

Climate Agreement

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A Introduction

In 2015, it was agreed in the Paris Climate Agreement that global warming should be limited to less than two degrees Celsius above pre-industrial levels. The aim is to limit global warming to 1.5 degrees Celsius.

The government's central goal with the National Climate Agreement is to reduce greenhouse gas emissions in the Netherlands by 49% compared to 1990 levels. At a European level, the government is advocating a 55% reduction of greenhouse gas emissions by 2030. Should such a target prove unfeasible within the EU, the Netherlands will strive to achieve more ambitious agreements with like-minded North-Western European countries than the allocation assigned to countries by the EU. Because the outcome of the international talks is not yet certain, the goal ultimately established for 2030 may differ from the 49% the government currently has in mind. A meaningful step was taken by the European Council on 20 June 2019, with a large majority of Member States endorsing climate neutrality for 2050.

The principal goal of the Climate Agreement, namely the reduction of greenhouse gas emissions, will affect everyday life. The transition we face as a nation will primarily be a social transition. Both citizens and businesses will face a series of decisions that affect how we live, our mobility, our food and diet, what products we buy and how we earn a living. These will not always be easy choices, and citizens and businesses will also have to rely on each other and on the government. A combination of decisiveness, investments, knowledge and expertise is required.

Since February 2018, more than 100 parties have jointly worked on a cohesive set of proposals with the aim of achieving the carbon reduction target in 2030. The final result is this Climate Agreement. This Climate Agreement contains a package of measures which has the broadest possible base of societal support, which has the active support of as many contributing parties as possible and which will achieve the political reduction target of 49% in 2030.

Structure of the document

This document consists of three parts.

Part B briefly outlines the goals and targets of the Climate Agreement and sets out the principles for monitoring and governance.

Part C contains the commitments made in the five sector platforms: (C1) Built environment, (C2) Mobility, (C3) Industry, (C4) Agriculture and land use and (C5) Electricity.

Part D contains the agreements that were made regarding issues that affect multiple sectors. The results of the task forces are summarised in three chapters: (D3) Integrated knowledge and innovation agenda, (D4) Labour market and training and (D8) Opportunities for market financing. National working groups developed the themes of (D2) Biomass and (D6) Spatial task. Chapter D7 outlines the commitments that were made regarding the Regional Energy Strategies. Additionally, Part D focuses on the overarching theme of Systems integration (D1), commitments aimed at improving support in society (D5), the way in which the national government implements its exemplary role (D10) and the key principles for the expansion of the SDE+ scheme (D9).

B An adaptive Climate Agreement based on five key pillars

B1 A single goal: -49% by 2030

The main goal of the National Climate Agreement is to achieve a 49% reduction in national greenhouse gas emissions by 2030 compared to 1990 levels. The consultations on how to achieve this target took place within five sector platforms. In order to facilitate the debate on measures and specific instruments and to provide clear direction, each sector platform was assigned a sector-specific target regarding the reduction in Mt (megatonnes) which would have to be realised by 2030, in respect of established and previously proposed policies, in order to collectively achieve the 49% reduction. The sector-specific targets were indicative, having been formulated by the government based on calculations by the Netherlands Environmental Assessment Agency (PBL) on the national cost effectiveness of various carbon emissions reduction measures.

B2 Increasing the European target to -55%

The government has requested that the participants of the Climate Agreement make a cost efficiency-based reduction contribution resulting in total emissions reduction amounting to 49% by 2030 in respect of 1990 levels. However, it is conceivable that, by 2030, the Netherlands will be required to achieve further reduction than -49%, as envisaged by this Climate Agreement, within its territory. This depends on a European decision on raising the European carbon dioxide reduction target, which is expected in 2020.

Within an international context, the government is calling for an increase of the European target to 55% by 2030. Exactly what the translation of such an ambition would entail depends on a parallel translation to non-ETS and ETS targets and additional European source-based policy. What is certain is that an ambitious increase of the European target could already change the national and international context by 2020.

The government has asked the sector platforms party to the Climate Agreement to reflect on additional measures, in case such should be required, by 2020 or otherwise, due to an increase of the European target to 55% by 2030 – this would be a welcome international tailwind for the efforts of this agreement. The government has not made an indicative translation based on national cost efficiency in terms of additional tonnes to be reduced per platform. The demand for the "additional strategy" was, first and foremost, a cross-platform issue, in response to the question of what if they were required to achieve more than -49% by 2030.

The answer to that question is not only relevant in the event that a decision is made in 2020 to increase the European target to -55% by 2030, but is equally relevant with a view to 2050. After all, further reduction is on the agenda for 2030 at the earliest, and will otherwise most certainly be an issue in the years thereafter. Due to the long lead times, it is vital that the option of additional measures should be taken into account in relation to the development of technology in the years to come, as well as in relation to the investment plans for necessary infrastructure and the planning of spatial integration. Accomplishing more than what has been agreed upon in this Climate Agreement implies further stimulation of carbon dioxide reduction options (production and demand) beyond what is required for the -49% by 2030, through standards, pricing and subsidies. This can be achieved in the sense that the technological

potential is greater than the potential that ought to be unleashed through the commitments in this Climate Agreement. In the summer of 2018, the sectors identified additional options to achieve further carbon dioxide reduction for the Proposal for the Key Points. Generally, these options concern intensification of the technological measures that form part of this agreement, in relation to which it should be noted that significant uncertainty remains regarding the technical feasibility of as yet more expensive options.

The commitments in this Climate Agreement are aimed at the realisation of 49% in emissions reduction by 2030 within the financial and non-financial frameworks of the government, taking account of any other conditionalities that were identified by the consultations in the platforms in respect of inter alia technological opportunities, spatial planning and social support. As such, instrumentation of any additional measures is not part of this agreement. Agreements on further stimulation of carbon dioxide reduction in production and demand, as well as a cost-effective allocation of the "additional tonnes" to be reduced by 2030, can only be made once the revised context actually comes into play following decisions in 2020 and market forecasts. Within the current international context – in which the ETS, for example, still uses a 40% target for emissions reduction in Europe – agreements on a national and international ambition greater than -49% will inevitably encounter the limits of the frameworks imposed on this Climate Agreement by the government; this applies to the desire to avoid carbon leakage of national efforts, in particular.

Since it is expected that any increase in the level of ambition will have to be realised through a very significant degree of electrification, including conversion to other energy carriers in the industry, mobility, built environment and agriculture sectors, agreements were made within the Electricity Platform regarding preparations for this scaling-up scenario and the applicable requirements and conditions.

B3 Key principles for monitoring

The Climate and Energy Report (*Klimaat- en Energieverkenning*, KEV), which is to be published in October on a yearly basis as of 2019, will report on the expected carbon dioxide emissions in 2030, based on the status of climate and energy management in the Netherlands and any expected future developments.

The reference scenario in the KEV will be updated annually. The forecast of expected emissions by 2030 and the target of 49% in cuts by 2030 has the potential to change each year both as a result of the existing and proposed policy at that time (whether or not based on the Climate Agreement) and due to changes in the national and international environment.

If insufficient efforts should cause delays in the implementation of the commitments, it is clear that the relevant parties should hold one another accountable. There may, however, be circumstances within the national and international environment over which the various parties have no control and which may result in the 2030 scope deviating (either in a positive or negative sense) from the indicative targets in this Climate Agreement. In the KEV, the Netherlands Environmental Assessment Agency will identify as accurately as possible to what extent potential assets or setbacks in relation to the scope of the Climate Agreement (49% emissions reduction by 2030) could be caused by exogenous factors (e.g. higher or lower forecast economic growth) or by national and international policies, including insufficient progress in the implementation of the commitments of this Climate Agreement.

In order to provide all the various parties charged with the implementation of climate policy with stability, alignment will take place with the planning and review cycle that is to be laid down in the Climate Act (*Klimaatwet*) (and aligns with the Paris Climate Agreement, as well as the Long-term Strategy and the Integrated National Energy and Climate Plan that are the

result of EU regulations). This means that the review of the remaining target(s) and the corresponding reconsideration of the necessary commitment of existing and additional measures and instruments will take place every five years. This five-year review opportunity will use an integrated perspective and will be based on the main greenhouse gas emissions reduction target. It will take a cross-sector view, take into account policy in neighbouring countries and have a ten-year horizon, although it will also have a view to 2050. This means that excess emissions per sector will not be the key focus. The intervening years will centre on the progress of the specific agreements in this Climate Agreement that are agreed upon annually, based on the KEV and the annual monitoring of the progress of the Climate Agreement.

In its response to the policy review for climate policy, the government announced its intention to pursue an integrated evaluation for national and international climate policy, which will focus on the alignment between instruments and sectors that contribute to achieving the national targets.¹ The development of the evaluation plan (scheduled for the spring and following the adoption of the Climate Agreement) will be aligned with the development of the progress monitor (see B4).

"Indirect emissions reduction": carbon dioxide chain impact and carbon footprint

The objective of the Climate Agreement is a national reduction target, as established in the Climate Act. Both climate policy and the scope of the Climate Agreement are based on the monitoring and reporting system for greenhouse gases agreed upon in a UN context (IPCC). This system monitors emissions where they actually take place (localised approach).

Both measures within sectors themselves and cross-sector measures contribute to the national carbon reduction target. Measures that fall into the second category include, for example, the supply of residual heat from industry to the built environment and the installation of solar panels on homes. These types of measures are not counted double in terms of emissions management, but are counted within the sector where the emissions cuts take place. In terms of the scope of the Climate Agreement, the sector to which emissions cuts are attributed on the balance is not relevant.

Within the sector platforms of the Climate Agreement, a need was expressed to gain a better understanding of the interaction between sectors in the form of supply chain impact, in order to highlight more clearly the collective contribution of sectors regarding carbon emissions reduction. Attention was also drawn to any measures that businesses in the Netherlands could take, but which would achieve emissions reduction in the international supply chains in which the businesses operated. These emissions cuts would not be attributed to the Netherlands, but could potentially contribute to resolving the issue of global climate change. Having an understanding of these types of effects also allows for a better understanding and estimation of the Dutch carbon footprint.

The Dutch government, in consultation with Statistics Netherlands (CBS), the Netherlands National Institute for Public Health and the Environment (RIVM) and the PBL, will be studying how greater insight can be gained into the contribution made by the various sectors to emissions reduction through cross-sector measures, such as in relation to the supply of residual heat, hydrogen and CO₂. In addition, a study will be conducted into how existing systems aimed at identifying carbon footprints can be improved in order to gain a better understanding of the national and international supply chain impact of measures focused on by businesses.

¹ See: Parliamentary Paper 30991, No. 34

B4 Governance

The principal goal of the Climate Agreement touches on everyday life. Citizens, businesses and public authorities will have to rely on one another to be able to contribute to this objective. For that reason, the Climate Agreement is a social pact.

At the same time, the Climate Agreement constitutes a large part of the implementation of the first Climate Plan under the Climate Act, in which the Dutch government will outline the key points of its climate policy for a ten-year period. Under the Climate Act, the primary responsibility for the Climate Plan is political. From the perspective of the Climate Act and at a national level, it is the responsibility of the government and the House of Representatives to make decisions regarding the policy to be implemented and the corresponding benefits and burdens, while taking into account the democratic process by which all public authorities shall under all circumstances be bound. Embedding this policy in both politics and society is critical to realising the objectives not merely on paper, but also in practice.

Organisation of the implementation committees

The implementation of the agreements will remain in the hands of the participating parties, including the Dutch government, as much as possible. In this way, the parties themselves bear primary responsibility for effective implementation of the agreements reached, and are jointly responsible for implementing their part of the Climate Agreement.

Civic organisations will only be able to fulfil their responsibilities if they are involved in the implementation process as a full partner. Sector-specific implementation committees will be set up for this purpose under the direction of the relevant ministers, who will organise the implementation committees that are required to implement the agreements, based on their sectoral responsibilities and together with the relevant parties. This process will both build on existing structures and operate within the new coalitions that have arisen during the Climate Agreement discussions.

The Minister of Economic Affairs and Climate Policy will have a coordinating responsibility and will monitor the overall coherence that is envisaged as a result of the Climate Agreement, including in relation to the cross-sector themes it has identified.

National RES Programme

The implementation of the RES is supported by the National RES Programme, which is managed by a Commissioning Consultation Body, consisting of the Dutch government and the local and regional authorities. The National RES Programme will receive advice regarding implementation issues from a programme council, in which both the government and other stakeholders (including network managers and the participation coalition) are represented. Coordination between public authorities on the RES targets will take place through the Administrative Consultation. This approach will not take place in parallel with existing consultations, such as the regional MIRT (Multi-year Programme for Infrastructure, Spatial planning and Transport) consultation in the mobility sector.

The National RES Programmes will ensure the representation of, in any case, the Built Environment and Electricity sectors in the implementation committees.

Labour market & training

The Labour market and training theme is critical to the climate transition, as well as to other major transitions, such as digitisation and the circular economy. Coordination for this theme will be made the remit of the Social and Economic Council (SER), which will set up a special SER committee tasked with identifying the opportunities and threats to employment posed by these transitions and exploiting them in an inclusive manner. In this context, the SER will promote and connect national, regional and sectoral initiatives and facilitate the development of sectoral training and labour market agendas. To this end, the chair of the SER committee

will be guaranteed insight into the general and sector-specific progress on the agreements of the Climate Agreement. In addition, the SER will reach agreements with relevant knowledge organisations on improving information provision on the labour market and training to support transition policy. Within the government, the Minister of Social Affairs and Employment will be the primary point of contact regarding this theme.

Financial sector

In order to guarantee the climate commitment of the participating institutions in the financial sector, the sector itself will be working with the Ministry of Finance to develop the implementation compliance structure, to allow the parties' progress in the development of the commitment to be determined on an annual basis. The development of project financing will be transferred from the Financing task force to InvestNL, which will continue to involve the relevant institutions across the entire sector.

Implementation of the Integrated Knowledge & Innovation Agenda of the Climate Agreement

A proposal will be developed under the auspices of the Ministry of Economic Affairs aimed at ensuring the implementation of the Integrated Knowledge and Innovation Agenda and the 13 Multi-year Mission-driven Innovation Programmes outlined and developed within the agenda. This will take place in close consultation with the relevant departments with sectoral responsibilities, the relevant Top Sectors and the knowledge institutions. Key starting points in this context include a focus on the five missions from the Climate Agreement for the five sectors and the interaction with the implementation committee for each sector, building on Top Sector policy and the collaboration within the golden triangle of businesses, knowledge institutions and government bodies. The proposal is scheduled to have been completed by summer.

Ensuring targets are reached: Climate Act

The private members' bill on the gradual reduction of greenhouse gases to combat climate change (Climate Act) will embed a reduction target of -49% in CO₂ by 2030 and -95% in CO₂ by 2050 in the Act. The Climate Act also provides the legal framework that defines the governance.

Annual reporting on governance in the context of the Climate Act

The Climate Act prescribes governance that is specifically geared toward safeguarding the targets, for which the Minister of Economic Affairs and Climate Policy bears ultimate responsibility (1st line). The Act sets out the following aspects:

- Climate Plan: contains the key points of the government policy to be implemented in the next ten years. The first Climate Plan will be based on the Climate Agreement. The Climate Plan will first be published in 2019, can be amended in 2021 and will be revised and readopted at least once every five years;
- Climate and Energy Report (KEV): the KEV, which is published by the Netherlands Environmental Assessment Agency, provides a report of actual and forecast CO₂ emissions in the Netherlands (and broader energy management). The KEV will be published each year as of 2019;
- Climate Memorandum: contains a Government Appraisal regarding the targets, accompanied by any additional policy intentions to achieve those targets. This will first be published in 2020 and on an annual basis thereafter.

The Climate Act cycle will align with the European accountability cycle. The submission of the Climate Plan will be aligned with the submission of the Integrated National Energy and Climate Plan (NECP). Europe calls for a progress report every two years, which will be streamlined with the Climate Memorandum.

Role of the Council of State

Under the Climate Act, the Advisory Division of the Council of State will have a formal role in relation to the Climate Plan and the Climate Memorandum. The Advisory Division of the Council of State will be consulted with regard to both documents and will issue advice on the Climate Plan, and thereafter will issue a review of the Climate Memorandum each year.

In its advice on the Climate Plan and the Climate Memorandum, the Council of State will conduct an assessment by reviewing the administrative, legal, financial and economic considerations made by the government.

Monitoring progress

Progress Monitor

Through the Climate and Energy Report (KEV) published by the PBL, the Climate Act ensures an annual report on actual and forecast CO₂ emissions. This guarantees insight into the CO₂ emissions targets as outlined above.

In order to enable adjustments in the interim, the monitoring of progress at the level of the individual measures and the reporting of interim results achieved is vital. For that reason, the Dutch government will be taking the lead in the development of a Climate Policy progress monitor, which, alongside the KEV, will serve as the basis for the Climate Memorandum and possible amendments to the Climate Plan every two years.

The progress monitor will provide information on the progress of the commitments set out in the Climate Agreement and on any additional government policy as included in the Climate Plan.

The progress monitor will report on implemented climate policy and should create a supported and credible factual basis for any review on issues where difficulties or obstacles have arisen in the implementation of policy.

Progress committee

The five sectors of the Climate Agreement are closely intertwined and the links between the sectors will only grow stronger. As such, regular cross-sector consultation on the progress of the commitments is crucial. To this end, a progress committee will be set up that will maintain close contact with the implementation committees. This progress committee will serve as a platform where parties can meet and reflect.

Effective knowledge infrastructure as a prerequisite for an adaptive approach

The success of the Climate Agreement and the corresponding success of the energy transition depends on an effective, consistent supply of information, in relation to political decision-making, innovation in technology and policy and support among citizens and businesses. Access to and development of knowledge will have to be embedded in the implementation of the Climate Agreement effectively.

The parties in the various sector platforms agree that the corresponding knowledge infrastructure can be improved. The national government will be taking the initiative in this regard in consultation with social stakeholders and knowledge organisations.

This agreement includes commitments on knowledge and other support for the Netherlands Heating Expertise Centre and a centre of expertise for the generation of renewable energy for local and regional authorities, which can provide input for the Guidelines and information products for the Regional Energy Strategies. This lays the foundation for a broad mechanism for information provision that can be developed further in the years to come. A pathway is to be launched in 2019 in which national data administrators will coordinate their data relating to the energy transition, provide access to that data in a user-friendly manner and collectively collaborate on correcting any shortcomings in the supply of data.

Title page

Sector-specific commitments

C1 Built environment

C Sector-specific commitments

C1 Built environment

C1.1 Vision for 2050

We are on the cusp of a sustainable transformation of the built environment and of the adaptation of the 7 million homes and 1 million buildings we have built, many of which are moderately well insulated and virtually all of which are heated by natural gas, into well insulated homes and buildings that are heated using renewable heating and in which we use or even generate clean electricity. This process will be carried out incrementally right up to 2050 and will involve cooperation with residents and the owners of these buildings.

This process has been principally precipitated by climate change. However, this is not the only reason. We wish to be able to cease natural gas extraction in Groningen as soon as possible. Additionally, everyone stands to benefit from lower energy bills and more comfortable homes.

It can be done effectively, provided that we tackle the issue in a structured manner and improve all relevant conditions, as well as take a broader view of the sustainability task ahead and include the circular economy as a key component. Perhaps the most important aspect is that we realise that the most significant challenge we face in this endeavour is not a technical, financial or administrative challenge, but a social challenge. It's about people. For that reason, we will be working together to shape the process – with residents, tenants, building owners, housing associations, builders, fitting businesses, etc.

This will be achieved through various means, including by way of a district-oriented approach. Heating grids or renovation projects will be organised locally, at district level. Case studies so far have shown that this is more successful, as local residents collaborate more with one another and with the relevant local government authority. This means collectively making the right decisions and collectively organising potential interventions in the local community and in residents' homes – for the sake of convenience and to cut costs – and perhaps even jointly owning a new geothermal or other heating source or solar panels. The sustainable transformation of the built environment is radical, but also gives rise to new opportunities.

This transformation can only succeed if everyone is able to participate and must therefore be affordable for everyone. Achieving neutral housing costs is our principal objective, which can be achieved if costs can be lowered through supply-demand pooling, digitisation and innovation and by securing of better funding to ensure that the vast majority of residents do not pay fees for the renovation loan that exceed the gains on their energy bills. In cases where this cannot be achieved, we will have to provide targeted support. This is a project for the many, not the few.

C1.2 Target and ambitions for 2030

In order to achieve the 2030 climate targets, we will have to steadily increase the pace of sustainability efforts to over 50,000 existing homes per year by 2021. By 2030, we will need to have settled into a rhythm of 200,000 homes per year. The objective is to ensure a reduction of 3.4 Mt of carbon dioxide in the built environment by 2030, compared to the reference scenario.

We have chosen a structured approach, tackling one district at a time. The municipalities play a crucial role in this regard. Alongside residents and building owners, a meticulous process

will have to be completed to determine the best solution for each district, for when houses are no longer heated with traditional central-heating boilers. Solutions may vary from one district to the next. If the area has been densely developed, contains many high-rise buildings or has homes that were built before 1995, then a district heating grid will often be the most suitable solution. If the area contains new homes set out in a spacious district, then an all-electric solution may be better. For many districts, the natural gas network will remain in place beyond 2030 and may even be used for green gas or hydrogen. Insulating and burning less gas, sustainable or otherwise, with a hybrid boiler might offer a sensible temporary solution. However, the condition of the homes is not the only relevant factor; the wishes of the residents and challenges in the district other than energy supply equally determine the pace and the outcome.

Given that we are keen to gain ground, we have opted for an energetic start. In many places, housing associations will be able to make tens of thousands of homes more sustainable and connect them to a different heating supply than natural gas in the years to come, under the condition that the monthly costs for rent and energy bills do not rise, including for first-time movers. In this way, tenants receive a better home at monthly costs that are equal to or lower than previous rates. Newly built homes have already allowed us to distance ourselves from natural gas more quickly.

A large number of commitments have been and are required to enable all of this. Commitments regarding the way in which the municipalities decide on the future of the district in consultation with residents and building owners. Commitments on how significant cost reductions can be achieved with the construction of heating grids, the fitting of insulation solutions or the installation of heat pumps. Commitments on an amendment of the energy tax, which would involve lower taxation of the commodity we need more of – electricity – and higher taxation of the commodity we want to use less – natural gas. Commitments regarding more renewable heating from the ground beneath our feet or from the large bodies of surface water in the Netherlands. Commitments regarding an opportunity for all home buyers to insulate their homes, if renovation works are taking place anyway, at attractive loan conditions.

These commitments and others have been laid down in this Climate Agreement. They form an integrated whole that will allow the 2030 target to be achieved and will enable the vision for 2050 to be realised.

C1.3 Approach for the built environment

In order to achieve the emissions reduction target for 2030 of 3.4 Mt worth of cuts in the built environment, roughly 1.5 million existing homes will have to be made more sustainable and carbon dioxide emissions in existing nonresidential buildings will have to be cut by an additional 1 Mt by 2030.

To make this task more manageable, the sector platform has proposed a phased and programmatic approach that, on the one hand, will seek to achieve a good head start and, on the other, will develop the conditions and requirements for the scaling up and rolling out of measures in the future. It is vital that the supplying parties learn how to make large numbers of homes more sustainable in a more efficient manner, including through the "starter motor" projects (*startmotor-projecten*). The lessons that can be learned from this initial, broader, multi-faceted issue provide opportunities for technological and organisational innovations, allowing suppliers to develop a cheaper, more efficient range of solutions. Clients will be gaining experience in this regard by putting large numbers of renovations out to tender. These are necessary conditions for actually scaling up implementation. The upscaling and large-scale implementation of strategies requires broad experience to be gained in terms of

what options will be cost-effective and practicable in different scenarios. This also creates time for a careful elaboration of the requirements underpinning future upscaling and implementation.

With regard to homes, we have opted for an approach of incentivisation and management via the district-oriented approach and the starter motor. At an individual level, building owners can also be incentivised to make their properties more sustainable. This approach will be successful if the sustainability efforts can be recouped through tenants' lower energy bills. Numerous innovations and significant cost savings will be required in order to fund these investments and make them affordable by means of energy savings and cost reduction. To this end, we are launching Test Beds for Natural Gas-free Districts (*Proeftuinen Aardgasvrije Wijken*) and an innovation programme, which will allow us to learn and experiment systematically and move forward with cost-effective upscaling and implementation after the current government's term of office. Without the perspective gained from this, municipal authorities would not be able to construct (or contract construction for) heating grids or to incentivise landlords or homeowners in a given district to make their properties more sustainable. After all, the ultimate goal is to achieve neutrality in terms of living and housing costs. Without this perspective, housing associations similarly would not be able to achieve sustainability efforts for tenants that result in neutral housing costs.

We will be providing this perspective by creating the conditions for scaling matters up, innovation, greater efficiency and cost savings, by making funding available and by putting forward proposals to alleviate the remaining operating shortfall of building-specific measures, infrastructure and sustainable energy sources through pricing and subsidising measures. This will mean a shift in energy tax to encourage investment in sustainability and attractive financing options that ensure investments are actually affordable. Further incentives and frameworks for action will be offered by means of standards describing the target specifications buildings will need to meet to be able to heat them without natural gas in future.

Once those conditions are met, a concerted approach, through the starter motor, the neighbourhood approach and a comprehensive range of generic incentives for homeowners (such as at the moment of purchase), will be able to achieve the necessary number of 1.5 million homes by 2030. This is a substantial upscaling effort, which, in itself, is necessary as a condition to achieve cost savings.

All of the foregoing adds up to a drastic, complex and extensive challenge that will affect everyone and will undeniably require citizens, businesses and institutions to get involved, be prepared to invest and give support. The financial sustainability and feasibility of measures, as well as security of supply, are crucial conditions in this regard.

With regard to nonresidential buildings, we have opted for carefully crafted standards for the 2030 and 2050 targets that will result in further emissions reduction of 1 Mt by 2030.

Finally, a sufficient level of sustainable heating must be made available to meet the target of 3.4 Mt of carbon dioxide emissions reduction in the built environment.

To that end, the Sector Platform for the Built Environment will be presenting a coherent package of commitments.

C1.4 Enabling scaling up and cost savings: arrangements and standards²

Achieving the necessary cost savings will require significant scaling up of sustainability efforts. In order to facilitate the scaling up of these efforts, the parties have been working on agreements on the development of *arrangements* and *standards*.

The *arrangements* are designed to support extensive industrialisation and innovation in the supply chain as well as pooling on the demand end. This pooling strategy, combined with digitisation and innovative types of procurement (including the renovation accelerator in the starter motor), will stimulate the development of innovative solutions (also see the innovation programme) and will result in necessary volume growth that will lead to product and process efficiency and a reduction of system costs.

A *standard* (in kWh/m²/year) for the annual net heating demand of homes will contribute to the goal of a low-carbon built environment by 2050.

The *standard* is based on the architectural/technological possibilities in conjunction with financial feasibility. For example, extensive insulation for homes without hollow walls will require greater investment. As such, the standard will be less stringent for pre-war homes than for homes that were built in the 1990s. Homes that can be insulated to a greater extent at acceptable costs will suffice with a lower temperature heating source. Other homes will require a medium or high temperature heating source. For that reason, the standard is able to function as one of the inputs for the guidelines and, as such, for the selection of the most suitable heating source for a given district.

The *standard* can be applied to the funding and subsidising of sustainability measures. Renovation and conversion to the requirements of the standard may be the basis for entitlement to subsidies. Differentiation of the transfer tax will be explored, with explicit focus on the effectiveness, feasibility and impact of such a measure on the accessibility of the housing market. This will provide banks and regulatory authorities with a standard for a housing-costs approach to the financing of a renovation or conversion project.

A *standard* can also give a perspective for action for homeowners that wish to take measures now in anticipation of the alternative to natural gas that is to be selected through the district-oriented approach. A "transition to natural gas-free" standard for homes prevents property owners and residents from having to put additional measures in place afterwards, for example if their insulation proves to be insufficient in the future.

Agreements

The parties have agreed the following:

Arrangements

- a. Market parties, in consultation with residential and other consumer organisations, are committed to the development of as many arrangements (standardised or industrially produced energy-saving packages (insulation) and renewable energy and heating solutions) as possible for the most distinctive home and building types. These arrangements and upscaling efforts, programmatic management and innovation will allow efficiency improvements to be achieved, which will lead to a reduction in system costs of the envisaged 20%, up to a potential of 40%, depending on the type of package.

² The dates/deadlines have not been changed in respect of the version of 21 December 2018. This will be discussed in greater detail by the implementation committees, where the dates will also be considered in relation to one another, given that dependencies between them exist.

- b. The various arrangements will be linked to the starter motor, living labs and the district-oriented approach. In addition, new initiatives (such as the renovation accelerator) will be developed that will lead to systematic upscaling.
- c. Organisations within the sector and relevant authorities, alongside interest groups for consumers and owners, will be working together to further develop the agreements and to monitor their implementation and safeguard the mutual agreements, and improve them where necessary. This will also be discussed in the sectoral quality control consultation body.
- d. By 1 July 2019, the national government, in consultation with Aedes and market parties, will develop a monitoring protocol that will allow the development to be tracked in the direction of the desired target within the sectoral quality control consultation body. Information generated from the district approach, the renovation accelerator and the starter motor will have to provide insight into the efficiency improvements achieved and any general cost development trends.
- e. In order to provide a full-service solution to residents and building owners in the consultation, implementation and financing stages of the renovation of the house/building, a digital platform will be launched on 1 January 2020, designed to ensure better alignment of supply and demand in relation to implementing sustainability in homes. This will involve existing initiatives being streamlined as much as possible to ensure uniformity of the information provided. In addition to proposals for individual home improvements, the platform may also be given a role in pooling demand, which will allow the market to formulate an attractive supply. Qualitative requirements will be formulated for suppliers. In this way, the digital platform will be contributing to bridging the gap between supply and demand within the neighbourhood approach. It is crucial that clarity be provided regarding this issue in 2019 in the short term. Bridging the gap between supply and demand is critical to the success of the upscaling process.
- f. Knowledge institutes and the business sector will be stepping up their cooperation in the field of innovation based on the Integrated Knowledge and Innovation Agenda (IKIA) of the Climate Agreement aimed at the built environment. Each year, the national government will contribute to the financing of the IKIA for the built environment with sufficient funds, with a minimum level set at the level of 2019. The TKI Urban Energy and the Building and Technology Innovation Center (BTIC) will play a key role in the implementation of the innovation programme. Industry associations such as the NVDE (the Dutch association for sustainable energy), Energie Nederland (Dutch industry association for electricity, gas and heat producers), Bouwend Nederland (Dutch construction and infra company association) and Techniek Nederland (employer's organisation for technical service providers, installation contractors and technical retailers) and educational organisations, such as universities for applied sciences, will ensure the wider dissemination of the knowledge developed.
- g. The parties will be significantly reinforcing the alignment of education to the needs from the sector through the embedding of education and its involvement in the neighbourhood approach. This is the key focus of the national "Declaration of intent on the labour market and training in the district-oriented approach" (*Intentieverklaring arbeidsmarkt en scholing in de wijkgerichte aanpak*), in addition to the Agreement on the Senior Secondary Vocational Education Curriculum for Climate Technologies (*convenant MBO-aanbod klimaattechniek*) (a specific development of the Declaration of intent for senior secondary vocational education) and the Green Deal for the Development of Local and Regional Renewable Heating and Cooling technologies (*Green Deal Ontwikkeling Decentrale Duurzame Warmte- en Koudetechnieken*). The parties will also remain committed to stepping up implementation capacity, in part via sectoral training funds. The agreements of the national "Declaration of intent on the labour market and training in the district-oriented approach" will be implemented inter alia through regional Public Private Partnerships (PPPs).

Standard³

- a. A "sensible" type of sustainability renovation can be determined for dominant or distinctive types of houses in the Netherlands, based on a cost-benefit analysis and the desired reduction of the heating demand. This would be a so-called "no regrets" renovation that would assure the building owner that multiple major adjustments to the same building components would be precluded for the duration of the technical lifespan, in anticipation of the alternative to natural gas selected in the neighbourhood approach. It would therefore be useful for the government, in consultation with the relevant parties to this agreement, in any case to determine such a standard for the dominant categories of homes and building types. That standard would be formulated at the level of the entire house (net heating demand in kWh/m²/year, in line with the NTA8800 energy performance determination method). The development process of the standard is currently looking into the sensitivity of the standard to the final selection of the heating alternative. This aspect is taken into account in the evaluation.
- b. In the first quarter of 2019, the VNG (Association of Netherlands Municipalities), the national government and the NVDE will be examining how the standard and neighbourhood approach align effectively.
- c. Not everyone will renovate their entire home when making sustainability improvements. In relation to renovations that only tackle one or a few building components (such as the roof, façade, flooring), target values will be prescribed for insulation (in Rc or U values) and the required ventilation. The standard for the overall home will take precedence, with the target values for building components contributing to the standard. The standard and the target values will be established no later than 1 July 2019. The standard will be able to function as one of the inputs for the guidelines and, as such, for the selection of the most suitable heating source for a given district. Moreover, the "no regrets" standard is a means of achieving the envisaged objective of a low-carbon built environment.
- d. The envisaged standard for existing buildings will as yet not be compulsory for owner-residents, but it does provide clarity on the desired energy performance of existing homes in advance of the district-oriented approach. In 2025, the standard will be evaluated based on criteria that have yet to be determined, in conjunction with other instruments and the neighbourhood approach. Thereafter, the standard can be tightened, receive better support or be given a more compulsory character as necessary. This will be discussed in the sectoral quality control consultation body.
- e. Unlike owner-residents, tenants do not have the freedom to determine how the houses should be adapted to meet the minimum requirements for the property in respect of the alternative heating source. In order to give landlords options to act and protect tenants against overly high energy costs, the standard is to be made compulsory by 2050 for homes intended for rental purposes. The obligation for landlords will not lead to their having a disproportionate share of the collective costs (filling-up risk).
- f. Landlords will be responsible for making adjustments to properties to ensure they comply with the standard once the homes are connected to the new infrastructure through the neighbourhood approach.
- g. Any renovation of a home is a radical event. The position of tenants is guaranteed due to the fact that they have a say on the reasonable nature of any given proposal. By contrast, landlords must be able to implement changes. The cooperation of tenants is crucial in this regard, so they or successive tenants can avoid high energy costs. For that reason, it will be considered whether the mutual rights and obligations of tenants and landlords (including the right of consent) may need to be amended. Moreover, consideration must take place on how to deal with this consent requirement if the adjustments relate to changes to homes that are required under the district-oriented approach and the proposed rent increase is compensated by the reduction in energy costs. The national government, tenants and landlords will be entering into a dialogue on the issue in the spring of 2019.

³ Also see the explanatory note "Implementing sustainability in existing homes" (*Verduurzaming bestaande woningen*).

- h. The national government and Aedes will make agreements as referred to in the annex.
- i. In 2019, the national government and the larger landlords will engage in a dialogue on the formulation of interim goals for larger landlords, not being housing associations, by 2030, and will coordinate the results with the Netherlands Union of Tenants. In 2025, the national government will monitor and evaluate the progress in respect of the intermediate 2030 target. If this evaluation should show a lack of results for the landlords, an appropriate package of additional measures will be agreed upon through a dialogue with the sector.
- j. The national government will integrate the standard (and target values) into existing methodologies, specifically:
- the Buildings Decree/Structures (Living Environment) Decree;
 - the energy label. The standard is expressed in kWh/m²/year and will be added to the revised energy label, which is based on the new NTA8800 energy performance determination method;
 - rent regulations, including the property valuation system. The regulations will be adapted in such a way as to provide the right incentives to renovate homes in compliance with the standard. In addition, regulations will assume a standardised housing-costs approach, resulting in landlords being able to charge costs that are equal to the reduction of tenants' energy costs;
 - careful extension of the existing right of initiative for tenants aimed at energetic improvements, such as in situations in which landlords are unable or unwilling to make sustainability improvements.
- k. Existing and future subsidy schemes aimed at homes, such as the ISDE investment subsidy for sustainable energy scheme, will be aligned with the measures that are required to comply with the standard as much as possible, with due consideration of feasibility aspects.
- l. The national government, energy information platforms, consumer organisations, financial institutions, advisers, estate agents and providers will be communicating extensively with homeowners and tenants on the standard, the target values and the necessary measures that are required to comply with the standard, across as many existing information channels as possible. There will also be additional focus on the perspective for action on the part of owners and residents and the quality aspects of the supply. In order to ensure homeowners are optimally informed and to provide a full-service solution in relation to sustainability improvements to their home, validated information on sustainability measures and corresponding indicative energy savings will be made available to all residents and investment profiles via energiebesparendoejenu.nl as of 1 January 2020. This will be linked to funding and subsidising opportunities. The website energiebesparendoejenu.nl will also enable professional parties to offer highly standardised sustainability packages, validated savings information and indicative investment amounts.
- m. The development of heating devices that do not use gas or do so to a far lower extent (such as hybrid or other heat pumps) is in full swing. The parties will be working together within a designated innovation programme to make these alternatives more efficient, more competitive and more comfortable (in terms of noise and size). An increasing number of consumers will transition to these alternatives when replacing their central heating boiler. In order to speed up this process, further performance requirements to technical heating installations can be considered beyond 2025, in line with EU regulations. This will be discussed in the sectoral quality control consultation body.

C1.5 Funding of sustainability improvements in homes and buildings⁴

In order to offer the prospects of recouping the financing of sustainability measures through energy bill savings, a broad spectrum of attractive, accessible and responsible funding options should in any case be available to all target groups. In addition, improved and intensified communication on the possibilities of attractive funding of sustainability investments, particularly in relation to the purchase of a home, may encourage more sustainability improvements among more property owners.

Agreements

The parties have agreed the following:

- a. The national government will draw up a provision for the Dutch Civil Code (BW) that allows for the transferability of funding through building-related financing (GGF). This structure (BW) should enable funding and customisation products to be made available to customers through various providers. This amendment is envisaged to be ready by 2020.
- b. In parallel to the legislative pathway, the financial sector will be developing a proposal for 2022 on how GGF products can be offered that are sufficiently attractive to property owners even without fiscal facilitation.
- c. A study will be carried out commissioned by the national government to examine under what conditions, and in compliance with any duty of care aspects, voluntarily ground lease can be used as an additional variant of GGF. The conclusions of the study will be submitted to the House of Representatives in the autumn of 2019.
- d. In advance of 1 July 2019, the parties will examine whether and to what extent the credit test, when taking out an additional mortgage for sustainability improvements, can be simplified for easy access purposes without this leading to excessive lending.
- e. In 2019, the national government will carry out a survey, in consultation with the Dutch Banking Association, Nibud, De Nederlandsche Bank (DNB) and the Netherlands Authority for the Financial Markets (AFM), regarding the development of a methodology for neutrality of housing costs that can guide the provision of credit for sustainability improvements.
- f. NIA/Invest NL (currently being set up), SVn, VvE Belang, NEF and the national government will furthermore be examining what, in addition to the National Energy Savings Fund (NEF) and the availability of 30 years of funding, is required to allow market parties to make attractive loans available for energy savings by Owners' Associations in the future. The NEF is prepared, subject to certain conditions, to consider whether Owners' Associations with six to ten apartments could be eligible for NEF funding. If this proves to be impossible, the Dutch Municipal Housing Incentive Fund (SVn) will set up pilot projects. Suitable funding options will be examined with regard to Owners' Associations with fewer than six apartments.
- g. Customisation concepts for private building owners will be developed further based on the experiences and experiments with local and regional initiatives, combined with various types of building-related and other funding. This will also involve reviewing what types of cooperation between public authorities, network managers, investors/lenders and energy businesses can be achieved and, subsequently, in what way procurements can be shaped to pool supply and demand in order to allow the expertise of market parties (construction businesses, installation businesses, energy businesses) to be used for customised products and cost savings that inspire confidence in private building owners.
- h. In advance of 1 July 2019, the national government, alongside SVn, NHG (National Mortgage Guarantee) and other parties, will examine which property owners do not have access to existing and yet to be developed funding mechanisms and how these property owners could be supported in this regard.

⁴ Also see the explanatory note on "Funding private homeowners".

- i. The parties in the supply chain will encourage home buyers and homeowners to begin sustainability improvements as early as possible. The parties will endeavour to ensure that residential valuations include an outline of any possible energy saving measures that can be taken, corresponding investments, the added value of collateral following realisation and an indication of the energy cost savings by default, using the *standards* as yet to be developed. To this end, the NHG will seek out partnerships with industry associations of estate agents and surveyors, the NRVT and lenders and coordinate with other stakeholders, taking into account that this should not lead to unacceptable price increases for valuations. Mortgage consultants will in their mortgage advice advise on any funding options and sustainability measures.
- j. The Dutch government will support private property owners and Owners' Associations with funding and customisation options for the sustainability process. To this end, a broad heat fund will be set up for all property owners and Owners' Associations, which will be partly aimed at providing parties who are currently unable to obtain funding due to lending standards with financing options. The fund will contain both public and private sector resources. Until 2030, the government will be making 50 to 80 million euros worth of non-revolving funds available for the fund each year – this amount will be reduced in the long term. Depending on how it is implemented, this fund may be supplemented with private funds to become a financing portfolio of more than €1 billion. In order to achieve responsible application of public funds, the level of prefinancing through the fund will be capped at 25,000 euros per property owner, with the duration of the funding capped at (up to) 20 years. This will prevent overextension of credit and will take into account the technical lifespan of installation and insulation measures. The aim is for the fund to be applied to market-based products in the long term. The period to come will focus on developing how these funds can be used as efficiently as possible in a public-private sector construction and how customisation can best be organised, to ensure that funding and customisation options are available for all groups.

C1.6 Removal of the operating shortfall: pricing and subsidising of housing construction

At present, cost reduction and attractive financing resolve part of the currently high operating shortfall of sustainability improvements. A sensible neighbourhood approach and starter motor will ensure that, by 2030, homes with an attractive operating shortfall will be relatively quicker to be renovated. Nevertheless, there will still be an operating shortfall until 2030. As such, without additional measures, many building owners will be faced with a situation in which the financing costs of the renovation will be significantly higher than their energy bill savings. This will result in any incentivisation of homeowners, or a concerted approach by housing associations or municipal authorities, failing.

Agreements

The parties have agreed the following:

The following mix of pricing and subsidy instruments will be used:

- 100 million euros/year – ISDE subsidy scheme;
- 100 million euros/year discount – Landlord charge;
- 50 million euros/year from 2020 to 2023 – Energy Investment Allowance for landlords;
- 100 million euros/year up to 2021 and 70 million euros/year from 2020 for the neighbourhood approach and the renovation accelerator from the climate Budget funds.
- Changes will be made to the energy tax to provide a stronger incentive to improve sustainability, by ensuring that investments in sustainability are recouped within a shorter period of time. The government has opted for the budget-neutral version, which will see the energy tax rate for the first bracket for natural gas increase by 4 cents per m³ in 2020

and +1 cent per m³ in the following six years. All additional funds raised this way will be returned via the tax reduction and a lower energy tax rate for the first bracket for electricity. Households benefit more from this change than businesses, thereby reducing the tax burden on households. This includes households that are not yet able or willing to invest in improving sustainability. A review is scheduled for 2023 to examine whether the proposed increase in energy tax on natural gas is still necessary to maintain the desired sustainability incentives, in view of the autonomous development of market prices.

C1.7 A district-oriented approach⁵

Resolving the operating shortfall of the sustainability improvement process is in itself insufficient to achieve the desired pace of sustainability improvement. Building owners often require additional incentives to begin sustainability improvements. As such, a planned and structured approach is required, which will be executed via the neighbourhood approach.

Alongside residents and building owners, a meticulous process will have to be completed to determine the best solution for each district, for when houses are no longer heated with traditional central-heating boilers. Solutions may vary from one district to the next. A district-oriented approach requires commitments to be made regarding relevant *guidelines, the Netherlands Heating Expertise Centre (ECW), alignment with the RES, participation, decision-making, implementation, a knowledge and learning programme, the legislative agenda for the neighbourhood approach and sufficient funding*. These are set out in this section.

Guidelines and support from the Netherlands Heating Expertise Centre⁶

In order to achieve a careful assessment process, both for the transition vision for heat and for the implementation plan at district level, municipal authorities and stakeholders will be supported by a set of guidelines, in which objective information will be made available based on transparent and validated factual data. These data will be shared and made available digitally and in a uniform and standardised manner, thus giving all stakeholders a uniform, public frame of reference that supports the social and political discourse within which the municipal council is to make a considered decision. The guidelines themselves will not contain an assessment.

Rather, the guidelines are an instrument consisting of two components. The first component of the guidelines, the technical-economic analysis based on an open source model, shows the impact of the various heating and other options and the level of insulation required, in terms of both the social costs and the costs to various end users in the district, in detail up to the level of the district itself. This also relates to the investment in the insulation of the property. The second component consists of a document containing directives (relating to the data, assumptions and calculation rules) that the municipalities can use to enrich the open source model with their own, local data, including in relation to planning for the decision-making process (transition vision for heat and implementation plans at district level). The information in this document will support municipal authorities with information, including on social costs and the costs to end users for an integrated cost analysis. Based on this information, municipalities will be able to select the most cost-effective districts. Municipalities will have to provide an explicit motivation in the decision-making process if they have chosen a different option to the alternative with the lowest social costs.

For each area development, after all, the municipality must consider what challenges it faces in a broader context and how they can be included. For example, if a road is opened up for the laying of a heating grid, the municipality will naturally include any maintenance to the

⁵ Also see the explanatory note on the "District-oriented approach".

⁶ Also see the explanatory note on the "Guidelines + ECW".

sewer system. The national government will be providing municipalities and umbrella organisations support in this regard to arrive at specific examples of spatial design to enable the integration of the heating transition in the built environment, in conjunction with the other targets that must be realised in communities and districts in the next few years, including in the Test Beds for Natural Gas-free Districts.

The Regional Energy Strategies (RES) include regional commitments on electricity, (green) gas and heating. In respect of electricity, the RES makes an allocation of the national target for the generation of renewable electricity. With regard to heating, the RES identifies the supply of renewable heating in the region, which involves national data on geothermal and aquathermal sources supplemented with residual heating sources identified in the region. This takes place in a fixed format to ensure that the data can be used as input for the guidelines. The content of this format will be developed by the guidelines working group in partnership with the RES working group. With regard to heating, the RES identifies the supply of renewable heating in the region, which involves carrying out a regional energy potential analysis that is to be made available for the regions at the start of 2019, to avoid any stagnation regarding the implementation of the existing commitments. These analyses will be realised in consultation with the PBL and the guidelines working group.

The inventory of heating sources will be included in the first component of the guidelines through the RES. The output of the guidelines may give rise to coordination at a regional level regarding the expected use of available renewable heating sources. During this phase, the RES can serve as a platform for regional commitments on the strategy most beneficial to society. However, the RES itself will not contain models or agreements in relation thereto. The outcomes of the guidelines can be used for the talks on this strategy.

The Netherlands Heating Expertise Centre (ECW) – still to be set up – will support municipalities in such a way as to enable them to prepare and formulate plans from a harmonised starting point. To that end, the ECW has two key roles:

- management and support of the guidelines;
- knowledge centre, chiefly in the field of technical, economic and sustainability aspects, but equally with regard to national developments such as market regulation and aquathermal and geothermal energy.

Shaping the ECW into an authoritative, independent organisation requires careful preparation and design. At the same time, it is crucial that there should be an operational support centre for the developments in the heating transition process in the near future. To this end, the ECW as a knowledge centre will focus on national developments as well as on the technical, economic and sustainability aspects that play a role in the guidelines. (It is ultimately envisaged that the ECW and the Expertise Centre for Energy Transition, which supports the RES, will be integrated if this should result in synergy benefits.)

The Knowledge and Learning Programme (KLP, more details provided in the text below), the ECW, network managers and possibly other parties will actively collaborate on coming to a comprehensive support package for municipal authorities.

Agreements

The parties have agreed the following:

- a. The national government – in consultation with the provisional ECW Advisory Council and the provisional ECW Steering Committee – will request that the Netherlands Environmental Assessment Agency draft and manage the guidelines (first component).
- b. The ECW Advisory Council, in consultation with national government, the VNG and the IPO (Association of Provincial Authorities), will advise the ECW Steering Committee on substantive issues concerning the guidelines and review of the guidelines.

- c. If the ECW has not yet formally been launched, the advice and decision-making will take place through the provisional ECW Advisory Council and the provisional ECW Steering Committee respectively of the – as yet to be founded – ECW.
- d. The provisional or realised ECW Steering Committee will consist of: the national government, VNG, UvW (Association of Regional Water Authorities) and the IPO. The provisional or realised ECW Advisory Council will in any case consist of: Netbeheer Nederland (the Dutch industry association for electricity and gas network managers), Energie Nederland, NVDE, Techniek Nederland and Aedes. The composition of the provisional or realised ECW Advisory Council will be determined in the first quarter of 2019.
- e. The ECW Steering Committee will establish the guidelines.
- f. The draft version of the guidelines ("Guidelines 0.8": a workable draft) will be completed as soon as possible, but no later than September 2019.
- g. The final version of the guidelines will be completed by March 2020.
- h. VNG and the national government will ensure effective coordination and cooperation between the ECW and the KLP to ensure broad support for municipal authorities.

Acceptance as a key condition

The transition from natural gas to sustainable heating will be achieved through the commitment of residents, building owners and other parties in the region where this transition is on the agenda. The early involvement of the community in and around the district ensures that various perspectives, knowledge and creativity are brought into the process early on. In this way, a well-structured participation process contributes to a better quality decision-making process and, as such, can also help increase acceptance of the measures of the neighbourhood approach.

For that reason, the importance of effective participation has been embedded in the Environment and Planning Act (*Omgevingswet*). The RES and visions for transition will be enshrined principally in the municipal visions on environment and planning, programmes and environmental plans. The Environment and Planning Act will apply to this, with the government issuing a notification to the environmental plan regarding the outlines of the participation process. Substantiation must be provided for environmental strategies, environmental plans and programmes regarding how citizens, businesses, civic organisations and public authorities will be involved in the preparations and what the results will be. In the event that parties are feeling insufficiently heard, everyone will have the opportunity to submit an opinion. The court can ultimately reverse a decision if it was not prepared diligently or if a sufficient argument is provided for doing so.

Participation requires a tailored approach. For that reason, the Environment and Planning Act does not prescribe exactly how participation should take place. The Act gives the competent authority and the initiating party the freedom to make their own choices on how to shape the participation process. It is vital that everyone who wishes to do so is given the opportunity to participate. After all, the site, the type of decision, the environment and the stakeholders will be different each time – the same goes for the start time of the participation process. Conversely, there are elements that are recurrent in every district.

Communication is a crucial basis for participation. Building owners and residents in a given district, for example, must have clarity on why the transition to gas alternatives is necessary. Concurrently, they will want to know why the relevant district is in line to undergo the transition at the given time. Communication will take place along two tracks: a nationwide core message through existing channels of communication and campaign(s) on the one hand and communication at district level on the other. The nationwide core message will provide communication materials that can be implemented at a regional or local level to facilitate recognition and consistency. These communication materials will be easy to adapt to match communication needs at a local level. The experiences from the Programme for Natural Gas-

free Districts will be used to that end. The parties relevant to the implementation of the district-oriented approach will be able to use those materials.

It is crucial that residents contribute to and participate in the transition process to achieve natural gas-free districts. There are good examples of community initiatives to achieve energy transition in a district. In recent years, the Nature and Environmental Federations, Energie Samen, Energy Information Platforms, HIER, Buurkracht and LSA Bewoners have gained a great deal of experience with community contribution and participation. Collectively, they make up a participation coalition and have drafted a plan for a support structure for residents that allows them to support local and regional authorities in the participation process. Municipalities retain the freedom to decide whether to make use of this.

In any case, it is important to take an open and learning approach to participation when transitioning away from natural gas in a district. This also involves targeted use of expertise and the exchange of knowledge and experiences. Ongoing pathways, such as the knowledge and learning programme for natural gas-free districts, provide optimal support.

The parties have agreed the following:

- a. Participation principles have been developed in supplement to existing and available instruments to safeguard community participation. These principles will be assessed in the Test Beds for Natural Gas-free Districts.
- b. In addition, the national government, in consultation with the VNG and other stakeholders, will draft a set of participation guidelines, in part based on the experiences in the Test Beds for Natural Gas-free Districts.
- c. The national government, the IPO, the VNG and Aedes will be working with stakeholders, such as VEH, EnergieSamen and the Netherlands Union of Tenants, to examine how the position of owners, tenants and/or residents can be safeguarded within the context of the neighbourhood approach.
- d. The participation coalition will be developing a support structure for residents in consultation with local and regional authorities and the national government. The national government will provide a financial contribution to that end, about which further agreements will be made in the first quarter of 2019. Individual municipalities or provinces will be able to consult the participation coalition according to their project-based needs based on their own contribution.

Transparent assessment and decision-making

In the transition vision for heat, the municipal council will establish a realistic time schedule within which to transition away from natural gas. Potential alternative energy infrastructures (all-electric, heating grid, heating grid type, etc.) for districts for which the transition has been scheduled before 2030 are already known. After the potential alternatives have been identified in the transition vision for heat, the municipality will determine the implementation plan (an implementation plan comparable to the instrument programme in the Environment and Planning Act) and implementation at the level of the district and will decide on the alternative energy infrastructure of the given district. In addition, it is the parties' joint responsibility to ensure that this should be a realistic, affordable alternative to owners and residents. This will provide a framework within which building owners, network managers, heat suppliers, municipalities, providers of sustainability packages and other parties will be able to make investment decisions. Opportunities for leaving the natural gas grid in place and using it for green gas or hydrogen will also be included. Municipal authorities will require roughly two years to create a district-specific implementation plan. In order to achieve a careful assessment process, both for the transition vision for heat and for the implementation plan at district level, municipal authorities and stakeholders will be supported by a set of guidelines. The guidelines will provide all stakeholders with a uniform frame of reference regarding the impact of the various natural gas alternatives in a district. The guidelines are aimed at providing an objective account of the choices for the most cost-effective options for

society and end user costs. The final decisions in relation to the application and use of heating that issue from the district-specific implementation plans will be included in the RES 2.0.

The parties have agreed the following:

- a. Municipalities will draw up a transition vision for heat in consultation with stakeholders by the end of 2021 in which they will establish the timetable for a step-by-step approach to phasing out natural gas (with insulation potentially constituting one step, provided it is part of the district-oriented approach to transitioning away from natural gas). The potential alternative energy infrastructures will be set out for districts planned for transition ahead of 2030 and municipal authorities will provide insight into the social costs and benefits and the integral costs for the end users. In the transition visions for heat, municipalities will be programming as much as possible based on the lowest social costs and costs for the end user.
- b. The transition visions for heat are essential to achieving a low-carbon built environment. In order to make these transition visions a reality, homes and other buildings will be insulated and rendered natural gas-free or ready to become natural gas-free in consultation with residents and building owners. In the context of the district-oriented approach, the PBL has estimated that 1.07 million homes and other buildings can be rendered natural gas-free in the period up to 2030. To ensure that sufficient savings are made, municipalities are drawing up plans to improve the sustainability of 1.5 million homes and other buildings between 2022 and 2030 with a start-up period from 2019-2021. The parties will agree upon a step-by-step approach in which insulation and other carbon-saving measures also explicitly form a part of the district-oriented approach. The parties will collaborate on alleviating any barriers or obstacles to realising the transition visions for heat.
- c. Municipalities will initially be reviewing their transition vision for heat every five years. By 2022, the VNG and the government will assess whether this review and update period of five years is suitable. This will also align with the knowledge and learning programme of the Programme for Natural Gas-Free Districts (PAW).
- d. Municipalities, in consultation with the relevant stakeholders, will determine the schedule of the step-by-step approach to phasing out natural gas and on what date the actual supply of natural gas will be terminated; this will be laid down in the district-specific implementation plan. When determining this date, municipalities will be expected to act with due care and diligence in allowing a sufficient amount of time for the investment plans of, inter alia, network managers and building owners, including housing associations and relevant institutions, although this date must be no later than eight years before the end date for the supply of natural gas. By 2022 at the latest, this eight-year period will be assessed in terms of suitability, also taking into account the experiences from the Programme for Natural Gas-free Districts.
- e. In 2019, the national government and the VNG will commission the development of a tool (along the lines of the Action plan for Noise), which the municipalities will use to communicate their progress on achieving their transition vision for heat. The tool will, in any case, monitor the number of homes and other buildings (expressed in home equivalents) in the districts that the transition vision for heat has indicated will be insulated in the period leading up to 2030 (as an intermediate step to phasing out natural gas) and/or will be made free of natural gas. After that, the tool will be expanded to monitor the progress of the implementation plans at a district-specific level. This is where the transition visions for heat and the district-specific implementation plans will be published following the relevant council resolution.
- f. The national government and the local and regional authorities will draw up a procedure by 2020 at the latest on the way in which, among other things, the sectoral quality control consultation body will make adjustments in the event that the plans in the context of the transition visions for heat collectively amount to less than 1.5 million homes and other buildings. Changes to realisation will take place in light of the target of 3.4 Mt for the built environment as a whole.

- g. The national government and the VNG will examine how municipal authorities may gain insight into the most recent, general energy usage of an area (at postal code 6 level) twice a year, in part based on the input of network managers and heat suppliers.
- h. In the transition visions for heat, municipalities will be programming as much as possible based on the lowest social costs and costs for the end user.

Implementation (agenda)

Energy information platforms are being set up to facilitate the parties involved in the district-oriented approach. This will involve the embedding of independence, financing, standardisation and uniform methods, with room for adaptation to specific local conditions.

The parties have agreed the following:

- a. An independent regional energy information platform must be set up, under the auspices of the municipal authority, which will act as a pivot between the various stakeholders in the district-oriented approach. Under the direction of the municipality, the energy information platform will be able to play a coordinating role with regard to communication on the execution of municipal decisions and actions aimed at building owners within the neighbourhood approach. The platform will provide independent information on the implementation of the neighbourhood approach. Implementation of this platform may be outsourced. Other functions, such as providing the residents and building owners with sustainability options (including financing) and referrals to suppliers will be carried out by the national government, in cooperation with various parties, and will be organised in a nationwide digital platform. The objective is to allow the various functions to make referrals to one another directly, to ensure building owners deal with one single platform.
- b. In 2019, an elaborated plan for these energy information platforms will be produced under the direction of the VNG and the national government, which will include proposals for minimum criteria, standardisation and harmonisation of the methods of the current energy information platforms.
- c. In order to achieve a smooth and integrated realisation of the implementation plan, further agreements will be developed by the network managers, the VNG and the parties below in 2019.
- d. This will also involve exploring whether energy information platforms or a digital platform can contribute to pooling the demand of owner-residents and, where possible, creating a link with the renovation accelerator. It is vital that this issue should be clarified at the earliest opportunity. Bridging the gap between supply and demand is critical to the success of the upscaling process.
- e. Techniek Nederland, Bouwend Nederland, Onderhoud NL, Stroomversnelling, NVDE and Energie-Nederland will be putting forward a proposal by mid-2019 on how to encourage and facilitate the pooling of demand and how to experiment with it in the Test Beds for Natural Gas-free Districts.

Knowledge and learning programme

Municipalities will be taking the lead in the district-oriented approach. This role is new to municipalities and requires new knowledge, expertise and competences. For that reason, an agreement has been made within the inter-administrative Programme for Natural Gas-free Districts (*interbestuurlijke programma aardgasvrije wijken*, PAW) that a knowledge and learning programme (KLP) is to be set up. This will have to be a multi-year programme that continues up to at least 2021. The VNG will lead the development of a plan to implement the KLP in consultation with the relevant government agencies in the programme (Ministry of the Interior and Kingdom Relations, Ministry of Economic Affairs and Climate Policy, the IPO and the UvW).

The parties have agreed the following:

- a. The national government will ensure the creation of a multi-year KLP to support the municipalities up to at least 2021. The VNG and the national government shall ensure effective coordination and cooperation between the ECW and the KLP to enable uniform support for municipalities in terms of content and process.
- b. Other parties, such as network managers, providers, energy cooperatives, housing associations and civic organisations have also indicated that they will be playing a new role within the district-oriented approach. They have committed to sharing their knowledge and learning experiences with one another, in connection to the KLP where relevant. In relation to non-municipally-oriented issues (such as lessons relating to pooling demand), the national government will facilitate the exchange of knowledge where necessary.

Legislative agenda for the district-oriented approach

In order to allow the municipalities to make a success of the district-oriented approach, a number of framework conditions must be met, including with regard to competences and overriding authorities that are embedded in national laws and regulations. The national government will ensure the timely availability of a legal framework that provides the municipal authorities with sufficient opportunities to carry out their leadership role in the district-oriented approach.

The parties have agreed the following:

- a. The national government shall – in consultation with local and regional authorities – ensure that the laws and regulations in the field of electricity, gas, heating and mining activities and environmental law are suitable for the district-oriented approach. This calibration/recalibration will take place cohesively; the rules must be in alignment with one another.
- b. The national government will calibrate/recalibrate the implementing and other rules of the Environment and Planning Act in order to facilitate the energy transition as much as possible and to remove any unnecessary barriers. Envisaged entry into force: 1 January 2021.
- c. In anticipation of this, the national government will ensure that the legislative framework contains a sufficient degree of implementable freedom to experiment, particularly prior to the new legislation coming into effect.
- d. The transition vision for heat will be incorporated as part of the municipal environmental strategy and the corresponding implementation programmes and environmental plans. The national government will, in consultation with the local and regional authorities, assess whether further substantive requirements should be put in place for the transition visions and will draft any necessary frameworks by July 2019, with due consideration of aspects relating to the monitoring of the implementation. This will in any case relate to the following points, which may be supplemented in the period leading up to July 2019. Municipalities will be obliged to have adopted a transition vision for heat by 31 December 2021. The Dutch government and the VNG will review how this is to take shape by July 2019. The transition vision for heat will set out the timetable for the insulation and phasing out of natural gas for each of the districts of the municipality, with a view to transitioning to a low-carbon built environment, and will set out the following for each district that is set to be renovated in the period from 2022 to 2030:
 - a) how many homes and other buildings (expressed in home equivalents) will be insulated and/or where natural gas will be phased out;
 - b) what alternative affordable, reliable and renewable energy infrastructures are potentially available (heating grid, all-electric, hybrid technologies that use far less renewable or other gas as a(n) (interim) solution, etc.);
 - c) which of those alternatives entails the lowest social costs, e.g. based on the Guidelines. The development process of the Guidelines will include a review of whether and, if so, how the social costs can be reflected in terms of avoided carbon emissions per tonne.

- e. The municipality will subsequently decide when and how the district will gradually be transitioning away from natural gas (by changing the environmental plan), and what alternative to natural gas has been selected, in a district-specific implementation plan. The government and the VNG will set out which requirements this decision must meet. In addition to the effective participation mentioned in the foregoing, the key issue will be the explicit motivation should the municipality select another option to the alternative with the lowest social costs. These municipal decisions may be appealed at the Council of State. The existing scheme on compensation for loss resulting from government decisions applies to the phasing out of natural gas in areas.
- f. In addition to this, the Energy Act will include a provision that will determine as of which date it may be determined that a given district will no longer be able to make use of the gas network based on the municipality's decision. The expiry of the duty to connect for gas distribution will also be included in the Energy Act and network managers will be given the opportunity and the instruments to carry out the gas disconnection activities. Corresponding requirements will be put in place to protect consumers and building owners. Central government and the VNG will assess the required municipal powers and associated guarantees for consumers and building owners, as well as any necessary changes to legislation. Central government and the VNG will draw up an analysis, which the government will then submit to Parliament. Envisaged entry into force of legislation, where necessary: 1 January 2021.
- g. The national government is committed to ensuring that the laws and regulations in the field of letting and renting property are amended in such a way as to allow tenants to claim the necessary adjustment of the property – including in the event of resistance of the landlord – as part of the implementation of the legal power of the municipality to achieve disconnection from the natural gas network.
- h. In consultation with the VNG, Energie Nederland, Netbeheer Nederland and the Netherlands Authority for Consumers and Markets (ACM), the national government will assess whether rules should be included in the Energy and/or Heating Supply Act (*Energie- en/of Warmtewet*) to prevent shifting of costs relating to individual choices of local authorities or building owners or whether this can be prevented in another way. The obligation for landlords will not lead to their having a disproportionate share of the collective costs (filling-up risk).
- i. The national government will put forward proposals on the manner in which the costs incurred by network managers for the removal, modification and accelerated depreciation of the existing gas networks can be reimbursed through the rates, in order to prevent the corresponding costs from being disproportionately shifted to the consumers who will be disconnected from natural gas in the future, for example.
- j. The rapid expansion of heating grids requires clarity on the roles, competences and responsibilities in relation to the construction and operation of such heating grids. The national government will therefore initiate legislation on the market regulation of heating grids. In order to enable alignment with the district-oriented approach and the associated timetable, this legislation should come into effect by 1 January 2022.

Sufficient financial resources

The VNG and the government have agreed on municipalities being given additional responsibilities in relation to shaping the energy transition in the built environment.

The parties have agreed the following:

- a. The national government will be making funds (150 million euros) available for the period 2019 to 2021. These funds will supplement the funds already earmarked under the Climate Budget, intended for the Test Beds for Natural Gas-free Districts and the RES, among others. These additional financial resources are intended principally to support local and regional authorities in the realisation of the RES and municipalities in relation to the transition visions for heat. In addition, residents and private building owners will have

to be informed effectively during this period and, where applicable, a start will have to be made with the preparation of the implementation plans at district level. Furthermore, a start can be made regarding charging stations for electrically powered transportation.

- b. The Netherlands Environmental Assessment Agency (PBL) will be analysing the measures of the Climate Agreement in terms of their contribution to carbon dioxide emissions reduction. This may lead to new insights into the Built Environment, in respect of which the national government and umbrella organisations will be holding consultations.
- c. It is not yet clear what the additional implementation costs for municipalities (and the costs of the neighbourhood approach in particular) will look like beyond 2021. The national government and the VNG will request that the Council for Public Administration (ROB) clarify this matter by means of a survey under Section 2, in which the initial findings of the test beds may be incorporated. The inquiry must be completed by 2021. The results will be taken up both by the national government and by the VNG. This inquiry will be part of a broader survey into the potential additional implementation costs for the local and regional authorities.

C1.8 A successful start through the starter motor for the rental sector

The district-oriented approach will take shape from 2021 onwards and the amendments to legislation will also require some time. However, we are unwilling and unable to wait that long to start the transition. As a result, parties have made agreements regarding implementing sustainability improvements to existing homes as soon as possible through the starter motor for the rental sector.

The parties have agreed the following:

- a. The government wishes to have phased out, or have prepared for the phasing out of, natural gas for 30,000 to 50,000 existing homes a year by the end of its term of office. Aedes, the VNG, IVBN (Association of Institutional Property Investors in the Netherlands), Vastgoed Belang, Bouwend NL, Techniek Nederland, Netbeheer Nederland, Energie Nederland, OnderhoudNL and the heat suppliers intend to have phased out, or have prepared for the phasing out of, natural gas for at least 100,000 homes between 2019 and 2022, in supplement to the agreements under the Energy Agreement. By 1 April 2019, these parties will have specified which homes have been designated for conversion and which sustainability options are available (heating grid, all-electric, hybrid) in order to ensure the supply of products and services. These sustainability options will have been coordinated with the relevant municipalities in advance.
- b. In relation to the heating grid connection option, as of 1 December 2018, Aedes will coordinate the "matchmaking" process between housing associations, municipalities, heat suppliers, network managers, heating businesses, installation, and maintenance and construction businesses at the level of the complex, street and/or district. The parties involved in this matchmaking process will ensure that the projects and corresponding decisions fit within the district-oriented approach to be developed and will make agreements on the management activities to be carried out for works in the public domain.
- c. In consultation with the Netherlands Union of Tenants, agreements will be made regarding all options to guarantee the neutrality of housing costs for tenants. With a view to fostering support for heating grids, the relevant parties will endeavour to provide effective facilitation, locally or otherwise, to tenants switching from natural gas to a heating grid and cooking with electricity.
- d. On this basis, Aedes will indicate what segment of these homes can be made more sustainable within the financial means and remit of the relevant housing associations and what proportion is subject to an operating shortfall that would preclude implementation. Aedes and the national government will hold further consultations on this issue.

- e. In relation to the heat pump option (hybrid and all-electric), Aedes and the market parties will coordinate with the local municipality and the network manager to guarantee the necessary modifications to the electricity infrastructure in a timely fashion.
- f. The Renovation Accelerator⁷ will be kicked off on 1 January 2019. The objective is to achieve cost savings and innovation (including through BTIC and the TKI Urban Energy) using a segment of the homes being converted under the starter motor. To that end, housing associations will be pooling any cross-association demand. Construction businesses, energy businesses, maintenance businesses and installation businesses will be organising processes (production and logistics) in order to be able to provide an adequate supply of products.
- g. In addition to an administrative steering committee with representatives of the relevant parties, a quartermaster will be appointed and an implementation team will be set up made up of tendering and other experts and process supervisors. The national government will finance and facilitate the implementation team, whose goal it is to formulate successful and, if possible, cross-association sustainability tenders. Accessibility for smaller or local SMEs will be guaranteed.
- h. The Renovation Accelerator implementation team will develop sustainability tenders for similar homes based on home classification, sustainability approaches and functional performance requirements, gradually increasing in size and scope.
- i. The Renovation Accelerator implementation team will prepare the first tenders. Starting with an initial trial auction in the second half of 2019 and auctions with suitable contract volumes, these auctions will be aimed at achieving further upscaling and cost savings as of 2020, in order to enable a large-scale and continuous number of construction projects.
- j. The national government will also examine whether financial or other support is required and can be provided for further upscaling efforts within the rules for state aid and competition aspects.

C1.9 Natural gas phased out in new construction⁸

The Gas Act (*Gaswet*) was amended as of 1 July 2018. As a result, new buildings will in principle no longer be fitted with gas connections. The change in the law affects new buildings for which the building permit was requested on or after 1 July 2018. The change applies to all small-scale users (<40 m³ gas/hour), such as homes and small commercial buildings.

However, a large number of plans for new housing were already in the pipeline. The parties believe that any projects already in preparation or projects with natural gas connections that have already been approved should preferably be adapted into natural gas-free new construction as much as possible, thus avoiding any additional social costs for the refitting of such houses in the future.

The parties have agreed the following:

- a. The parties will work toward achieving 75% of total new housing without natural gas in the period from 1 July 2018 up to the end of 2021.
- b. Project developers, construction businesses, housing associations, network managers and heat suppliers will make a pool of employees available for the switch team. The switch team will support parties that wish to adapt plans for new construction projects in order to switch from natural gas to an alternative type of heating supply. Management of the pool and the selection and availability of the teams will be carried out by the Netherlands Enterprise Agency (RVO.nl) on behalf of the Ministry of the Interior and Kingdom Relations. The Ministry of the Interior and Kingdom Relations is additionally making spatial designers available at the Ministry's expense. The labour costs of the team members

⁷ Also see the explanatory note on the "Renovation accelerator".

⁸ Also see the "Natural gas phased out in new construction" memorandum.

deployed will be borne by their employer. The hiring parties will jointly pay the employer a reimbursement of €500 per day per person (up to €7,500).

- c. The National Energy Savings Fund (NEF) intends to provide a loan facility, at the end of January 2019, to buyers of newly built houses that wish to transition away from natural gas, provided the right agreements are made with relevant parties by that time.
- d. The percentage of newly built housing without natural gas will be monitored and the national government will provide insight into the relevant progress on a quarterly basis. This will be discussed in the sectoral quality control consultation body.

A colossal construction challenge lies ahead in the years to come, which provides opportunities for circular economy thinking to be embedded in the construction sector and requires smart coordination of interventions, whether for new construction or renovation projects.

The parties have agreed the following:

- a. The national government will include the appreciation of circular measures in the environmental performance requirement. Within its term of office, national government will, in consultation with the market, examine at what point this statutory requirement can be made more stringent and can be implemented.

C1.10 Standardisation and scaling up of sustainability improvements to nonresidential buildings⁹

In all nonresidential sectors, energy savings and the generation of renewable energy for own use are widely supported. At the same time, it has been determined that putting far-reaching measures in place is no easy feat in practice, due to resistance and diversity, and that a cost effective and affordable transition requires a customised approach for each sector. Set against this background, the parties propose the development of a coherent package of statutory standards and supporting instruments that will lead to a 50% reduction of carbon dioxide emissions by 2030, compared to 1990 levels, and to low-carbon nonresidential buildings by 2050, in close collaboration with the various sectoral umbrella organisations and the national government.

Introduction of target and standard for non-residential buildings

A clear timetable in respect of 2030 and 2050 is needed in order to achieve the emissions targets for nonresidential buildings.

The parties have agreed the following:

- a. In order to achieve the emissions target for 2030, additional reduction efforts of 1 Mt of carbon dioxide are required for existing nonresidential buildings. These reduction steps will be translated into a specific target for existing nonresidential building (commercial and social real estate) before 1 July 2019, including an evaluation methodology to determine whether this target will be achieved in a timely manner. The indicator for this target (e.g. kWh/m²/year, minimum insulation values for the building envelope, package of measures or a combination of these) and the degree of differentiation into different building categories are yet to be determined. The target will focus on measures that allow the realisation of 1 Mt in carbon emissions reduction in the built environment. By making maximum use of relatively cheap measures, such as regulation of installations, heat recovery, etc., and by investing in the building envelope at organic opportunities, carbon dioxide reduction efforts for 1 Mt by 2030 can be implemented in a cost-effective way. In

⁹ Also see the explanatory note on "Sustainability improvements to nonresidential buildings".

order to substantiate this, an impact analysis will be carried out in 2019 into the overall costs and benefits of these reduction steps.

- b. The implementation of the revised EPBD Directive will furthermore see improvement of the regulations in respect of the energy performance of technical building systems and energy-efficient calibration of installations by the national government, in order to maximise use of cost-effective measures in this field. The envisaged implementation date is 10 March 2020.
- c. In addition, a statutory final standard will be introduced for the energy performance of buildings in 2050, based on the new calculation method for the energy performance of buildings (NTA880) and expressed in kWh/m²/year, which will lead to low-carbon nonresidential buildings by 2050. This final standard will be introduced on 1 January 2021, will be differentiated to various building categories and relates to all nonresidential buildings (commercial and social property). A survey will be carried out on what a realistic standard would be for listed buildings and what exceptions would apply (e.g. buildings <100 m², buildings without space heating or cooling, major industry). This obligation will rest with the building owners, with monitoring and compliance resting with the local authorities. Attempts will be made to achieve as many sustainability improvements as possible in the direction of this standard at organic opportunities (with regard to maintenance and investment). In consultation with the parties, the national government will ensure the provision of information and communication upon the introduction of the statutory final standard. Various parties will play a role in this regard, such as the Knowledge and Innovation Platform for sustainability improvements to social real estate, the Sustainable Housing Platform and the Netherlands Enterprise Agency (RVO).
- d. The actual energy consumption of various building and operating functions, the feasibility and cost effectiveness of measures, far-reaching energy savings and alignment with the district-oriented approach, in addition the extent to which the measures are "no regrets" measures, are key starting points in determining the 2030 target and the 2050 final standard. The target and the final standard will be determined by the national government in consultation with the sectoral umbrella organisations and competent authorities.
- e. The national government will monitor and assess progress in respect of the target for 2030 and the final standard for 2050 every four years. The first comprehensive evaluation will take place in 2025. In addition to the results achieved, the evaluation will also address any remaining difficulties and obstacles. If this evaluation shows insufficient progress has been achieved for existing non-residential buildings by 2025, an appropriate package of feasible and cost-effective measures will be included in legislation in consultation with the sectors, including SMEs, to ensure that the 2030 reduction target of 1 Mt for existing non-residential buildings is still reached, including a corresponding facilitation and enforcement strategy.
- f. Major building owners will be setting out what measures they have already put in place and how they are working toward the 2030 target and a low-carbon property portfolio by 2050 through four-year roadmaps at the level of the property portfolio, sustainable multi-year maintenance plans and/or multi-year property sustainability plans. The reporting method is to be standardised by the national government by 1 June 2020 in partnership with the sectoral umbrella organisations and competent authorities. Key areas of focus in relation to the further development of the four-year reports include the role of renewable energy generation (both for individual buildings and for areas) and the relationship with the district-oriented approach. IVBN and Vastgoed Belang will be encouraging their members to draft roadmaps at portfolio level or multi-year property sustainability improvement plans for their property before 2021. Other major property owners are also invited to follow this example, whether or not through their umbrella organisation. Major businesses are subject to a four-year reporting obligation in the form of an energy audit (EED). The district-oriented approach provides specific perspective for action for individual

SMEs and owners of nonresidential buildings that are developing portfolio-specific roadmaps, and focuses on their specific financing issues.

- g. Existing statutory obligations for nonresidential buildings (Environmental Management Act (*Wet Milieubeheer*), including the corresponding duty of information, EED, requirements in respect of new construction, fallback requirements for major renovation, label requirements, etc.) will be harmonised by 1 January 2021 and provided with a comprehensive and more intensive enforcement strategy, aimed at achieving maximum effectiveness at a minimal administrative burden both for businesses and institutions and for competent authorities. The cost effectiveness and feasibility of measures are key aspects in this regard, alongside effective coordination of laws and regulations for nonresidential buildings in the legislative agenda for the district-oriented approach, effective coordination between the various requirements within the Environment and Planning Act and clear demarcation between major industrial buildings and other nonresidential buildings, to ensure that there is clarity for all businesses and institutions regarding which regime they fall under and which statutory obligations they must meet. The regulations will also focus on rental situations, in which building owners and users are jointly responsible for meeting statutory obligations.
- h. The obligation to implement measures with a cost-recovery period of five years or less will remain in force, and as of 1 July 2019 will include a four-year duty of information. However, in the corresponding approved lists of measures, the national government will make a clear distinction between building-related measures and nonbuilding-related measures, to make clear who is responsible for what. The cost-recovery period method may be amended by the national government in order to align with the carbon dioxide reduction target more closely. This is in alignment with the results of the Industry Sector Platform.
- i. The legislation referred to above should provide sufficient freedom for individually customised agreements in which the competent authority is able to take into account company-specific circumstances (such as credit rating) and the timetable and implementation of the district-oriented approach. In addition, the legislation should provide accountability options for building owners and tenants to competent authorities based on carbon dioxide emissions reduction achieved and/or actual energy consumption, and for accountability at the level of the portfolio or company through the four-year reports referred to above. The conditions for accountability based on actual energy consumption will be published with the introduction of the final standard on 1 January 2021, and will use the benchmarks of various building categories and usage profiles previously referred to. If experiences in practice show that assessment based on actual energy consumption will prove more feasible and enforceable than assessment of the energy performance of buildings and approved measures and, additionally, would contribute to simplification of laws and regulations, then this will be taken into account in the standard for existing nonresidential buildings.
- j. The combination of four-year reports at the level of the company or portfolio, the municipal transition visions for heat and the duty to provide information under the Environmental Management Act yields a relatively complete picture of the progress of the sustainability efforts for nonresidential buildings, and therefore demonstrate whether nonresidential buildings are on track for the 2030 and 2050 targets. Any adjustments can be made when the four-year comprehensive evaluations, which also aim to minimise the regulatory burden, are carried out.

Roadmaps for social real estate

Twelve social real estate sectors will be drawing up a sectoral roadmap relating to transitioning toward low-carbon real estate: the Central Government Real Estate Agency, the VNG, the IPO, the Police, primary and secondary education, senior secondary vocational,

higher professional and university education, healthcare and sports real estate and listed buildings.

The parties have agreed the following:

- a. These roadmaps will set out the starting points of the relevant sectors and outline according to which plan and timetable the sector will be working toward the 2030 target and toward achieving a low-carbon property portfolio by 2050 in a cost-effective manner. In addition, the roadmap will identify the necessary conditions and common sector-specific challenges in relation to financing, legislation, organisation, etc. and will put forward practical solutions where possible, in consultation within supply chain partners such as the Dutch Banking Association (NVB), Techniek Nederland and Bouwend Nederland.
- b. The roadmap for listed buildings relates to listed properties in general, regardless of building or usage function. This roadmap provides insight into the maximum carbon dioxide emissions reduction that can be achieved for this category of buildings, taking into account cost effectiveness and conservation values.
- c. The Central Government Real Estate Agency, the VNG, the IPO, the Police, primary and secondary education, senior secondary vocational, higher professional and university education, healthcare and sports real estate and listed buildings must submit their sectoral roadmaps to the sectoral quality control consultation body (currently not yet set up) to the Climate Agreement by 1 May 2019. The quality control consultation body will assess whether the sectoral roadmaps submitted provide insight into achievement of the 2030 target. If this is not the case, additional agreements will be made in 2020 aimed at achieving the target within the envisioned time period, after which the first round of roadmaps will be adopted definitively.
- d. The sectors will subsequently report on their progress to the sectoral quality control consultation body once every two years. The roadmaps will also be reviewed at this time, for example in order to establish a link with the district-oriented approach or in order to incorporate the latest developments in the sector. The list of conditions will also be updated at that point, so that any implementation challenges can be addressed. The first progress report will take place in 2022. The sectoral umbrella organisations will take the initiative in respect of the progress reports. This means the administrative burden for individual institutions will be kept to a minimum.
- e. The comprehensive evaluation in 2025 will see an assessment take place, based on the progress reports of 2024, on whether the adopted roadmaps have been carried out according to plan to a degree of at least 90%. If this is not the case, a package of feasible and cost-effective measures will be made obligatory if this is necessary to put the 2030 target within reach.
- f. The social real estate sector carries out its exemplary role by boosting and pursuing sustainable area development.
- g. The sectoral roadmaps indicate whether the specific funding and structural financing systems of the various sectors require adjustment in order to be able to implement the roadmaps. The national government will encourage knowledge exchange and mutual learning between the various sectors. This will involve a review of, among other things, whether the funding system for the government buildings regime (RVB) could have a broader field of application (within central government and, where relevant, in other sectors in the social real estate domain).
- h. Specifically with regard to primary and secondary education, municipalities and school boards will jointly draw up a multi-year Integrated Accommodation Plan (IHP) with a specific look ahead at the next 16 years and, where possible, a general look ahead at 2050. In addition, school boards will draw up a multi-year maintenance plan (MJOP), to be used as input when specifying the IHPs. The MJOP sets out scheduled maintenance activities and allocated resources. The IHP and the MJOP for basic education are embedded in relevant legislation (Primary Education Act (WPO), Secondary Education Act (WVO) and the Expertise Centres Act (WEC), for special education). In addition,

renovation will be included as a provision in the law and the investment ban, as set out in the Primary Education Act, will be amended and made more flexible.

- i. The Knowledge and Innovation Platform for sustainability improvements to social real estate (to be set up) will be able to support social sectors in the implementation of the sectoral roadmaps.
- j. Commercial sectors, including SME sectors, will be invited to take part in this sectoral roadmap approach if their umbrella organisations consider this to be appropriate.

Other instruments for nonresidential buildings

The standardisation, pooling and provision of access to knowledge and information will further encourage sustainability improvements to nonresidential buildings.

The parties have agreed the following:

- a. In order to provide individual building owners and tenants with insight into their actual energy consumption and their individual reduction pathway toward a low-carbon real estate portfolio by 2050, the national government, the Secondary Education Council, the Primary Education Council, the Association of Universities in the Netherlands (VSNU), healthcare and sports umbrella organisations, IVBN, the Dutch Green Building Council, Techniek Nederland and the VNG will begin developing comparable benchmarks in January 2019 based on actual energy consumption for various building categories and usage profiles through the already existing partnership of the Sustainable Housing Platform. Other relevant umbrella organisations for commercial and social real estate, knowledge partners and market parties will also specifically be invited to take part.
- b. All parties – clients, providers and the government – stand to benefit from the aggregation of the energy consumption data, building data and building usage data available, which are currently still fragmented, in a data system. Based on this common need, the Sustainable Housing Platform will be kicking off the agile development of a data system in 2019. Using the data system, building owners will be able to offer providers with a well-documented invitation for sustainability improvements. In addition, the data system will be able to facilitate smarter and more cost-effective enforcement by environmental agencies, with a reduced regulatory burden for entrepreneurs.
- c. Parties that wish to collaborate through the Sustainable Housing Platform will agree that existing tools in relation to the shared incentive for sustainability improvements of rental properties can be developed further and/or focus on specific target groups.
- d. The Dutch Register of Real Estate Appraisers and the Dutch Banking Association will jointly develop a format for the sustainability section in valuation reports.

C1.11 More sustainable heating¹⁰

Making 1.5 million residences and a large number of nonresidential buildings that must partly or largely be heated in an alternative way to natural gas sustainable requires a substantial scaling up of the supply of sustainable heating.

The expected heating demand for the built environment (homes and services) by 2030 will amount to 333 PJ (based on the PBL analysis of the Proposal for Key Points of the Climate Agreement, or PKCA). Sustainable heating and sustainable gases each have a technical potential supply of over 100 PJ. The realisation of the targets will necessitate the combination of all heating technologies and sources.

Actually unlocking the technical potential of the supply is a colossal feat, both in terms of numbers and in terms of time and space; innovation and cost reduction of new and existing technologies, implementation, support and sufficient financial resources are crucial. This requires the commitment of commercial businesses, public businesses and local and regional authorities.

¹⁰ Also see the explanatory note on "Supply of and demand for sustainable heating and sustainable gases".

The collective knowledge and expertise on supply of and demand for sustainable heating and sustainable gas will be used as much as possible in the further development of the guidelines and the drafting of the RES when it comes to a regional supply and demand analysis. The RES provides a regional overview of all available sources, the overall heating demand and an overview of the existing and projected heating infrastructure.

The parties have agreed the following:

a) Use of heating sector and green gas sector for carbon dioxide emissions reduction by 2030

Sustainable heating

- a. Heat suppliers will realise growth in district heating, increasing up to approximately 80,000 home equivalents per year by 2025 and holding that level up to 2030. This will result in a heating demand of 40 PJ by 2030. Further sustainability improvement of heating sources and growth in heating grids will allow the realisation of carbon dioxide reduction of approximately 1 Mt. Elements that are necessary in order to realise this growth include the conditions in relation to market regulation, the Energy tax shift (or subsidy) to cover the shortfall of heating grids and a programmatic approach to demand and standardisation of buildings. Under the right conditions, including an adequate business case, a larger number of home equivalents than 80,000 can be achieved ahead of 2030.
- b. In respect of homes and nonresidential buildings that are connected to or about to be connected to a district heating grid (40 PJ by 2030), heat suppliers will realise average carbon cuts of 70% by 2030 compared to current natural gas central heating boilers. This means that the carbon dioxide intensity of the heat supplied by district heating grids will be reduced to 18.9 kg of CO₂/GJ. To this end, the heating sector (production and supply) will realise growth of the use of sustainable heating sources, including geothermal heat, aquathermal heat, residual heat, solar heating, biomass, power to heat and sustainable gases. It is vital that any corresponding operating shortfall be covered by the national government and that these sources be valued in relevant regulations (such as BENG, carbon dioxide reduction reporting and the standard for existing buildings). All these types of sustainable heating sources are required to achieve the target referred to here. The exact combination of heating sources in 2030 will depend on developments in future availability, integral and other costs and suitability.
- c. As soon as the transition visions for heat become available in 2021, the parties' strategies will be specified further.

Sustainable gases

- d. The green gas sector aims to realise 70 PJ of green gas by 2030 (3.6 Mt of carbon dioxide reduction), of which a substantial percentage can then be used for the built environment (direct injection into the gas grid, hybrid heat pump or through the heating grid).
- e. The green gas sector aims to achieve additional carbon dioxide reduction worth 1 to 2 Mt by 2030 through CCS and CCU (negative emissions).^{11, 12}
- f. The green gas sector aims to arrive at a cost level of 100 – 150 euros per avoided tonne of carbon dioxide by 2030. The means to achieve this include a decrease of production, the combination of green gas production with carbon dioxide storage or reuse (CCS and CCU) and further improvement of the yields through multiple improved returns.
- g. The cross-sector working group for hydrogen has noted a growing interest in hydrogen in the built environment, which will most likely only manifest itself in more large-scale

¹¹ For negative emissions, see the "Analysis of the Proposal for Key Points of the Climate Agreement" (PBL, 2018)

¹² CE Delft/De Gemeynt, November 2018, "Green Gas Roadmap for 2020 – 2050: Contours and policy instruments"

applications beyond 2030. Consequently, the emphasis on pilots and demos in the years to come will be crucial.

b) SDE+ and other incentive instruments

Sustainable heating

- a. The national government will make SDE+ resources available so that renewable heating sources can be made operational in a timely fashion in order to contribute to the commitments for the built environment sector by 2030.
- b. The national government will develop the expanded SDE+ scheme in more detail in consultation with the sectors, which consultations will determine, among other things, which technologies will be eligible for the expanded SDE+ scheme. The expansion of the SDE+ scheme is intended to allow emissions reduction of 49% to be achieved in a cost-effective manner by 2030. The sector is committed to reducing the operating shortfall of renewable heating sources as much as possible.
- c. The opening up of the SDE++ scheme in 2020 will see the national government work with the sector to explore more adequate stimulation of the application of geothermal energy in the built environment.

Sustainable gases

- d. Part of the elaboration of the expanded SDE+ scheme will examine how green gas can be stimulated through the SDE+ scheme. The national government and the sector will jointly examine whether other or additional policy instruments will be necessary in due course.
- e. With regard to hydrogen, we would kindly refer to the cross-sector working group for hydrogen.

c) Framework conditionsSustainable heating

- a. The national government will examine under what conditions (high and/or low temperature) residual heat (which would otherwise be discharged) can be measured as being sustainable in regulations (BENG and carbon dioxide reduction report).
- b. The national government, working alongside the sector and environmental organisations, will examine under what conditions the quality certificates for heating grids can better take into account the future, phased sustainability improvement of heating grids.
- c. Once housing associations, other property owners and municipalities realise better insulation and heat delivery systems, as outlined in section C1.4, this would create the possibility for heat suppliers to lower the temperatures in heating grids (to medium temperature in buildings) to benefit the intake of low temperature heating sources.
- d. In 2019, the industry will publish its available residual heat potential in the heat atlas (including the temperature levels), after which it will provide an update each year.
- e. The sector and the national government will jointly examine whether the energy tax can be amended to ensure that heat suppliers and energy businesses should not be fiscally disadvantaged due to the tax they pay on natural gas, as a result of the addition of renewable sources to heating grids.
- f. The sector and the national government will jointly examine how a range of instruments can be used to make peak boilers more sustainable in a cost-effective manner, including through the use of biofuels, green gas and renewable electricity.
- g. Local authorities and housing associations will take an active role in the effective aggregation of heating demand for the development of renewable heating sources and grids.

Sustainable gases

- h. Network managers will facilitate the supply of green gas in an efficient manner. To this end, the recommendations in the advisory report "Creating sufficient supply flexibility for green gas"¹³ are to be implemented.

Sustainable heating & sustainable gases

- i. The national government will ensure a robust sustainability framework for biomass (including green gas). As part of this framework, biomass may be used as a transition, peak and backup heating source in the built environment.
- j. Public authorities will commit to shortening the lead time of projects through more efficient licensing processes.

d) Development & innovation agendaSustainable heating

- a. The geothermal energy sector has already committed itself to scaling geothermal energy, both in the greenhouse horticulture sector and in the built environment, through the Geothermal Master Plan. In this regard, the sector is committed to achieving further cost savings, the development of a geothermal heat proposition alongside heat suppliers,

¹³ Netbeheer Nederland 2018.

broadening the base and further professionalising the sector across the entire value chain and ensuring a local and regional social dialogue on geothermal heat in the context of the energy transition. This will take place under the financial and other framework conditions as set out above.

- b. An aquathermal energy programme will be created and reinforced in 2019 with a Green Deal between the national government and the water managers. The purpose of this proposed Green Deal for Aquathermal Energy is to identify the value of aquathermal energy, with all of its opportunities and dependencies and the next steps needed to kick-start the aquathermal energy market and allow for broad, large-scale application.
- c. In addition to the European Heatstore project, the heating sector is committed to the development of high temperature seasonal storage.

Sustainable gases

- d. In 2019, the national government will be working with the sector to produce a green gas roadmap in order to advance innovation, production and use of green gas.
- e. In order to realise the 2050 target for the built environment, the national government and the sector will explore how hydrogen-related pilots and demos in the built environment can be stimulated and how flexibility can be created in the relevant laws and regulations to this end.

Annex

In 2019, the national government and Aedes will carry out a broad interdepartmental study of the development of the financial position of the housing association sector and the feasibility of the long-term targets. Based on that research, and in due consideration of the standards that homes must meet by 2050, agreements will be made on interim goals. The standards will be based on carbon dioxide savings, must be in line with the financial possibilities and provide flexibility for cost-effective choices and various sustainability improvement strategies within the frameworks of the regional energy strategies, municipal transition visions for heat and district-specific implementation plans.

- a. The parties endorse the objective of having a carbon-neutral housing stock by 2050. As a key player on the housing market, housing associations play a key role in achieving these goals.
- b. Housing associations' core mission is to ensure the affordability and availability of high-quality homes. As an underlying principle, the resources and responsibilities (affordability, availability and sustainability) of the sector must therefore be in balance with one another.
- c. Being the first mover has broad social importance (scaling and reduction of costs). The government will provide suitable financial support for the additional costs associated with being the first mover, such as in relation to the starter motor.
- d. In order to provide the necessary security for long-term investments in sustainability, it is vital to gain more insight into the development of the financial position in the long term. The national government and Aedes have agreed that a broad interdepartmental study will be carried out in 2019 into the feasibility of the long-term tasks and targets. The study will shed light on the financial flexibility for sustainability based on several scenarios. This will also involve examining cost developments, the available and selected sustainability strategies, economic and fiscal developments, public housing challenges and policy choices such as affordability and new construction. The study will also look at the most effective use of the existing resources within the sector (including peer support and redistribution) and examine what financial incentive instruments, such as a Sustainability Investment Allowance (DIA), would be desirable. The Housing Association Authority (Aw) and the Social Housing Guarantee Fund (WSW) are involved in this study.
- e. In 2019, the national government will draw up a standard for 16 dominant types of homes. The results of the agreed study on the financial position will provide insight into which interim goal is feasible, at which time and under which conditions. The parties will subsequently make agreements on interim goals for 2030.
- f. The standards to be agreed upon for 2030 will be based on CO₂ reduction and providing flexibility for cost effectiveness and "no regrets" choices, as well as various sustainability improvement strategies within the frameworks of the regional visions for heat and district plans. The process to determine the standard for 2030 will do justice to the various differences in property (such as housing type, listed buildings and demolition).
- g. An evaluation of the agreements will take place in 2025, which will take into account resources, tasks (all) and framework conditions, with a view to the task to be carried out by housing associations beyond 2030.
- h. In addition, the parties will work on the removal of barriers and split incentives (in laws and regulations, including financial instruments) for sustainability improvements and on the creation of the right framework conditions such as the development of a housing costs approach.
- i. Furthermore, framework conditions for housing associations include municipalities having their district plans ready on time and other property owners undertaking sustainability improvements.

C2 Mobility

C2 Mobility

C2.1 Vision and ambitions for 2050

Carefree mobility for everything and everyone in 2050. Zero emissions and excellent accessibility for both young and old, poor and rich, the able-bodied and the disabled. Affordable, safe, comfortable, easy and healthy. Smart, sustainable, compact cities with an optimum flow of people and goods. Beautiful, liveable and easily accessible areas and villages, with mobility acting as the link between living, working and leisure time.

This is the vision that the participants of the Mobility Sector Platform wish to achieve by pursuing an integrated approach to the mobility system, which involves optimal development and use of all means of transport and of the infrastructure and in which, ultimately, all means of transport will be clean. This not only is in compliance with the commitments under the Paris Agreement, but also goes toward making a significant contribution to the mitigation of other environmental damage.

Conditions for a future-proof mobility system

The government has requested that the Platform identify effective measures that align with the most cost-effective pathway toward 2050.¹⁴ The government has indicated that it is open to any demonstrably better ideas to achieve the target than the policy proposals included in the Coalition Agreement. The aim is to achieve a balanced and future-oriented package of agreements. The government feels it is critical that the commitments in the Climate Agreement amount to more than simply the sum of the parties' special interests. A comprehensive approach is crucial. This approach must be led by the national government, with regional authorities focusing on spatially efficient and zero-emissions mobility through spatial measures and employers collectively putting together a package of measures to stimulate zero-emissions traffic between home and the workplace. The public interest should be paramount for each and every party involved. In addition to achieving CO₂ reduction, the agreement must also ensure that existing public objectives are not called into question.

Set against the backdrop of this brief and the 2030 and 2050 targets, the Mobility Sector Platform has concluded that the administrative frameworks and principles in the Coalition Agreement will not suffice for the future-proofing of the mobility system. The long-term horizon of a robust mobility system requires various changes to the system.

The Mobility Platform has determined that the following four measures are critical and will require further development in 2019 for implementation at the earliest possible opportunity:

1. *National government to reorganise the Infrastructure Fund into a Mobility Fund.* Working toward carefree mobility is in line with the reorganisation of the Infrastructure Fund into a Mobility Fund that is being undertaken by the current government and within which mobility targets rather than the means of transport will be the focus as of 2030. This transformation is crucial in order to allow for better capitalisation on the optimal use of existing infrastructure, the stimulation of smart transport systems, such as self-driving cars, carbon-neutral mobility solutions and Mobility as a Service. In this regard, it is vital that the new principles for the Mobility Fund be applied to new targets and challenges in the short term, such as explicitly taking into account smart measures that increase flexibility between means of transport (public transport, road, waterways, bicycle). The Platform considers additional investments to resolve existing and new challenges in

¹⁴ As set out in the Letter to Parliament on the Government commitment to the Climate Agreement (23 February 2018) and the Brief for the President of the Mobility Sector Platform.

accessibility, in urban areas in particular, and providing an additional boost to modal shift crucial to success.¹⁵ The current budget is not sufficient at the present time.

2. *Public authorities to make key strides with regional mobility plans and a corresponding national mobility plan.* Every region needs a specific integrated approach for the realisation of carefree mobility. The regional scale is highly suited to creating specific as well as customised solutions. For that reason, public authorities are already collaborating on realising future-proof solutions to accessibility challenges (infrastructure plans, provision of (supply chain) mobility and customisation for spatial and behavioural aspects), for example, in the accessibility programmes within the Amsterdam Metropolitan Region (MRA), the Rotterdam-The Hague Metropolitan Region (MRDH) and the Utrecht Metropolitan Region (U Ned). These plans constitute the shared basis for joint investments and will later incorporate the commitments of the Climate Agreement. A suitable governance structure will be developed in regions where this is not yet in place. Collaboration between public authorities within these regional programmes is crucial, and equivalent to the Regional Energy Strategies (RES). As such, an implementation agenda will be adopted during an administrative consultation at the start of 2019 for the process of both linking up the regional programmes and arriving at a national programme. The plans will ultimately be adopted within the context of the Multi-year Programme for Infrastructure, Spatial planning and Transport (MIRT).
3. *Transition to another funding system.* The current motor vehicle tax system consists of a combination of tax on ownership and tax according to fossil fuel use via excise duties. The concept of e-mobility is becoming more and more socially ingrained. This is one of the reasons why the motor vehicle tax system will require an overhaul in the long term, to avoid a situation in which an ever-dwindling number of people is generating the revenue.

The new system must also ensure that everyone who uses infrastructure makes a reasonable contribution toward the costs. According to the PBL, a pay-as-you-go system could help to reduce traffic congestion and emissions.

The government will therefore explore the pay-as-you-go options set out below, sketch out preparations and, where possible or necessary, make these preparations for when the next government is formed. The introduction of the new system will be included in the tax review that has already been proposed for 2025.

The following options will be detailed:

1. a per-km pricing system for electric cars, with no changes to the existing system for cars that run on fossil fuels. This would lead to an overall reduction in total costs within the motor vehicle domain. This system would not involve any differentiation according to time or location and a rush hour charge would therefore not be considered;
2. time and location-specific tax, with the exception of a rush hour charge for all vehicles;
3. emissions, time and location-specific tax for all vehicles.

All options will take into account the perspective for action, and privacy remains a key concern as much as possible. The following aspects will also be covered when detailing each of the options:

- a. the desired encouragement of e-mobility, in line with the government's target of 100% zero-emissions new cars by 2030;
- b. the possibility of reducing overall costs within the motor vehicle domain;

¹⁵ Local and regional authorities take a neutral position in this agreement where investments and tax revenues are concerned. This applies to the proposed survey in Point 3 below in particular.

c. any impact on the national budget and ways of managing this.

Key stakeholders in this transition, such as the partners in the Formula E-Team, will be closely involved in the development process described above.

4. *Knowledge and innovation for a sustainable mobility system.* Achieving a fully sustainable mobility system by 2050 will require radical system changes and the implementation of a large number of carbon reduction measures, for which the mission-driven Multi-year Knowledge and Innovation Programme lays the foundations. Providing a precise blueprint of the exact pathway that will lead to the realisation of the 2050 target is an impossible feat, as there are significant uncertainties in relation to, among other things, the development of the potential and the costs of existing and new types of solutions, the acceptance of those innovations and actors' responses to policies. These uncertainties and the level of complexity involved require adaptive programming for the management of the necessary transitions in a targeted manner. The knowledge required for adaptive programming should be objective and independent and must come about in a transparent, reproducible and consistent manner; having a knowledge infrastructure is key in this regard.

Global developments over time

The trends in the mobility sector are unfolding along a variety of patterns and at various paces. It is not possible to predict what the future will look like with certainty. Nevertheless, it is safe to assume that mobility will be cleaner, smarter and different to what it was in the past. The key trends have been summarised in the table below.

	2019 – 2030	2030 – 2050
Cleaner (means of transport)	Electric passenger cars will become competitive (around 2025). Charging infrastructure for electric vehicles will be rolled out further, including possible modifications to the grid.	Zero emissions will be the standard; driverless cars see a breakthrough onto the market.
	Rapid growth of electric vans, public transport buses and light lorries (zero-emissions environmental zones in many inner cities by 2025).	Zero emissions will be the standard; driverless cars see a breakthrough onto the market.
	An increasing number of electric alternatives will be used for heavy road traffic (battery electric and hydrogen). In the interim, heavy road transport will use sustainable and synthetic biofuels/bioerosine/bioLNG as a transition measure toward zero-emissions energy carriers. Sustainable biofuels, preferably for means of transport for which there are no alternatives as yet (shipping and aviation). In addition: rise of electric (incl. hydrogen); adaptation of charging and refuelling infrastructure	Zero emissions to dominate (hydrogen electric) and become the standard in goods traffic; driverless vehicles to break through onto the market; electric and synthetic biofuels to make up hybrid standards.
Smarter	Passenger transport: zero-emissions means of transport will become increasingly more attractive and will increasingly align with one another in more effective ways. "Smart charging" will become a standard for electric vehicles and will therefore become part of the electricity system. Information systems will increasingly determine travel behaviour. Sustainability and accessibility criteria will become significant and decisive in the spatial planning domain.	Dominant: clean mobility is a service; means of transport are easily accessible, whereas private property (particularly in urban areas) will be less of a necessity and less attractive. Mobility criteria will partly shape the spatial planning domain. Cities will be designed to facilitate optimal accessibility, with particular focus on pedestrians, cycling and public

		transport.
	Logistics: urban zero-emissions environmental zones will take flight, as well as the pooling of transport flows to and within urban regions through supply chain management and innovative logistics systems.	Supply chain management and innovative zero emissions concepts will be the norm.
Other	Passenger transport: travel behaviour will be more dependent on context. Preponderance of combined transport systems with a greater role for public transport and cycling. Working from home and teleconferencing more common.	Digital innovations and driverless care will lead to entirely new mobility behaviour that will be difficult to predict.
	Logistics: greater role for multimodal hubs.	Multimodal hubs will play a pivotal role in logistics chains.

C2.2 Target and ambitions for 2030

The Mobility Platform distinguishes between four key themes. Below are the principal objectives per theme:

- sustainable energy carriers:
 - renewable energy carriers;
 - stimulation of hydrogen;
 - sustainable procurement by government;
- stimulation of electric passenger and other transport:
 - ambition for 100% of new cars sold to be emissions-free by 2030;
- sustainability improvements in logistics:
 - medium-size zero-emissions zones in city logistics in 30 to 40 larger municipalities by 2025;
 - zero-emissions construction traffic and mobile machinery;
 - climate-neutral and circular ground, road and water works;
 - 30% reduction of carbon dioxide emissions through hinterland and continental transport by 2030;
 - inland shipping;
- sustainability of personal mobility (including business travel, public transport and cycling):
 - reduction of 8 billion kilometres in business mileage by 2030;
- survey of other types of mobility funding.

Collaboration is and remains essential. The parties have agreed that the public-private partnership agreements in the field of electric vehicles (FET), hydrogen (H2 Platform) and sustainable biofuels (Platform for sustainable biofuels including bioLNG) will be continued and integrated.

The PBL has concluded that, taking into account the various types of uncertainty, the carbon emissions target should be within reach with these measures.

C2.3 Commitments regarding sustainable renewable energy carriers in mobility

The greening of the mobility sector focuses on the shift toward the use of more sustainable energy for all means of transport – whether by road, water or air. In addition to a behavioural shift in our personal mobility that should lead to less mileage, more car shares, more bikes and more public transport, it is vital that a transition toward 0% fossil fuels in transport take place as soon as possible.

This requires the use of batteries (renewable), electricity, green hydrogen, solar power, renewable fuels such as Power-to-X and synthetic fuels and sustainable biofuels. The strategy for making the various means of transport more sustainable prioritises electrification, with the use of renewable fuels being a temporary measure aimed at achieving emissions reductions in good time. It is hoped and expected that the electrification of passenger transport and short-distance transport will accelerate rapidly over the next few years, allowing the emissions reductions to be realised and rendering large-scale use of biomass in these sectors unnecessary for the realisation of the national targets. As such, the 2 megatonnes (Mt) included in this chapter constitute a cap for road traffic as well as a conduit to the electrification measures included in the next chapter. Scarce sustainable biofuels will preferably be used for the heavier segments within the sector. The entire process will be geared toward achieving low carbon emissions in the fuel chain of all energy carriers.

Renewable energy carriers

In relation to the use of renewable fuels, sustainability is a precondition both in quantitative and qualitative terms. To guarantee the sustainability of the renewable fuels that are used in the Netherlands in order to achieve the European target for renewable energy in transport, the European sustainability requirements of the new European Renewable Energy Directive (Article 29 of RED II) will be key. Deviating national sustainability criteria may only be used for renewable biofuels that are used in addition to this European target. Moreover, in February 2019, pursuant to RED II, the European Commission will determine criteria on which biofuels entail a high risk to indirect land use change (ILUC) and subsequently must be phased out toward 2030. Current practice in the Netherlands regarding exclusion of the use of biofuels produced from palm and soybean oil will be continued.

Agreements

- a. In a broader framework, the government will take the initiative to draw up an integrated sustainability framework for all biomass (see D.2 Biomass) in order to guarantee a consistent framework across the various sectors in which biomass is used. A special Social and Economic Council committee will be consulted regarding this sustainability framework, which will also involve consultation of stakeholders. This framework is expected to be completed in 2020 and will focus on safeguards, feasibility and enforceability in particular.
- b. The implementation process of RED II has already begun and should be completed by 1 July 2021. In principle, the sustainability framework should take precedence in the implementation of RED II, unless this is not possible under the obligations of the RED II or for safeguarding, feasibility or enforceability reasons.
- c. In order to realise the climate targets agreed upon, a maximum of 27 PJ in renewable fuels will be used in road traffic in supplement to the 2030 scenario of the National Energy Outlook (NEV) 2017, in addition to the use of electricity and hydrogen. The 27 PJ (in formal carbon dioxide calculations) corresponds to a carbon dioxide reduction of 2 Mt.
- d. It has been agreed that an obligation for renewable energy in transport will be embedded in the Environmental Management Act. The process of determining the level of this obligation will consider the percentage of renewable electricity in transport and the percentage of renewable fuels (including the 27 PJ). Provisions will also be included in new legislation on the way in which CO² reduction will be implemented in the supply chain. The integrated sustainability framework for biomass determines how carbon dioxide emissions caused by indirect land use change (ILUC) will be taken into account in the calculation of carbon dioxide emissions in the biomass supply chain.
- e. Under the auspices of the national government, the parties will examine the possibilities of the use of Green Truck Fuel. This depends on whether the PBL believes that carbon cuts can actually be achieved, that the fuel meets the sustainability requirements of the

sustainability framework and that there will be no lock-in that would delay the introduction of zero-emissions vehicles.

- f. Many biofuels are already produced from waste and residues. The increase in biofuels must be brought about largely from sustainable residual substances (including cascading). This is in line with the government's objective regarding the highest quality use of biomass as well as with the development of the circular economy. For that reason, the parties have agreed that, in relation to achieving this renewable energy target for transport (including the 27 PJ), no additional biofuels from food and feed crops in excess of the 2020 levels should be used in the Netherlands. This will be embedded in national regulations with the implementation of RED II. This will go toward advancing the realisation of growth through sustainable advanced biofuels, produced from waste and residues.
- g. At this time, no biofuels produced from agricultural crops (other than food and feed crops) with a low ILUC risk that meet the requirements of the regulatory framework of RED I and RED II are being used in the Netherlands. In 2020, the parties will make agreements on the future commitments and the sustainability framework in force and will not commit to the additional use of the foregoing crops during this period.
- h. In order to support the field in this transition, other stimulation measures are also present, such as the new Stimulation of Sustainable Energy Production scheme (SDE++). The national government will reserve 200 million euros, which it intends to use to increase the production and innovation of sustainable advanced biofuels and renewable synthetic biofuels. The national government will assess which instruments are most suitable for that purpose and will not commit these funds sooner than 2020. The parties will make agreements on what production of these renewable fuels in the Netherlands would be eligible for the SDE++ scheme and agreements specifying that such production would be in addition to the European renewable energy obligation and would fit within the sustainability framework mentioned under D2.
- i. A major driver of infrastructure is the European Alternative Fuels Infrastructure Directive (AFID), which provides rules for the roll-out of refuelling and charging infrastructure. The transport field, in terms of modes of transport, is diverse and can be supported in different ways. The national government and the local and regional authorities, in consultation with the regional programmes for smart and sustainable growth, will draft an integrated plan for the necessity of alternative refuelling and charging infrastructure, including storage, in the Netherlands. This plan will be coordinated with market parties and will be included in the report on the national policy plan on infrastructure for alternative fuels that will be completed at the end of 2019. The National Charging Infrastructure Agenda will be a part of that plan. The legal obligations arising under the European AFID Directive will be monitored.
- j. In addition to the agreements on the national motorway network (see the National Charging Infrastructure Agenda, annex on www.klimaataakkoord.nl), the national government, the Association of Provincial Authorities (IPO)/the Association of Netherlands Municipalities (VNG) and suppliers of energy carriers for transport will also make agreements, with regard to the underlying motorway network, to accelerate the refuelling and charging infrastructure for sustainable energy carriers for transport in the permit and concession granting process at petrol stations. Alongside relevant parties, local and regional authorities and the NEN, the national government will make the necessary modifications in the field of safety. The parties will ensure the provision of clear and uniform information to consumers regarding all renewable fuels on and around the motorway network and related to publicly accessible refuelling and charging infrastructure, in accordance with the requirements of the AFID Directive.

Stimulation of hydrogen

The development of hydrogen is vital as an energy carrier in mobility – and particularly so for heavy transport. Depending on market developments, additional measures may be required. Within the passenger transport sector, some 15,000 Fuel Cell Electric Vehicles (FCEV) are

expected by 2025, potentially growing to 300,000 vehicles by 2030. The expected energy demand for hydrogen in relation to these numbers amounts to 141 million kg per year by 2030. An ambitious agreement for hydrogen will therefore be entered into with the sector in 2020 in order to achieve the targets set out in the Climate Agreement. The government envisions a major future role for hydrogen as an energy carrier in mobility, especially in heavy transport, such as lorries, public transport buses and as a potential replacement for diesel trains. Hydrogen will also play a role as an energy carrier for sustainably generated energy.

In addition to the agreements on Electric Transport (see C2.4), the parties have agreed the following:

- a. In 2020, the H2 Platform will draw up an Agreement on the stimulation of hydrogen mobility alongside car manufacturers (Original Equipment Manufacturers: OEMs), fuel and hydrogen suppliers, leasing businesses, business users and other stakeholders. The agreement will aim to achieve the realisation of 50 hydrogen-refuelling stations, 15,000 FCEV passenger cars and 3,000 heavy vehicles with a hydrogen fuel cell by 2025, as a strategic foundation for accelerated growth toward 2030 and 2050 in particular. In the agreement, OEMs, fuel and hydrogen suppliers, leasing businesses and business users agree that they will make efforts to ensure the timely and adequate allocation of vehicles, the timely construction of refuelling stations and the aggregation of relevant demand and that they aim to achieve a reduction of investment costs for H2 refuelling infrastructure of an average of 10% per year through innovation and economies of scale. In order to realise the foregoing objectives by 2025, the participants of the H2 Platform and the Ministry of Infrastructure and Water Management will be collaborating to ensure the maximum allocation of the European funds (such as CEF/TEN-T and TEN-E CVD fund, FCHJU, Interreg) to achieve their goals.

Sustainable procurement, buses, target group transport, cleaning vehicles

- a. The national government will encourage the sustainability of its own fleet through the use of clean vehicles, sustainable energy carriers and the Sustainable Procurement programme (including electrification of its fleet, batteries and hydrogen). In consultation with local and regional authorities, the national government will discuss what contributions they can make in this regard (also see the chapter on the Exemplary role of the National Government). In addition, the Governmental Shipping Company will act as a launching customer for sustainable biofuels in vessels and, where possible, the Ministry of Defence will use sustainable biofuels in all its operational vehicles, vessels and aircraft.
- b. The provinces, transport regions, network managers, energy producers, the national government and the business community will together work on the further roll-out and scaling up of zero-emissions buses and the necessary alternative refuelling and charging infrastructure through the Administrative agreement on zero-emissions buses (*Bestuursakkoord zero-emissie bus*, BAZEB). By 2025, all new public transport buses entering service will be zero-emissions buses, ensuring that all public transport buses (roughly 5,000 buses) will be zero-emissions buses by 2030 (the BAZEB is already included in the NEV). Beyond 2025, it is expected that the market for battery electric buses will have reached maturity. With regard to hydrogen-powered buses, significant strides are also expected in 2025. In the intervening period, however, the business case still entails an operating shortfall, which is falling at an insufficiently fast pace under the current working methods. Pooling demand (across the various concessions), new financing arrangements (in which risks are shifted – for example through leases – and capital charges for projects are reduced through public loans) and the involvement of Dutch businesses and international export opportunities should ensure a more rapid decrease of the cost price. The national government and the IPO have taken the initiative to develop a roadmap that addresses these issues and that should be completed in 2019. In order to prevent transport businesses from failing to get the business case for zero-emissions buses off the ground at this juncture and delaying the introduction of zero-emissions rolling stock to a later concession period, the national government and the authorities

granting the concessions are already collaborating. Finding coverage for the operating shortfall requires a tailored approach on a project-to-project basis, and the support package should mainly be covered by national and international co-financing instruments (such as CEF/TEN-T and TEN-E, FCHJU, Interreg, MIA/Vamil and DKTI)¹⁶ and by innovative financing arrangements, to be developed jointly with national and European public, semi-public (such as InvestNL and InvestEU) and private institutions. The national government and the authorities granting the concessions have agreed to strengthen the organisation surrounding BAZEB by carrying out the activities resulting from the roadmap alongside all relevant provincial and market parties (including OEMs). Within the framework of the joint roadmap, the national government has agreed that it will organise an annual boost of approximately 10 million euros between 2019 and 2025, allocated from the national co-financing instruments, in relation to which annual monitoring will take place to prevent excessive stimulation.

- c. The municipalities, provinces, network managers, energy producers, the national government and the business community will collectively work on the further roll-out and scaling up of zero-emissions target group transport through the *Administrative agreement on zero-emissions target group transport* (BAZED, not included in the NEV). Under the BAZED, 50% of taxis must be zero emissions by 2025.
- d. At the start of 2019, the municipalities, provinces, energy producers, the national government and Dutch businesses will develop a new agreement for zero-emissions cleaning vehicles, which will include a timetable.
- e. The provinces and municipalities will work together to ensure that sustainable energy demands for sustainable transport are met where necessary in the Regional Energy Strategies.

C2.4 Agreements on Electric Transport

Ambition for 100% of new cars sold to be emissions-free by 2030

Transport is responsible for a quarter of all emissions. The ambition is for all new cars to be emission free by 2030 at the latest. The solutions include hydrogen and electric cars. These vehicles produce zero greenhouse gas emissions, keep our air clean and cause less noise pollution. In the Netherlands, a new car will on average have a lifespan of nearly 18 years. The government's ambition is therefore for all new cars to be emission free by 2030 at the latest. The preconditions must also be in place. Charging your electric car must be as easy as charging your mobile phone. The same goes for hydrogen.

A key prerequisite is that mobility should remain affordable and the burdens of the transition should be distributed fairly, to allow all Dutch citizens to make the transition to zero-emissions passenger vehicles. In the Letter to Parliament of 13 March, the government set out its intention to shape stimulation of electric transport with more consideration of the market in order to avoid over-incentivisation. To this end, the government will be implementing a number of changes to the proposals in the draft Climate Agreement, in order to align more closely with the perspectives for action of private motorists and to lower overall household bills.

Further elaboration has led to a coherent package that includes standards, supporting policies, accelerated roll-out of charging infrastructure and fiscal incentives.

¹⁶ CEF/TEN-T and TEN-E = Connecting Europe Facility (CEF)/Trans European Networks-Transport (TEN-T) and Trans European Networks-Energy (TEN-E). FCHJU = Fuel Cells and Hydrogen Joint Undertaking. Interreg = Interreg Europe, an EU organisation that assists regional and local authorities in Europe in the development and delivery of better policies. MIA/Vamil = Environmental Investment Rebate (MIA)/Arbitrary depreciation of environmental investments (Vamil). DKTI = Climate technologies and Innovations in Transport Demonstration scheme.

Fiscal incentives are technology-neutral and apply to all zero-emissions cars. The cap on the reduced additional tax will not yet apply to technologies that are further removed from the market, such as hydrogen and solar-powered cars. With regard to the charging infrastructure and the supporting policies, the focus is on accelerating battery electric. The measures aimed at accelerating hydrogen infrastructure are included in the chapter on sustainable energy carriers in the mobility sector.

I. Standards for electric vehicles (nationally and within the EU)

The Netherlands is working closely with other countries to stimulate electric transport (for example, within the context of the Electric Vehicle Initiative (CEM – EVI) and the international e-mobility partnership. Additionally, the Netherlands is seeking out alignment on European standards such as the tightening of the European carbon dioxide standards for passenger cars and vans and heavy transport. As a result of EU regulations, the Netherlands is unable to impose carbon standards independently. If a vehicle has obtained type approval in an EU Member State, that vehicle may be sold throughout the EU, including in the Netherlands. The rules for the single market do not allow banning of the sale and parallel import of vehicles with conventional combustion engines, even if this were to be desired by a leading group of countries. However, standardisation is possible for other components that contribute to the growth of electric transport, as outlined below. This chiefly relates to the business market, in which tax/financial incentives are gradually being phased out.

Agreements

- a. The parties (national government and Formula E-Team)¹⁷ have agreed that the national government will continue its commitment to achieving more stringent EU standards and will collaborate with leading countries to advance electric transport and coordinate corresponding measures. This is in line with the government's aim to ensure that only zero-emissions cars will be sold by 2030. The specific execution of this aim will take place through linking up with the meetings of the Green Growth Coalition, which will take place prior to the Environment Council (Frontrunner Conference). The European Commission is expected to produce a proposal for a new standard for the period beyond 2030 in 2023 – 2024. The Netherlands' key aim is to reduce CO² emissions from vehicles to zero as soon as possible, including at a European level. European agreements may contribute to a cheaper and more rapid transition for the Netherlands.
- b. The national government will be working on the introduction of normative regulations under the Environment and Planning Act that will be introduced at the start of 2022, or far sooner if possible, and will be aimed at mitigating the adverse impact of work-related traffic, goods transport and governmental fleets (see commitment 2 under Sustainable passenger mobility). The parties have agreed to make maximum use of the possibilities of electric transport within the regulations and to bring electric transport into focus as much as possible in the business community and in relation to other organisations (as a means to meet the standards). The national government will be charged with the development of this agreement and establishing the regulations. The IPO, the VNG, employers and environmental services will be involved in drawing up these standards in order to achieve the best possible implementation. By mid-2019, this advisory process will lead to a decision on the type of regulations to be introduced.
- c. The national government and local and regional authorities have agreed that businesses that have made their fleet more sustainable will be given an advantage in relevant

¹⁷ The Formula E-Team is an advisory body with an independent chair set up by the national government, with members such as ANWB, Automotive NL, BOVAG, De Groene Zaak, Energie-Nederland, E-Laad, the IPO, the Netherlands Association for Sustainable Energy (NVDE), RAI Vereniging, Natuur & Milieu, Vereniging DOET, the Association of Dutch Car Leasing Companies (VNA), the Association of Netherlands Municipalities and 3TU. The purpose of the advisory body is to advance developments surrounding electric transport and to align with developments abroad and with opportunities for green growth.

tendering processes, either through high sustainability requirements or by including sustainability as a critical weighting factor when awarding the contract.

- d. The parties (national government, BOVAG, RAI Vereniging, ANWB) have agreed to work on developing an improved price comparison between fossil fuel and electric cars in dealership showrooms and online, in which all fixed costs for an as yet to be determined period (total costs of ownership) are incorporated. In conjunction, the national government will examine the possibilities of introducing a compulsory provision, for example through changes to the energy label (to head European policy), and will make a decision on the issue in the spring of 2019.
- e. The parties (refuelling and charging infrastructure parties and suppliers of alternative and other fuel), in consultation with the national government, will formulate an implementation strategy for the Dutch plan regarding the European regulation on the method of information provision to consumers on price differences between fossil fuels and the various alternative fuels. To this end, and in the context of the European Commission's Programme Support Action (PSA) on Price Comparison, the national government will be taking part in a consortium alongside eight other European Member States for the development of the application of the new European price comparison methodology. The application of this price comparison methodology (per unit) at petrol stations is to become compulsory for all European Member States as of mid-2020, pursuant to the European directive on the deployment of the alternative fuels infrastructure.
- f. The parties (national government and Formula E-Team) will make agreements to include a limitation provision for the export of cars that have been supported with a purchase subsidy, in the conditions for the use of a purchase subsidy as detailed in the fiscal package. The development of the purchase subsidy will be carried out by the Netherlands Enterprise Agency in consultation with members of the Formula E-Team. The purchase subsidy will be published by mid-2020. The parties will endeavour to introduce this measure as of 1 January 2020 or to introduce a temporary stimulus measure in the interim period, including relevant cover.
- g. The national government will make capacity available for the leadership responsibilities related to the EU project¹⁸ aimed at improving, harmonising and providing access to the location and the availability of charging stations and the charging prices for electric transport. The same project will focus on unique identification codes for charging stations and charging contracts, aimed at smooth international payments. The project may lead to European regulations in the years to come.
- h. The regional authorities will draw up regional programmes, which set out agreements on:
 - incentives for electric transport: a roadmap in the direction of the largest possible amount of zero-emissions transport by 2030 (including reductions and changes);
 - procurement of a private fleet: zero-emissions light vehicles by 2030, heavy vehicles (>3500 kg) to the extent possible in 2030. Organic replacement opportunities will be seized upon as they arise;
 - sustainable procurement of target group transport: zero emissions by 2025 to the extent possible, fully zero emissions by 2030;
 - procurement of contracts: zero-emissions transport as a requirement no later than 2030.
- i. In 2019, the national government will submit a legislative proposal that will allow differentiated parking fees by law by 1 January 2021 or as soon as possible. Within their parking policies, the municipalities will make an assessment on the use of such fees in combination with other measures to maximise the impact thereof.
- j. The national government will ensure that the governmental fleet is entirely zero emissions by 2028. The national government will take part in the Transforming Travel (*Anders Reizen*) coalition and aims to achieve at least 50% in Co₂ reduction in governmental

¹⁸ Project title "Data collection related to recharging/refuelling points for alternative fuels and the unique identification codes related to e-mobility actors"

mobility by 2030, including through human resources policy and collective bargaining. In addition, the necessary infrastructure will be put in place in government buildings and other government offices and sites (approximately 2,400 charging stations) to achieve that objective.

II. Flanking measures: next steps for the sector and the regions

The transition from conventional petrol-fuelled cars to electric cars requires a systemic transition that can only be made possible through simultaneous intervention in all areas. In addition to standards and financial incentives in order to facilitate the transition to a broad-spectrum introduction and ensuring adequate charging infrastructure, flanking measures are also required. This will further lower the threshold for the transition to electric transport.

Agreements

Communication

- a. In 2019, the parties (the members of the Formula E-Team) will launch a centralised campaign, alongside their own communication strategies, outlining the benefits of and experiences with electric transport aimed at the appropriate target groups and containing targeted messages that are meant to highlight preconceptions with regard to electric transport. This will include a component on the electrification of the commercial fleet, private leasing and car parts. It will also involve the active communication of prime examples of the mobility policies implemented by businesses. The campaign will be linked to the site NederlandElektrisch.nl.
- b. The parties (the members of the Formula E-Team) will ensure that, in addition to their communication with their own members, a centralised website will be made available in 2019, which will contain all information that is relevant to the introduction of electric transport both for consumers and for suppliers and policy makers. To this end, the current NederlandElektrisch.nl website will be expanded further.
- c. The parties (BOVAG and RAI Vereniging) will ensure that, in addition to the technical knowledge on electric cars, which will be rolled out through car brands, car dealers have knowledge at their disposal on all consumer affairs in the Netherlands in relation to electric passenger cars. To this end, an industry-wide training programme will be developed and provided in 2019.
- d. The parties (ANWB, BOVAG, RAI Vereniging and the Association of Dutch Car Leasing Businesses (VNA)), in consultation with the National Knowledge Platform for Charging Infrastructure, will ensure that assistance with the application procedures for the desired charging infrastructure is available to parties purchasing electric cars.
- e. In 2019, the parties (ANWB, BOVAG, RAI Vereniging and the VNA) will examine the possibilities for the development of a tool in which the fuel costs, based on the listed certified consumption figures and kWh price (differentiated by personal and business and AC and DC), and energy costs for the vehicle can be compared under similar conditions. This survey will be launched based on the transparent price comparisons that will be introduced as of 1 August 2019.
- f. The parties (BOVAG and RAI Vereniging), in consultation with the national government, will ensure that, by the end of 2019, universal technical training programmes enabling and qualifying persons to work on e-vehicles and high-voltage installations will be available for third parties and that they are based on standards NEN 1940 for "Safe working on e-vehicles", NEN 3140 "Operation of electrical installations" and the Industry Standard for Safely Working on Electric Vehicles (EV) and Hybrid Electric Vehicles (HEV) in Garage Workshops. To this end, suppliers of electric vehicles will provide materials that set out how electric vehicles specific to their brand should be worked on. This will be brought to the attention of third parties through government information.
- g. The parties (BOVAG and RAI Vereniging) will develop a sustainable human resources policy in order to prepare for the acceleration of the arrival of electric vehicles.

Battery check and warranty

The warranty period for batteries has been extended significantly in recent years. In respect of new cars, the warranty on the battery will even be unlimited for an average period of up to eight years with maximum mileage of 100,000 km. In many cases, this provides a sufficient degree of security for buyers. With increasing sales in the second-hand market, consumers furthermore require clarity on the status of the battery, which may depend on how the car has been used and is a determining factor for the value of the car. A detailed check of the status of the battery is not available for all brands, however, as a result of which a universally applicable, certified battery check could not be developed in a national context (NEN: knowledge network for standards development and application). Developments in Europe are nonetheless ongoing that may in time lead to requirements for the period of use of batteries.

Another point for attention is the fact that the market for applications of used batteries is still in full development, which means residual value is often still undervalued. For example, batteries can be used to stabilise the energy network and may also prove useful with regard to the recovery or upgrading of raw materials. There seems to be a clear trend of car manufacturers taking repossession of batteries for recovery of raw materials or for upgrading purposes. If these possible applications would literally be valued more highly, this would reduce depreciation on electric cars.

- h. The parties (national government, ANWB, BOVAG, DOET, RAI Vereniging and Vereniging Elektrische Rijders (VER)) are committed to compelling insight into the lifespan and charging capacity of a used electric car for consumers through European law and to jointly lobby in favour of such steps. Based on that insight, market parties will be able to develop extended warranty products, aimed at the second-hand market. The parties will introduce a uniform battery check as soon as possible. The battery check will be linked to a warranty period as soon as possible.
- i. The parties (BOVAG, NVDE, RAI Vereniging, Vereniging DOET, Natuur & Milieu, network managers and Autorecycling Nederland ARN), in consultation with the national government, will explore the possibilities for the development of a system in which used batteries that are not taken back (recycled) by the manufacturer can be used at real value, including for the stabilisation of the network.

Electrification in leasing

In relation to leasing, leasing businesses will be removing a large number of obstacles to the transition to electric transport: no additional financing of the higher new price, no risks for batteries, costs and residual value and charging support. Given that leasing focuses on use of the vehicle rather than on the purchase, the benefits of electric transport are fully demonstrated directly through the leasing price.

In order to accelerate the electrification of leasing vehicles, the parties have agreed to the following in addition to tax and financial commitments:

- j. In 2019, the VNA, alongside a group of leading leasing businesses, will identify, based on the lessons they have learned, which obstacles and barriers must be removed in order to be able to offer even more effective electric transport and will communicate its findings. Publication will take place by 1 January 2020. Key areas of learning include support for charging infrastructure, electric shared cars and cars as part of the local energy system.
- k. An increasing number of leasing businesses will be allowing their private lease electric vehicles to be shared by the leasing driver. In addition, the leasing businesses will be collaborating with car sharing platforms, including neighbour-to-neighbour car sharing initiatives.
- l. By 2021, the leasing businesses, alongside other parties in the sector, will realise an industry-wide agreement for electric vehicle leasing to the effect that leasing will always be offered with an indication of the total costs per month, made up of the fixed leasing price plus an estimate of the energy costs – even if the charging costs do not form part of

the leasing contract. This will allow bottom line comparison between electric cars and conventional fuel cars, providing consumers with a clear picture of the total costs. The percentage of new electric vehicles deployed by leasing businesses will always at least amount to the percentage of total Dutch electric vehicle sales in respect of total Dutch passenger car sales. This applies as long as (a) fiscal policy encourages electric vehicles, as is currently provided for, and (b) leasing businesses have the same access to supply as the private market does. The VNA will prepare a report on the progress of these new registrations.

- m. In 2019, the parties (ANWB, BOVAG, the VNA, NVDE, Natuur & Milieu, Vereniging DOET and Vereniging Elektrische Rijders) will examine the feasibility of leasing second-hand electric cars. Their recommendations on a promising second-hand leasing market will be published by 1 January 2020.
- n. The national government, the VNA and the Transforming Travel coalition will examine whether the minimum "rental rates" regarding the use of electric or conventional fuel company car shares for private purposes should be adjusted in current practice. This scheme allows personal use by employees to be kept outside of the additional tax liability by applying a market-based rental rate.
- o. The national government, BOVAG, the VNA and the Transforming Travel coalition have agreed to include the electrification of the fleet in the examination of the use of tax schemes to make the process of making mobility more sustainable more attractive to employers.

Electrification of car sharing

Electric vehicle car sharing may prove a key accelerator to the introduction of electric transport. In the Green Deal – Car sharing II (*Green Deal Autodelen II*), the national government, local and regional authorities and Natuur & Milieu have made a commitment to further advance the growth of car sharing up to 100,000 car shares and to 700,000 users by 2021. A key percentage of these car shares would be in consumer-to-consumer networks, in which electrification would take place alongside the electrification of the overall Dutch vehicle fleet. The Formula E-Team estimates the growth for electric business-to-consumer (B2C) car shares up to 2021 at 20,000 electric vehicles. Moving toward 2030, growth is expected of at least 80,000 electric B2C car shares.

- p. Municipalities, government agencies and businesses will make their electric car shares open to use by civilians outside of office hours where possible.
- q. Municipalities will ensure fixed parking bays for car shares that are site-specific, which will include appropriate signage and road markings. In respect of car shares that are not site-specific, the municipalities will examine the possibilities for cross-municipal and mutually recognised parking permits and will publish the results of that survey no later than mid-2019.
- r. The national government, industry associations, municipal and provincial authorities and businesses will examine the possibilities of a car sharing campaign, which will seek to align with the main campaign on the benefits of electric transport.

Electrification of two-wheelers

The contribution of motorised two-wheelers to carbon dioxide emissions, although minor, does have a negative impact on local air quality. In addition to the agreements below, it is vital that safe road use by different types of vehicles with different speeds should be taken into consideration.

- s. The parties (national government, BOVAG, RAI Vereniging and Vereniging DOET) will collectively work on the transition toward 100% zero-emissions motorised bicycles. As of 1 January 2025, all new motorised bicycles sold on the Dutch market will be zero emissions. The national government will ensure a level playing field on the Dutch market.

- t. The parties (national government and the VNG) will examine the possibilities regarding in what areas and in what way acceleration can be achieved within municipalities.
- u. The parties (national government, BOVAG and RAI Vereniging) aim to achieve a transition to zero emissions in new sales of motorised bicycles ahead of 2030, analogous to the objective for passenger vehicles.
- v. The parties (BOVAG, RAI Vereniging and Vereniging DOET) will review the possibilities for the introduction of leasing products for two-wheelers in 2019 and will identify the opportunities and challenges in this regard. Leasing products may provide a solution to the higher purchase price of electric alternatives, given that the lower costs of use are taken into account.
- w. Vereniging DOET (Dutch Organisation for Electric Transport), in consultation with the Dutch Association of Insurers, will assess whether better information provision from insurers may improve the insurability of LEVs.

In 2019, the parties (national government, the VNG, the IPO and Vereniging DOET), following the example of other EU countries, will examine the possibilities of making parking bays available for electric two-wheel or three-wheel vehicles with corresponding charging infrastructure.

Second-hand cars

To ensure the broad availability of electric vehicles in the Netherlands, it is vital that there be a fully-fledged second-hand market. In part, it is only a matter of time before the models that arrive on the market meet the needs of consumers. At the same time, various measures have been included in these agreements that could improve this:

- a low motor vehicle tax and private motor vehicle and motorcycle tax for zero-emissions cars in order to limit the price difference with conventional fuel cars, such as a private vehicle and motorcycle tax exemption until 2024;
- examination of the possibilities of linking the subsidy for zero-emissions cars to a restriction on exports, resulting in the cars remaining available in the Netherlands longer;
- examination of steps aimed at enforcing insight into the lifespan and charging capacity of used electric vehicles for consumers at the level of European regulations;
- review of the possibilities for the use of used batteries in the stabilisation of the electricity network at their real value. This would have a positive impact on the residual value of cars;
- review of the feasibility of leasing second-hand electric cars.

III. National Charging Infrastructure Agenda

Municipalities, provinces, the national government, network managers, Dutch businesses and industry associations have collectively drawn up a National Charging Infrastructure Agenda. The agreements in this agenda will lead to national coverage of charging stations and provide for the charging capacity needed for the growing number of electric vehicles. The implementation of the National Agenda will be translated into regional mobility plans in consultation with provinces and municipalities. These plans will detail the local needs for charging infrastructure.

With regard to passenger transport, a charging capacity will be provided of 1.8 million public, semi-public and private charging stations by 2030. With regard to urban logistics, an initial analysis conducted by the Netherlands Organisation for Applied Scientific Research (TNO) showed a maximum charging capacity need for vans of 18,600 charging stations by 2030, with 7,400 charging stations for lorries. There will be a more extensive review of the number of charging stations required for vans and lorries at a later stage. In addition, the charging capacity requirements of electric buses, inland vessels and Light Electric Vehicles (LEVs) will grow. Realising these charging stations is a significant challenge, which involves the placement of roughly 700 charging stations per day in the final stage. This can only be achieved through effective agreements and cooperation between all parties. In drafting the

National Charging Infrastructure Agenda, the key principle is that no direct financial public funding should be needed for the construction and operation of the regular charging infrastructure. The National Charging Infrastructure Agenda contains agreements that in some cases may have an impact on the organisation and responsibilities of the relevant parties. In addition, support may be needed for innovations, process management, monitoring and evaluation. For that reason, in the next two months, the signatories of the National Charging Infrastructure Agenda will be identifying what the implementation costs are for the implementation of the agenda. According to the local and regional authorities, an initial estimate shows that the National Charging Infrastructure Agenda will involve approximately 5 million euros in implementation costs per year. These costs are yet to be detailed and substantiated and will be factored into the agreements on the decentralisation of the Climate Agreement.

The National Charging Infrastructure Agenda contains an exhaustive list of all agreements that have been made, specifying in detail which parties will be realising what and the date of completion or delivery. All these agreements constitute an integral part of the Climate Agreement.

The agreements of the National Charging Infrastructure Agenda focus on:

1. accelerating the process and establishing basic conditions for the rolling out of public charging infrastructure for electric vehicles, including through:
 - a. setting up and strengthening cooperation regions. These cooperation regions, working alongside the municipalities, will be responsible for rolling out charging infrastructure in the region. The cooperation regions will support municipalities in the drafting and implementation of an integrated vision and policies;
 - b. embedding commitments on charging infrastructure and the rolling out of charging infrastructure, including its preparation, in the Regional Energy Strategy (RES), the environmental strategy and the environmental plan. The national government will provide security on sufficient supply of public charging stations in municipalities and on the pace of the realisation of such stations through the instruments of the Environment and Planning Act (including through standards);
 - c. adoption of placement policies, including roll-out plans for public charging infrastructure, in regions and municipalities by late 2020. These placement policies will be updated every two years;
 - d. support of municipalities and regions with guidelines and tools;
 - e. in the first quarter of 2019, the national government, network managers, market parties and relevant industry associations will produce an analysis of the problems related to the operation of the energy tax for bi-directional charging (double tax on smart charging), in relation to which solutions will be sought if necessary;
 - f. agreement of measures aimed at rolling out private charging infrastructure, in addition to the roll-out of publicly accessible charging infrastructure, such as the implementation of the requirements of the European Directive on energy performance of buildings and the simplification of the realisation of charging stations at owners' associations;
2. improvement of the provision of information on the location and availability of charging stations, charging price transparency, use of open protocols in the charging supply chain and an open charging market, including through:
 - a. the establishment of a national access point for data on charging stations, through which service providers and charging station operators will exchange their static and dynamic basic information on all publicly and semi-publicly accessible charging stations by 1 August 2019. This relates to, among other things, basic information on the location and availability of the charging stations and the charging prices;

- b. the commitment that all service providers and operators of charging stations will provide EV drivers with the price of each type of charging session in an accessible and transparent manner by 1 August 2019;
 - c. arriving at an effective pictogram for alternative fuels that can be easily integrated into signage along motorways and roads and is sufficiently clear to drivers of electric vehicles, before the summer of 2019;
 - d. consistent documentation of commitments on interoperability, access of customers of other providers to charging stations and the application of neutral and open protocols in contracts on the construction and operation of charging stations to facilitate an open and competitive market for charging services;
 - e. collaboration on the development and international adaptation and standardisation of open protocols, including smart charging protocols and the integration of EVs with the broader energy system and the built environment. A working group is to be established by 1 August 2019 and an open market will be set up to stimulate the process;
3. the use of smart charging to ensure a stable electricity network in which optimal use can be made of renewable energy and the benefits thereof for EV drivers, including through:
 - a. setting up and optimising market models in which the potential of smart energy solutions, such as smart charging, can be realised;
 - b. translation of any difficulties in new market models for smart charging into new regulations through experimentation and legislative pathways;
 - c. analysis of the problems surrounding the operation of the energy tax in relation to bi-directional charging, in relation to which any necessary solutions will be sought;
 - d. readying the current smart charging infrastructure and examining and developing new architecture options for smart charging;
 - e. simplification of the digital exchange of data between electric vehicles and charging infrastructure;
 4. future-proofing charging infrastructure by focusing on innovation, including through:
 - a. incorporation of the innovation challenges resulting from the National Charging Infrastructure Agenda in the Knowledge and Innovation Agenda for Mobility;
 - b. making commitments on the implementation of programmes and projects resulting from the National Charging Infrastructure Agenda and on the flexibility to experiment embedded within laws and regulations required for demonstrations and pilots;
 5. the realisation of robust charging infrastructure for urban logistics, enabling further integrated growth and development of electrification of mobile machinery and electric transport of goods, including through:
 - a. responding to the growing need for the use of zero-emissions heavy goods vehicles. These heavy goods vehicles require new charging solutions with a greater capacity and will therefore have a larger impact on the energy grid;
 - b. assessment of the charging behaviour and charging needs with respect to urban logistics per sector, in order to determine optimal charging sites and the possible necessity of reinforcing the energy grid to enable the further integration of zero-emissions urban logistics;
 - c. examination of the required charging infrastructure (battery electric and hydrogen) for inland shipping, for pilots to be carried out with electric inland vessels and with regard to what the rolling out strategy for the required shore power should look like in the long term;
 - d. research into charging infrastructure solutions for mobile machinery.

The Netherlands Enterprise Agency (RVO) will set up a monitoring programme to track the progress of the implementation of the National Charging Infrastructure Agenda. In addition, the national government will appoint a steering committee that will include representatives

from the Ministry of Infrastructure and Water Management, the Formula E-Team, the VNG, the Association of Provincial Authorities and ElaadNL.

IV. Financial and tax incentives

The government aims to make electric vehicles attractive and affordable for everyone in the long term, via an approach that also takes advantage of the market dynamics described above, which the government expects will reduce the need for a per-car incentive. However, in addition to incentive costs, the transition to electric cars also means less income from excise duty.

The current motor vehicle tax system consists of a combination of tax on ownership and tax according to fossil fuel use via excise duties. The concept of e-mobility is becoming more and more socially ingrained. This is one of the reasons why the motor vehicle tax system will require an overhaul in the long term, to avoid a situation in which an ever-dwindling number of people is generating the revenue. The new system must also ensure that everyone who uses infrastructure makes a reasonable contribution toward the costs. According to the PBL, a pay-as-you-go system could help to reduce traffic congestion and emissions.

Vehicles from the commercial market are a key component of the Dutch second-hand market. By encouraging the business market to increase its focus on cars that will later be attractive to the Dutch market, the government aims to retain more of these cars in the Netherlands for longer. In order to foster a thriving second-hand market in electric cars for private individuals, the government will develop a scheme for the reimbursement of charge credit, purchase subsidies or battery guarantees. This will make it easier for private individuals to afford a second-hand electric car.

Financial and tax support for zero-emissions cars

The government has established the following fiscal and financial support for zero-emissions vehicles.

Table 1: Overview of incentives per instrument, 2021 – 2030

Incentive policy	2020	2021	2022	2023	2024	2025	2026*	2027*	2028*	2029*	2030*
Motor vehicle tax fixed rate, electric	0	0	0	0	0	360	360	360	360	360	360
Motor vehicle tax FCEV/EV, electric	0%	0%	0%	0%	0%	25%	100%	100%	100%	100%	100%
Additional tax	8%	12%	16%	16%	16%	17%	22%	22%	22%	22%	22%
Additional tax cap	45000	40000	40000	40000	40000	40000	N/A	N/A	N/A	N/A	N/A
Private subsidy	The series will be determined in due course to ensure the most effective implementation						0	0	0	0	0
Linear reduction for private subsidy	40k – 60k	40k – 60k	40k – 60k	40k – 60k	40k – 60k	40k – 60k	0	0	0	0	0

* Based on the Motor Vehicles Memorandum II, the incentivisation of electric vehicles will be terminated in 2021. Under the current Climate Agreement, the Motor Vehicle Memorandum II will be adjusted in relation to 2020 and the government will be continuing incentivisation through incremental adjustments until 2025. In the meantime, the government will be working on the development and preparation of another motor vehicle taxation system, in relation to which the objective in the Coalition Agreement concerning all new cars being zero emissions by 2030 will be included. The table outlines the incentive measures that will be available up to 2026. Naturally, it cannot yet be ascertained how the new motor vehicle taxation system will develop in the years thereafter.

Description of incentive measures:

- a. Zero-emissions vehicles will remain exempt from the private motor vehicle and motorcycle tax up to 2024. In 2025, motorists will pay a fixed rate of 360 euros per vehicle.

- b. Zero-emissions vehicles will remain exempt from the national component of the motor vehicle tax up to 2025. In 2025, zero-emissions vehicles will be subject to a percentage of the national component of the motor vehicle tax of 25%. PHEVs will pay motor vehicle tax with a correction factor due to the heavier weight in respect of conventional fuel-powered cars.
- c. A decreasing cost-efficiency purchase subsidy will be introduced for private zero-emissions vehicles, which starts at PM euros per vehicle (2021) and will subsequently decrease, given the expected increased presence of affordable models of electric vehicles on the market. The detailed development of the scheme will take place in consultation with the sector. The key principle of the scheme is that it will be set up as a target subsidy with a capped subsidy amount and a subsidy cap based on percentages of sales of new cars. This subsidy should cover part of the difference of the purchase price compared to conventional fuel-powered cars, resulting in consumers being able to recoup the costs of electric cars sooner. It will be examined whether or not this purchase subsidy can also be made available for certain types of private leasing and private car sharing concepts.¹⁹ It will also be examined whether it would be possible and beneficial to give consumers a choice between charging credit, a purchase subsidy or a charging station subsidy. The subsidy will be made conditional in order to make vehicles in the Dutch vehicle fleet available as long as possible (the period envisaged by politicians is eight years). If this condition is not complied with, the subsidy must be reimbursed (in proportion).
- d. In respect of commercial zero-emissions vehicles, a reduced rate of additional tax is applied above a maximum of €50,000 of the catalogue price (for battery electric). This maximum will decrease to €45,000 in 2020 and will subsequently decrease further to €40,000 in 2021. This reduced additional tax rate starts at 8% (2020) and will rise to 12% in 2021 and to 16% in 2022. Monitoring and adjustments will take place on an annual basis (please see the "Hand on the tap" section below). In respect of innovative zero-emissions cars that have not yet proven themselves on the market, such as hydrogen and solar-powered cars, the introduction of the maximum amount for additional tax will be postponed until after 2024. Further consultation will take place regarding the precise introduction process.
- e. In respect of incentivising second-hand zero-emissions vehicles, the following measures will be developed in consultation with the sector: the provision of charging credit to private individuals, a cost-effective purchase subsidy for second-hand electric cars in lower segments, reimbursement of the costs of the construction of a charging facility at home and/or a battery warranty or battery leasing scheme. An amount of €100 million will be reserved for these measures between 2021 and 2024.

Incentivising with the "Hand on the tap"

It has been agreed that a comprehensive review will be carried out around 2024. Further to the review, it will be possible based on the latest developments in the vehicle market to identify those policies and measures that are essential and desirable after 2025 to achieve the government's target of 100% zero-emissions new cars. On top of this, the incentives will be calibrated annually in order to keep a "hand on the tap" and avoid over-incentivisation. The extent of the adjustment will depend on the extent of the deviation, meaning major overspending will result in a major adjustment to the rates and minor overspending will result in a minor adjustment. Both upward and downward adjustments are possible.

"Hand on the tap" principle during implementation of the integration trajectory agreed in the policy:

Financial control: if developments cause the situation to move at a faster or slower pace than the agreed financial framework, we will adjust the incentive package.

Hand on the tap in the case of non-tax incentives:

¹⁹ No cumulation of commercial and private benefits can take place.

A subsidy ceiling ("when it's gone, it's gone") applies to the purchase subsidy for private individuals and the stimulus to the second-hand market (100 million). The annual financial ceiling therefore cannot be exceeded for these measures.

Hand on the tap in the case of tax incentives (additional tax liability, motor vehicle tax, private motor vehicle and motorcycle tax):

If the number of EVs sold is higher or lower than forecast, this will lead to higher or lower losses than predicted in the year in question. This situation can be adjusted in year t+1 if structural deviations from the trajectory are expected in the coming years. This works in two ways, both by preventing losses in later years and by maintaining EV sales (in the event of lower EV sales than forecast). The extent of the adjustment will depend on the extent of the deviation, meaning major overspending will result in a major adjustment to the rates and minor overspending will result in a minor adjustment.

The Ministry of Finance and the Ministry of Infrastructure and Water Management will monitor the effects of the incentive policy based on the following KPIs:

- budgetary costs based on the Central Government Annual Financial Report (*Financieel Jaarverslag van het Rijk*) and actual implementation;
- number of new vehicle sales (lease/business);
- number of new vehicle sales/private lease to private individuals;
- number of imports/exports (i.e. development in domestic vehicle fleet).

The number of new vehicle sales to businesses/private individuals is monitored on a monthly basis; imports/exports are monitored on an annual basis.

Action can be taken if the actual numbers deviate from the predicted numbers:

- Monthly monitoring: based on the first four months of year t, an initial forecast is made on the total development in year t and results in year t-1. If this forecast deviates from the projected pathway, a proposal can be formulated (emergency brake) to adjust the fiscal measures for the purpose of the Tax Plan for year t+1, which is published in September of year t (input for this in June of year t).
- As part of the package, the option to make policy adjustments will be clearly communicated in the EV incentive package. This will support a proper understanding of the hand on the tap principle.

Frequency of evaluations

In addition to the annual review, which will be submitted to the House, and any amendments, detailed evaluations will be carried out at the following times.

Evaluations will be carried out as set out below:

- 2022/2023 (interim evaluation);
- 2023/2024 2027/2028 (interim evaluation);
- 2030 (final evaluation of the climate agreement).

Cover for any losses of revenue and additional expenses

Table 2: Overview of coverage per instrument, 2021 – 2030

Coverage policy	2020	2021	2022	2023	2024	2025	2026*	2027*	2028*	2029*	2030*
Motor vehicle tax increase per year per van	0	24	48	72	96	72	72	72	72	72	72
Diesel excise duty	0	1	1	2	2	2	2	2	2	2	2

* Based on the Motor Vehicle Memorandum II, the incentivisation of electric vehicles will be terminated in 2021. Under the current Climate Agreement, the Motor Vehicle Memorandum II will be adjusted in relation to 2020 and the government will be continuing incentivisation through incremental adjustments until 2025. In the meantime, the government will be working on the development and preparation of another motor vehicle taxation system, in relation to which the objective in the Coalition Agreement concerning all new cars being zero emissions by 2030 will be included. The table outlines the incentive measures that will be available up to 2026. Naturally,

it cannot yet be ascertained how the new motor vehicle taxation system will develop in the years thereafter.

The parties (national government and the Formula E-Team) have agreed the following in respect of coverage:

- a. As of 2025, zero-emissions vehicles will pay a fixed rate of 360 euros in private motor vehicle and motorcycle tax per vehicle.
- b. The excise duty on diesel will be increased by 1 cent as of 2021 and again by 1 cent as of 2023.
- c. The current discount on the motor vehicle tax for vans will be gradually reduced. This will mean an increase of 2 euros per month per van from 2021 to 2024.

Compensation for provinces regarding electric transport incentives (excise duty losses for provinces)

As was the case in the past with the Motor Vehicles Memorandum II, electric passenger cars will be exempt from the motor vehicle tax up to 2024 and as such exempt from surcharges. As of 2025, in accordance with this proposal, EVs will also pay motor vehicle tax (dependent on potential changes to the system). It has been concluded that the IPO (Association of Provincial Authorities) and the national government use different definitions regarding the impact of the electric vehicle incentive package in the Climate Agreement. The differences are outlined below:

- A zero tariff means provinces may not levy a motor vehicle tax on EVs. The IPO states that provinces will lose revenue as a result of the zero tariff for each electric vehicle sold. This restriction of the tax base for provinces leads to less revenue and consequently has an impact on the open management, for which the provinces should be compensated.
- The national government states that – based on current insights – the growth of fossil-powered cars and the (increasing) weight of fossil-powered cars ensures that the total annual revenue from surcharges in the 2021 – 2024 period will not substantially deteriorate in respect of the year 2020 in an absolute sense. There will only be fewer additional gains. The national government is therefore of the opinion that there will be no losses for which the provinces ought to be compensated.

The provinces and the national government have a common interest in ensuring effective monitoring of the development of electric transport in the years to come. The national government will be responsible for maintaining an identical or otherwise comparable individual tax area in terms of impact. This type of taxation should ensure that the open management of the provinces will remain fully intact.

The national government and the IPO have agreed the following:

- a. The national government and the IPO will jointly monitor the impact of the surcharges as a result of the policy intentions of the government in the 2021 – 2024 period. The national government and the IPO will jointly develop a methodology to monitor EVs ("Hand on the tap"). The calculations will be based on the rates for the provincial surcharges in 2019.
- b. In the context of monitoring, the Council for Public Administration (ROB) will issue a significant opinion in 2020 – based on a survey under Article 2 – on the extent to which the policy intentions of the national government in relation to the provincial surcharges will lead to a substantial change in the revenue of the provinces. Both variants of the definitions used will be included in the request for opinion by the national government. In addition, the ROB will identify the effects on the responsibilities of the provinces.
- c. Consultations will take place between the national government and the provinces on the relevant results, following the monitoring efforts and the significant opinion of the ROB.

Review and adaptive planning toward zero-emissions new cars by 2030

The parties agree that the degree of uncertainty beyond 2025 is significant. The government will therefore explore the pay-as-you-go options set out below, sketch out preparations and,

where possible or necessary, make these preparations for when the next government is formed. The introduction of the new system will be included in the tax review that has already been proposed for 2025.

The following options will be detailed:

- a per-km pricing system for electric cars, with no changes to the existing system for cars that run on fossil fuels. This would lead to an overall reduction in total costs within the motor vehicle domain. This system would not involve any differentiation according to time or location and a rush hour charge would therefore not be considered;
- time and location-specific tax, with the exception of a rush hour charge for all vehicles;
- emissions, time and location-specific tax for all vehicles.

All options will take into account the perspective for action, and privacy remains a key concern as much as possible. The following aspects will also be covered when detailing each of the options:

- the desired encouragement of e-mobility, in line with the government's target of 100% zero-emissions new cars by 2030;
- the possibility of reducing overall costs within the motor vehicle domain;
- any impact on the national budget and ways of managing this.

The key stakeholders in this transition, such as the partners in the Formula E-Team, will be closely involved in the development process described above.

V. Continuation

- i. The parties have agreed to formulate implementation plans for the flanking measures in 2019 within the Formula E-Team context.
- j. The parties have agreed that implementation plans will be drafted for the National Charging Infrastructure Agenda in the spring of 2019 within the Formula E-Team context.
- k. The parties have agreed that the national government will develop the fiscal measures and embed them in Motor Vehicle Memorandum III.
- l. The parties have agreed to collaborate on the annual monitoring of the Climate Agreement measures that are to be implemented by the national government as of 2019. The monitoring details will be discussed in the Formula E-Team. Based on the monitoring, the incentives will be recalibrated, which may, for example, allow supporting policies to be intensified, and will allow the parties to be held accountable for the progress made.

C2.5 Sustainability improvements in logistics

Logistics is a key cornerstone of the Dutch economy and Dutch society (Holland International Distribution Council, NDL). As the same time, logistics operations are a key source of carbon dioxide and other types of emissions. In addition to the energy carrier track, an acceleration of the transition to zero emissions is also being pursued along other avenues, including through medium-sized zero-emissions zones in 30 – 40 larger municipalities, zero-emissions construction traffic and mobile machinery, climate-neutral and circular ground, road and hydraulic engineering, logistical efficiency improvements and a Green Deal for Inland Shipping.

Medium-sized zero-emissions zones in city logistics in 30 to 40 larger municipalities by 2025

Within the context of a Green Deal or Zero-Emissions Urban Logistics (ZES), mid-sized zero-emissions zones (ZE zones) will be established in the 30 – 40 major cities by 2020 at the latest, which will apply to goods transport as of 2025. Other municipalities will be able to join this scheme. This is expected to lead to savings of 1.0 Mt of carbon dioxide.

With regard to the ZE zones for logistics that will apply as of 2025, there will be clarity by 2020 as to how introduction will take place (this will be formulated within a structured process under joint management of the national government and the municipalities), to allow Dutch businesses to make preparations in good time. As regards the responsibilities for zero-emissions zones, the relationships and the costs align with the existing agreements in the Zero-Emissions City Logistics Green Deal. This means that the municipalities will be responsible for the decisions and choices surrounding the introduction and enforcement of a zone (as well as for any corresponding costs, such as for the placement of signage and cameras) as is currently the case. Where necessary, the national government will focus its efforts on facilitating the cross-border aspects, such as regarding the recently initiated amendment of national regulations. Further development will focus on several aspects, including on the situation of small business owners with vans, in order to align with organic investment opportunities. Other municipalities that set up zero-emissions zones at a later date must announce such zones at least four years in advance to ensure structured preparations by the government and by the business community.

Agreements

- a. TLN, Evofenedex, the Logistics Top Sector and other sectoral parties, in consultation with the national government, the VNG, the IPO, large municipalities and Natuur & Milieu, will collectively draft an implementation agenda for the various sub-sectors in urban logistics (such as construction, retail, fresh produce, waste streams, hospitality, facilities management and e-commerce), with the aim of allowing transport activities to be carried out without emissions by 2025. This implementation agenda will at least contain agreements on the funding of solutions, communication, facilitating and supporting entrepreneurs, monitoring and governance.
- b. Businesses in the logistics chains will take the initiative to implement demonstrably sustainable solutions. In support of these initiatives, they will invest in IT (control towers, integration of logistics planning using Building Information Modelling, etc.) and in the development and procurement of clean technology for vehicles.
- c. The Logistics Top Sector will develop knowledge, new concepts and pilot projects in order to create demonstrably sustainable logistics solutions, including monitoring. In addition, the Top Sector will develop quantitative models for the logistics sub-sectors in order to clarify the considerations between financial efforts, competitiveness and carbon dioxide savings, to allow investment decisions to take place more quickly.
- d. As of 2025, all new lorries that wish to enter ZE zones must be ZE themselves. ZE zones will lead to a high demand for zero-emissions delivery vans and heavy goods vehicles (a total of 50,000 ZE delivery vans and 5,000 ZE/PHEV lorries are expected by 2025, growing to 115,000 ZE delivery vans and 10,000+ ZE/PHEV lorries by 2030). The growth and integration of these vehicles is supported by the development of new services that use utility vehicles, Light Electric Vehicles (LEVs) and E-cargo bikes. Medium-sized ZE zones will require more ZE heavy goods vehicles than the expected growth detailed above. For that reason, existing lorries registered before 1 January 2025 will be subject to a transitional scheme until 1 January 2030 in the form of a centrally issued waiver granted per license plate. Only EURO-VI lorries that are not older than five years old (box lorries) and eight years old (articulated lorries) will be eligible. In collaboration with the municipalities, it will be reviewed whether ZE lorries can be given certain privileges in that period (such as access to attractive parking/maintenance bays) to encourage the integration of zero-emissions technology.
- e. Moreover, the national government has established an incentive programme that was agreed upon with the sector. The scope of this incentive scheme is 94 million euros for lorries up to 2025 and 185 million euros for delivery vans. The starting point of this incentive scheme is a purchasing arrangement with coverage of up to 40% of the additional costs of a ZE vehicle in respect of the fossil alternative. Due to availability, PHEV variants may also make use of this scheme for goods transport during this period.
- f. The Association of Netherlands Municipalities (VNG) will lead the way and work with municipal authorities to realise organisational and IT framework conditions for the introduction of ZE zones by 2025. The municipalities will stimulate the development of market demand by embedding and rewarding licensing, purchase and procurement (by local and regional authorities and third parties). In addition, they will be working on infrastructure adjustments (including to bicycle infrastructure and public charging infrastructure) that will be necessary to facilitate new concepts.
- g. New urban logistics concepts will be encouraged. In the years to come, the DKTi scheme will bring about options to stimulate the incorporation of cargo bikes and LEVs. The national government will be working alongside the sector to actively encourage the market to make use of this scheme.
- h. Within the framework of the European Directive on Promotion of Clean and Energy Efficient Road Transport Vehicles, the national government and the municipalities will put in place requirements for the use of ZE utility vehicles for public tenders.

- i. If, by 2025, the implementing agendas have not yet led to the establishment of medium-sized zero-emissions zones in 30 – 40 cities, the national government will put statutory measures in place in consultation with stakeholders to ensure zero-emissions zones for logistics are established by 2030. The progress of the municipal participation will be monitored continuously.

Zero-emissions construction traffic and mobile machinery

In order to support the introduction of ZE zones, the parties will be focusing on achieving zero-emissions construction traffic and the use of zero and low-emissions mobile machinery in urban areas. This involves building on existing partnerships and commitments that were made with parties in the framework of the Green Deal for Mobile Machinery (*Het Nieuwe Draaien*, HND) and the Green Deal for Construction Logistics. It is through these Green Deals that public authorities and parties within the construction sector have collectively developed action plans, along various lines (behaviour, technology and fuels, policy), to reduce the carbon dioxide emissions of mobile machinery. Collectively, these agreements are expected to lead to savings of 0.4 Mt of carbon dioxide.

Agreements

- a. In 2019, Dutch businesses, working alongside public authorities, knowledge institutes, and Natuur & Milieu, will undertake the "Climate-neutral Construction Site Challenge" in order to identify knowledge and experiences, opportunities and possible obstacles surrounding zero-emissions mobile machinery, in order to accelerate the growth and incorporation of zero-emissions mobile machinery and advance knowledge exchange and to facilitate public authorities in this transition.
- b. Public authorities will take the initiative to include the use of ZE mobile machinery and the principles of the HND Green Deal in procurement processes, such as for construction works and landscaping activities. In this regard, the national government and other public authorities will aim to achieve agreements on the standardisation of invitations to tender for zero-emissions machinery. Agricultural machinery will be added to the Green Deal for Mobile Machinery (HND Green Deal). The national government will enable the relevant top sectors to develop autonomous vehicles, via crossovers before 2023, that carry out transport and field operations sources for precision applications and run on renewable energy sources.
- c. The national government will create framework conditions within the regulations to allow cities to steer toward green construction traffic and the use of zero-emissions construction machinery, for example by imposing a monitoring obligation for emissions and load factor.
- d. The national government will be committed to putting carbon dioxide labelling and standardisation of mobile machinery on the agenda of the European Commission.
- e. If the agreements above have not yet led to an expected reduction of carbon dioxide emissions by mobile machinery of 0.4 Mt by 2030 (to be determined in consultation with local and regional authorities), the national government will impose zero-emissions green construction traffic and the use of zero-emissions mobile machinery by 2026. The government will already begin the preparation of legislation to allow rapid introduction of a legal obligation to take place.

Climate-neutral and circular ground, road and water works

The national government, alongside other local and regional authorities, has a strong impact on the development of the ground, road and water works (GWW) sector, which is almost entirely dependent on public procurement. The public authorities will therefore jointly work toward climate-neutral and circular procurement, to allow this sector to operate climate-neutrally. This will involve building on existing partnerships and agreements that were made with parties in the context of the roadmap on circular use of raw materials in the Industry section, among other things.

Agreements

- a. In relation to ground, road and water works (GWW), the national government alongside regional authorities will increase purchasing power, and will make commitments by no later than 2020 regarding the application of climate-neutral and circular methods wherever possible by 2030 (machinery, material supply chains), including procurement and standardisation of the invitation to tender. The national government and other public authorities will encourage measures within their own construction and maintenance processes and by establishing supply chain agreements and Green Deals aimed at product and material supply chains (such as asphalt, concrete, soil and steel). Among other things, the measures will focus on maintenance works that prolong lifespans, on sustainability (low carbon improvements) and on harmonisation of material use. This will involve making use of tools from the Sustainable GWW approach, such as DuboCalc, the carbon dioxide performance ladder and additional procurement criteria. Where possible, the national government and provincial authorities will use their infrastructure to generate energy and for multi-purpose use of space (also see C.5 Electricity).
- b. The national government and local and regional authorities will make their experience with sustainable GWW available (innovations for climate adaptation, climate mitigation and the circular economy) and will share knowledge aimed at making the material supply chains more sustainable and at energy savings and generation in the GWW sector in order to learn more quickly and save costs in implementation.
- c. In relation to tenders and implementation of GWW, the national government will score based on carbon dioxide emissions, where providers with lower emissions will be more likely to receive the contract. In 2019, the national government will be developing a strategy and action programme aimed at achieving fully circular and climate-neutral status in the GWW sector by 2030, in relation to which it will formulate specific carbon dioxide reduction targets in projects that contribute to acceleration of the developments toward zero-emissions vehicles and logistics optimisation formulated in this Agreement.

30% reduction of carbon dioxide emissions through hinterland and continental transport by 2030

The Holland International Distribution Council is a major driver of the Dutch economy. Its activities centre on high-value services, such as supply chain management and service logistics, alongside transport to and from the Dutch major transport hubs, logistics hotspots and production clusters (such as greenports, automotive clusters) via the transport corridors. In order to maintain the Netherlands' competitive position, the national government, local and regional authorities, shipping businesses and logistics providers will make substantial efforts to make transport more sustainable and to improve accessibility. This will be accomplished by improving the efficiency of logistics, including through innovative logistics concepts, smart sharing of data and cooperation in logistics chains, significant improvement of the load factor and optimisation of the use of the available capacity on roads, rail and inland waterways. There will be additional efforts to ensure the rapid growth and integration of zero-emissions lorries and inland vessels and further electrification of the railways.

In order to realise 30% reduction of carbon dioxide emissions, there will be efforts to strengthen European source policy up to 2030 in addition to logistical efficiency improvements. Additionally, public authorities and shipping businesses will include sustainability criteria in their procurement policy. Such procurement policy will increase demand for low or zero-emissions vehicles and vessels. The greater commitment of the sector toward achieving logistical efficiency is expected to result in 0.4 Mt in savings (in addition to the 0.5 Mt improvement from logistical efficiency that is included in the baseline estimate of the PBL, amounting to total savings of 0.9 Mt). In addition, by 2030, 1.0 Mt in savings are expected to be realised as a result of government policies (0.8 Mt through European source policy and 0.2 Mt through the introduction of a tax on lorries for goods traffic).

To achieve this, the parties have agreed the following:

- a. TLN, Evofenedex and the Logistics Top Sector will take the initiative in the development of an integrated sectoral approach to developing sustainable solutions with demonstrably lower emissions and in implementing them in various logistics supply chains, with additional focus on the optimisation of the use of various modes of transport. The aim is to achieve an average improvement of logistical efficiency of 2% per year. In addition to solutions within businesses themselves, the sectoral parties will also take part in partnerships in logistics chains aimed at reducing transportation needs where possible and achieving transport performance with less mileage.²⁰
- b. The national government and Natuur & Milieu will make efforts, alongside the sector, to arrive at (1) ambitious carbon dioxide standards for delivery vans and heavy commercial vehicles, (2) more stringent requirements for vehicle efficiency and (3) an incentive for further sustainability improvements within European source policy in relation to ZE vehicles – all at a European level. The European Parliament is currently aiming toward achieving 20% reduction by 2025 and 35% reduction by 2030 for lorries and delivery vans.
- c. The Logistics Top Sector will develop knowledge, new concepts and pilot projects in order to create demonstrably sustainable logistics solutions, including monitoring. In addition, the Logistics Top Sector will develop quantitative models for sectors aimed at clarifying the considerations between financial efforts, competitiveness and carbon dioxide savings, enabling investment decisions to be taken more quickly.
- d. Furthermore, the national government, in consultation with the sectoral parties, will put measures in place in the inland shipping sector and the railway sector to alleviate capacity bottlenecks and to allow smooth and reliable transport. The measures for the railways will be carried out under the existing package of measures for goods transport by rail and will be taken up jointly by the railway operators/sector.²¹
- e. By 2023, the national government will introduce a tax on lorries, the net revenues of which will primarily be used for the greening and innovation of road transport, in consultation with the parties subject to this taxation. A key objective in this regard is the reduction of carbon dioxide emissions, including through encouragement of non-fossil fuel vehicles. Based on agreements with parties liable for the tax, the revenues can also be used for further sustainability improvements in the logistics sector. A governance model for channelling the revenue has yet to be developed by the parties in more detail. The Mobility Platform considers it crucial that the introduction of the tax on lorries, as announced in the Coalition Agreement, should constitute an integral part of the future system of taxation and levies (as set out in C2.1.3). With regard to making road transport more sustainable in the short term, the national government is developing a compensation scheme for bio-LNG for 2019 and 2020.
- f. The national government will be advancing the development and supply of zero-emissions vehicles and vessels by manufacturers through the Top Sectors (Logistics, HTSM and Water) and will support them through the DKTi scheme. In addition, it will be determined whether prefinancing via NL Next is possible. The national government will accelerate the development of charging and refuelling infrastructure for zero-emissions vehicles and vehicles powered by alternative fuels at transport corridor level. The corresponding

²⁰ This sectoral approach can count on support from the Logistics Top Sector/Dinalog and will result in concrete instruments and guidance for businesses on supply chain cooperation in practice. To support these initiatives, businesses will invest in IT (such as control towers), in the development and procurement of clean technology for vehicles (electric inland vessels, electrification of rail traffic at the terminal), in the optimisation of the use of various modes of transport, in the use of super lorries (and DUO trailers) and in connected & automated driving services (platooning). Shipping companies will be closely involved in the initiatives, as a result of which they will take sustainable logistics into account more seriously in their purchasing process. Companies will implement a monitoring system to be able to log the company-specific carbon dioxide emissions of the transport objectively.

²¹ This package will both directly and indirectly result in more trains on tracks (an SCBA has indicated growth from roughly 200 tonne-kilometres by rail in 2019 to roughly 350 tonne-kilometres by 2023).

development will take place in the plan for alternative refuelling infrastructure (AFID + DKTI) (furthermore, charging infrastructure logistics is part of the National Charging Infrastructure Agenda).

Inland shipping

The Green Deal for maritime shipping, inland shipping and ports will include the shipping sector's objective of achieving CO₂ reduction in inland shipping. The national government is prepared to examine the options available to support the aim of the sector using existing resources up to a maximum of 0.4 Mt by 2030. With regard to implementation, various options will be developed for the use of sustainable energy carriers, including hybrid electric, hydrogen and sustainable biofuels (including HVO: Hydrotreated Vegetable Oil), to ensure at least 5 PJ worth of sustainable energy carriers are implemented in inland shipping. The inland shipping sector and the national government will focus on achieving incorporation of 150 zero-emissions vessels (based on modular energy supply) by 2030. In the run-up to zero-emissions vessels, the focus will be on a blending percentage of 30% biofuels for inland shipping vessels. Ensuring sufficiently advanced renewable biofuels will take place within the sustainability framework for biomass.

In order to achieve lower carbon dioxide emissions in inland shipping through market stimuli, the GLEC framework may be applicable following further development. The objective is to achieve a system in which businesses will be able to demonstrate that they have reduced carbon dioxide emissions of their own transport by a certain percentage via certification (using a system of independent accountants). This will require the development of the system, testing within inland shipping and roll-out via an international ISO standard if good results are achieved.

C2.6 Commitments on sustainability improvements to passenger mobility

In addition to technological developments in the propulsion of modes of transport or the fuels that are produced to that end, mobility behaviour is crucial to achieving CO₂ reduction. Ultimately, the choices made by travellers and passengers determine emissions. By not travelling or travelling less, and by choosing the cleanest forms of the various modes of transport, we are able to make our travel behaviour more sustainable and reduce our carbon footprint.

Reduction of 8 billion kilometres in business mileage by 2030

Given that more than half of road mileage in passenger transport is related to work, employers have a major role to play in greening mobility, not only through their car fleet, but also by having their employees travel or work in a sustainable manner. This will lead to fewer carbon dioxide emissions and will encourage broader sustainability improvements in passenger mobility, both for commercial purposes and private persons. The agreements with employers are aimed both at increasing the number of employers making efforts to achieve lower emissions by work-related traffic and at scaling up and rolling out best practices. Efforts are also underway to embed sustainable mobility in a legal framework. This should enable the level of road mileage to be reduced by 8 billion kilometres by 2030, which will result in substantial fuel savings and should save at least 1 Mt of carbon dioxide in addition to the savings achieved through the electrification of the vehicle fleet.²²

The parties have noted that stimulation of transport that is already sustainable may lead to bottlenecks in the infrastructure. They have agreed to examine whether and how existing

²² Source: CE Delft (2018) *CO₂-effect van Anders Reizen* [The Effect of Travelling Differently on Carbon Dioxide Emissions]

infrastructure can be used even better in order to absorb the expected growth in bicycle and public transport use. The Multi-year Programme for Infrastructure, Spatial planning and Transport (MIRT) and the regional programmes for smart and sustainable mobility will periodically examine new opportunities for projects and measures that contribute to this.

At least 1,000 employers to halve carbon dioxide emissions of commercial mobility

In practice, employers have a range of possibilities available to them to make work-related mobility more sustainable. Within the Transforming Travel coalition, over 45 major enterprises have committed themselves to halving carbon dioxide emissions for business mobility and commuter traffic in 2016 – 2030.

A top ten of measures – the New Normal – was drawn up to achieve the envisaged reduction based on best practices of participating parties.

Framework: Current Top 10 Transforming Travel measures

1. *less travel through flexible working policies: avoiding rush hour, working from home one day a week and video conferencing;*
2. *parking policy: parking only permitted for employees who commute or have no other sustainable travel options, such as those who live more than 10 km away from work or cannot use public transport;*
3. *lowering the carbon dioxide threshold when purchasing a new company car and making electric vehicles more attractive;*
4. *mobility budget with a bonus-malus system; reward sustainable road and travel behaviour, clean car choice and flexible choices in favour of public transport and bikes;*
5. *mobility card for all lease drivers; lowers the threshold for travel by public transport;*
6. *relocating to a public transport location; at natural opportunities, relocate to a station/public transport hub;*
7. *offering new employees free use of public transport in the first three months, then allowing them to choose;*
8. *offering free public transport access for personal use and for business purposes for employees with a private car;*
9. *rail travel instead of air travel for distances under 700 km, where travel time from door to door by train is <150% the travel time by aircraft;*
10. *behavioural campaign or contest to experience sustainable travel; periodic participation in Low Car Diet or a comparable programme.*

The parties have agreed the following:

1. As many employers as possible, and at least 1,000, will commit to realising at least 50% in CO₂ reduction for business mobility by 2030, compared to 2016 levels. The parties will achieve this by communicating with employees on sustainable mobility, by putting in place reduction measures and by monitoring progress.

The parties will undertake the following actions:

- a. The Transforming Travel coalition will expand to 80 employers in 2020 and to 500 employers by 2030. The national government will provide a portion of the necessary supporting capacity for the expansion of Transforming Travel.
- b. The national government, the IPO and the VNG will involve regional networks of employers in the implementation of the Climate Agreement and at least 80 employers in 2020 – and 500 employers by 2030 – will commit to realising at least a 50% reduction in carbon dioxide for business mobility by 2030, compared to 2016 levels. Specific agreements, including on results, will be made within the context of the MIRT pursuant to the regional implementation.

- c. The national government, the IPO, the VNG and Transforming Travel will ensure effective coordination between national and regional efforts in order to limit the administrative burden for employers. In particular, agreements will be made on setting up and implementing a harmonised, uniform and independent monitoring system.

Furthermore, the Transforming Travel coalition (AR) will undertake the following steps in consultation with the relevant parties:

- Parties participating in the Climate Agreement will strive to join as employers.
 - The national government will join as an employer.
 - The IPO and the VNG will determine when they are able to join the Transforming Travel coalition collectively. Where possible, individual municipalities will immediately join as employing parties.
 - The Confederation of Netherlands Industry and Employers (VNO-NCW) will recruit employers from among its members (through the regional network).
 - Transforming Travel will recruit industry associations to endorse the objective on behalf of their members and will begin with NLIingenieurs and teaching hospitals.
 - The VNA will recruit members through leasing businesses.
- The affiliated employers will aim to carry out all frontrunner measures, as these are financially attractive to most employers. This chiefly relates to the introduction of parking policies, switching to fully electric company cars, free access to public transport (personal and business), a bonus-malus system for the introduction of a mobility budget – within the applicable fiscal frameworks – and providing lease drivers with a mobility card. The list of measures is dynamic. If a measure is implemented by most employers, such as the introduction of flexible working policies, this will become standard practice and a new best practice will be added, such as promotion of bicycle use.
- The Transforming Travel coalition offers businesses added value. Businesses that take part in Transforming Travel benefit from a variety of advantages, in addition to sharing and developing knowledge and experience. The members of Transforming Travel demonstrate that they are working in earnest on making mobility more sustainable (carbon dioxide reduction, health and productivity). It will be determined whether membership of Transforming Travel can be integrated into procurement instruments (such as the carbon dioxide performance ladder), quality marks and certificates, to allow Transforming Travel membership to be used to meet the standard more easily. In order to take advantage of these benefits, Transforming Travel members will take on the obligation to conduct an annual progress review. At the start, the members will draft a carbon dioxide reduction plan for mobility. If a given member is lagging behind in terms of its own reduction plan, this will be met with a warning and a request to demonstrate that the target will nevertheless be met. Businesses that do not meet the requirements of their own reduction plan in a subsequent year will be placed on a so-called "orange" list, where additional commitment is required for additional steps. If, at the end of the third year, the targets are shown not to have been met, the company is stripped of its membership and thereby of the benefits.

Standards for employers

In addition to further stimulation by frontrunner employers, standards will be introduced to ensure other businesses take the appropriate steps as well.

The parties have agreed the following:

2. From early 2022, standards embedded in legislation will take effect for employers with more than 100 employees. In total, this relates to over 7,000 employers, collectively representing 4.9 million employees. Agreements 1 and 2 are expected to yield carbon dioxide gains of 1.0 Mt by 2030.

- d. Together with relevant parties, the national government is working on the introduction of normative regulations under the Environment and Planning Act, which are intended to mitigate the adverse effects of work-related traffic, vehicle fleets and logistics on the climate. Work-related traffic in this case refers to commuter traffic and business traffic. The regulations will aim to create a level playing field for the efforts of employers in the field of climate policy and to include any parties lagging behind, with a key condition being a minimal administrative burden for employers and enforcement agencies. There will be particular focus on the position of and the administrative burden on SMEs. Frameworks and basic principles regarding commuter and business mobility and vehicle fleets:
- target group: the regulations will be aimed at employers who employ over 100 employees. With regard to logistics, the lower threshold will be determined by the number of goods movements;
 - type of standard: the objective will be to realise a standard, such as maximum emissions per employer, which will take into account the location and the number of employees. As a result, employers who have already taken a large number of steps in this field will not be disadvantaged. By using an outcome-oriented standard, employers will be able to determine how they will meet the requirements of the standard themselves, leaving room for tailored solutions;
 - level of the standard: the standard will be determined in 2019. The key principle in the consulting process is that the standard should at least result in overall reduction across all businesses of at least 25% of the total carbon dioxide emissions resulting from work-related traffic by 2030, compared to 2016 levels (lower threshold). The standard will be dynamic and will be tightened in stages, where necessary. This will take place in consultation with the national government and parties involved and will allow flexibility for tailored solutions. Prior to the tightening of the standard, a survey will be carried out into the effects of tightening on employers. The outcome of this survey will guide the potential tightening of the standard. A minimal administrative burden for and the special position of SMEs will be a key priority in tightening the standard. The standard will be evaluated on a regular basis and will be submitted to the House of Representatives for approval;
 - support of compliance practises: employers will be facilitated and supported in the way in which they are able to meet the requirements of the standard, for example through Transforming Travel, quality marks that allow them to meet the standard or regional networks of employers. This will be initiated following the consultation process in 2019, to ensure that employers are adequately prepared. In addition, steps will be taken to ensure easy and clear access to information and best practices, such as electric transport, bicycle promotion, working from home or parking policies, via the platform outlined in measure 3f below;
 - reporting and monitoring: employers will report the impact to the environmental agencies. A tool will be developed to that end that will allow the carbon footprint of work-related traffic to be registered clearly for each company. This is in line with the agreements on the creation of a harmonised, uniform and independent monitoring system under 1c. The tool will take into account the aim to ensure the lowest possible regulatory burden for employers;
 - monitoring and enforcement: the local and regional authorities are the intended competent authority. Environmental agencies will be charged with oversight on and enforcement of the regulations. To this end, they will be given powers of inspection and enforcement instruments, including (recovery) sanctions.

Specification:

- The national government will be charged with the development of this agreement and establishing the regulations. The IPO, the VNG, employers and environmental services will be involved in drawing up these standards in order to achieve the best possible

implementation. By mid-2019, this advisory process will lead to a decision on the type of regulations to be introduced.

- The advisory process will in any case separately take into account passenger traffic and goods transport and in both cases shall take into account the position of SMEs.
- The opinion must align with existing and parallel processes (Energy Efficiency Directive (EED) and Multi-year Agreements on Energy Efficiency (MJA) and establish an effective transition between current and new regulations.
- A key point for attention in this process is the feasibility and the way in which employers can be facilitated in meeting the requirements of the standard. Implementation of the regulations will align with certification requirements and quality marks (including the CO₂ performance ladder, Breeam, ISOs) and vice versa. It will also be determined whether Transforming Travel membership can be integrated into these quality marks and certificates, to allow that membership to be used by participants to meet the standard more easily. In this context, there will also be a focus on the development of a simplified and efficient oversight and enforcement mechanism.
- The objective is the introduction and enforcement of a dynamic standard as of 2022 that can be recalibrated in stages. The period between recalibration and re-assessment must be such that the market is provided with clarity and that employers have the opportunity to take into account the standards in relation to their organic investment opportunities (e.g. every four years).
- In relation to any potential delay of the desired amendment of the Environment and Planning Act, the possibilities for retaining the duty of care for work-related traffic in the Environmental Management Act (Section 2.16) and to supplement it with the option to include Accredited Measures (*Erkende Maatregelen*), which have already been included in the Order in Council but are currently frozen, are being considered in parallel to this process.

Informing the public

The parties will inform the public regarding the available opportunities in the field of sustainability improvements to mobility.

The parties have agreed the following:

3. The parties will take on informing the public as part of their joint responsibilities. These actions will be aimed at all employers and employees in the Netherlands, 7.9 million people in total.

- e. In the coming years, ANWB, BOVAG, RAI Vereniging, the Dutch Cyclists' Union (*Fietzersbond*) and the Transforming Travel coalition will use their own communication channels to bring sustainable mobility (car sharing, cycling, tyres, public transport, EV, MaaS, travel allowance) to the attention of their members.
- f. The national government will facilitate the establishment of a platform that inspires and informs employers and employees on making mobility more sustainable.
- g. In 2019, the national government will study and reinforce the systematic behavioural impact of the Low Car Diet (LCD) campaign. Provided the impact has been demonstrated to be sufficient, the national government will also make efforts to enable the LCD beyond 2019, to ensure that 10,000 employees gain experience with sustainable travel alternatives each year.
- h. The national government, RAI Vereniging, BOVAG, ANWB, the VNA, Stichting Band op Spanning, the Dutch Noise Abatement Society (NSG) and Milieu Centraal will make efforts to achieve sustainable behavioural changes in motorists regarding the fitting of the most appropriate tyres and maintaining the correct pressure. The national government will facilitate public campaigns that are aimed at increasing tyre awareness up to 2020, like the ongoing *Kies de Beste Band* (Choose the Best Tyre) programme. In the subsequent

period, RAI Vereniging, BOVAG, ANWB, the VNA and Stichting Band op Spanning will take charge of the progress of communication with the general public through their own communication channels, such as the holiday checks conducted by ANWB and BOVAG and events, allowing impact to be monitored as much as possible. This will be monitored periodically.

Specification:

- The national government will facilitate the establishment of a platform that inspires and informs employers and employees on making mobility more sustainable. The platform will set out the opportunities available to employers (such as best practices, Transforming Travel, the Kies de Beste Band programme, public transport and cycling promotion). The national government will use this platform to inform the public on the fiscal options available to encourage sustainable mobility within the current boundaries of the tax system. In addition, the platform will provide an overview of services that employers can support (such as the Low Car Diet, rij2op5, Lean and Green) and of existing quality marks and benchmarks. The national government will regularly monitor the platform and the information contained on it through its communication channels.
- The Dutch Cyclists' Union and Wandelnet will set up the Dynamic Work Alliance (*Alliantie Werken in Beweging*). The alliance will provide employers and employees with inspiration on the most effective measures in the field of healthy working practices, including transportation and a healthy workplace.

Acceleration and facilitation

There are various other lines along which sustainable mobility can and will be further accelerated and supported.

The parties have agreed the following:

4. Measures to be agreed upon regarding the acceleration and facilitation of sustainable passenger mobility.

Embedding in collective labour agreements

- i. In 2019, the national government and Transforming Travel, in consultation with the trade unions, will examine the possibilities for embedding current fiscal schemes for sustainable business transport (including bicycle schemes) in collective labour agreements (CAOs).

Municipal policy

- j. Accessibility within the city should be considered in conjunction with the development of the quality of the living environment, the availability of alternative transport, urban development and parking facilities within (inner) cities. Naturally, the organisation and development of a city is and shall remain the responsibility of the municipal authority.
- k. The IPO, the VNG, and the national government, within the context of the National Environmental Planning Strategy (NOVI) and its regional implementations, have agreed on extensive bicycle parking standards for businesses and homes as a new standard and to be applied as a requirement. To this end, the parties will enter into a voluntary agreement in early 2019. As of 2019, new standards will be applied to construction sites for new buildings, which will also be applied to the renewal of all environmental permits and plans in the years thereafter. For that purpose, public authorities will at least use the revised 2018 key indicators (prepared by the Fietsberaad, the Dutch cycling council).

Tax arrangements

- l. The national government, RAI Vereniging, BOVAG, NS, the VNA and Transforming Travel have agreed to examine tax arrangements and the application thereof for such schemes for the purpose of making the greening of mobility more attractive to employers.

In line with this, the parties have agreed the following:

- The national government will produce an up-to-date overview of the fiscal opportunities available for sustainable work-related traffic for employers and employees. The national government and Transforming Travel will examine the current use of fiscal options by employers.
- In the vision on the new motor vehicle tax system beyond 2020, the national government, the VNA, Transforming Travel and Dutch Railways (NS) will explore possible agreements on the untaxed compensation of parking fees of park & ride sites as well as bicycle parking as part of multimodal travel.
- The national government will work with and communicate with the Transforming Travel coalition on existing opportunities within travel allowance schemes, such as travel allowance for cyclists and walkers of 19 cents per kilometre and company bicycles.

International travel up to 700 km

- In 2019, the national government and NS will examine equivalent conditions in relation to the price of international aviation travel and rail travel up to 700 km.

Regional approach

- m. Regional Climate Agreement approach for the mobility domain: In order to ensure the commitments of the Climate agreement are upheld, agreements will be made regarding their implementation. All parties will bear collective responsibility for this, each acting within their own role and responsibility. A key segment of the measures must be realised at a local and regional level. In order to structure regional implementation of the Climate Agreement, a programme for smart and sustainable mobility will be set up per region (hereinafter referred to as "regional programmes"), along with a national equivalent (hereinafter referred to as the "national programme"). These programmes will see municipalities, provinces, the national government, private parties, such as employers and service providers, and other regional stakeholders, such as educational institutions and hospitals, participating alongside one another. The programmes will drive the implementation of measures from the Climate Agreement for mobility, monitor progress and apply adjustments where necessary. Where possible and desirable, there will be alignment with existing structures, such as the accessibility programmes in the Amsterdam Metropolitan Region, The Hague Metropolitan Region and Utrecht (U Ned). While the parties will take the time to set up these programmes, this will not prejudice the fact that some agreements will start with immediate effect.

The national government, municipalities and provinces will jointly begin the following as soon as the Climate Agreement has been signed:

- The national government, provinces, municipalities and the partners above will jointly draft action plans for regional programmes, which will inter alia determine the most appropriate regional format. These plans will also contain draft agreements on targets, development strategies, governance and finance provisions.
- The national government will facilitate the regional programmes through active participation and support and will manage the consistency and cross-regional, national aspects (laws and regulations, standardisation, frameworks, etc.). To carry out this national management task, the national government will launch a national programme for Smart and Sustainable Mobility with administrative, strategic consultations, with representation of regional and other parties. These consultations will focus on:
 - the transition toward a sustainable and climate-proof mobility system;
 - the relationship between mobility and spatial planning, the National Housing Agenda and the National Environmental Planning Strategy (NOVI);
 - the desired mobility transition as set out in Carefree Mobility (*Zorgeloze Mobiliteit*);
 - what this requires in terms of instrumentation, such as the Mobility Agenda, the Mobility Fund and commitments on governance and cooperation. Consultations are

already ongoing with the relevant parties regarding one of these instruments, namely the Mobility Fund.

An administrative consultation at the start of 2019 will see the adoption of an implementation agenda for the process to realise both regional programmes and a national programme. The initial draft action plans for the regional programmes and the national programme will be discussed at the Administrative Consultations for the MIRT (*Bestuurlijke Overleggen MIRT*, BO MIRT) in the autumn of 2019. These plans will eventually be adopted within the context of the MIRT.

MIRT programmes

- n. The parties have agreed to the smart use of existing MIRT programmes (Multi-year programme for Infrastructure, Spatial Planning and Transport) for sustainable mobility up to 2028.

In specific terms, the parties have agreed the following:

- The national government, the IPO and the VNG have committed to examining whether measures for cycling and multimodal hubs, which have a technological/financial and/or social value, would be beneficial to include in changes to road, water and rail infrastructure in ongoing MIRT pathways.
This will be done by considering the opportunities and impact of cycling when determining the scope of projects. In addition, a survey will be set up into the opportunities and challenges with regard to the realisation of cycling projects within the programmes, and recommendations will be made on how to deal with them.

Bicycles

- The national government recognises that bicycles provide an attractive, sustainable and healthy alternative for people to travel short distances from A to B. For that reason and given the broad range of promising projects available, the national government will be making a further 75 million euros available, in addition to the Coalition Agreement funding, for the co-financing of investments in bicycle parking facilities at public transport hubs.
- The national government, the IPO and the VNG, within the context of the Tour de Force, have agreed that a survey will be completed at the start of 2019 into promising link-up opportunities between ongoing national programmes and surveys into the desired and required cycling investments by provinces, the VNG, F10 and the Directorate-General for Public Works and Water Management. These would be link-up opportunities, for example, with the "Smart and Sustainable Mobility" programme, the "Management, Maintenance and Replacement of the Main Motorway Network, Main Waterway Network and Railroads" programmes, the "Less Nuisance" programme and the major infrastructure projects on a national and regional level. This would relate, among other things, to the construction of a cycling bridge within a replacement project, which can be carried out far cheaper by combining these projects. Projects can be linked provided that budgetary cover exists. Opportunities for doing so may not lead to a decrease in safety of the existing main motorway and railway networks or to delays in the schedule.
- Based on the survey, a joint overview of promising cycling and urban logistics projects and multimodal hubs will be established by the end of May 2019 in consultation with Tour de Force. This will relate either to projects that anticipate growth in specific trajectories or to projects that will result in significant improvements in quality (such as the removal of barriers) that would make either the transitions from cars to bicycles or the bicycle-public transport chain more attractive and are facilitated by regional incentives. This will also involve examining the relationship with regional accessibility challenges and the targets of the Regional Energy Strategies. This overview will support the prioritisation of cycling and other projects and will be used in BO MIRT consultations and in consultations within the

region and between the region and the government. The programmes for smart and sustainable mobility will periodically consider new opportunities for projects.

- The national government, provinces and the VNG, in their commitments on sustainable public procurement, will include a provision to the effect that, whenever a public tender should relate to cycling, customer needs will be specifically taken into account.

Hyper rush hours

- o. The national government and NS (as well as any other public transport operators) will shape the approach to hyper rush hours ("*hyperspits*") based on agreements in the field of influencing demand, use of capacity and concession and other agreements in respect of optimising timetables. Other authorities granting concessions and transport operators will be involved in the process of effectively coordinating similar initiatives in local and regional public transport and on the main railway network and preventing hyper rush hours from getting worse in local and regional public transport as a result. In 2019, NS and the national government will arrive at a joint proposal for the implementation of demand management, including price incentives, on specific lines. The pilot projects and/or measures will initially focus on the busiest lines. The proposal will relate to potential lines and to financial coverage, among other things. Given that NS and the national government regard hyper rush hours as a social problem, both parties wish to come to proposals that are supported by the general public. In addition, the national government, NS and any other transport operators and authorities granting concessions will engage in a dialogue with educational institutions regarding the staggering of teaching times to create a sufficient amount of flexibility in hyper rush hours. In addition to better use of existing rail capacity, steps will also be taken to allow capacity on the rail network and in rolling stock to be increased. Potential pilot projects with autonomous rail traffic will also be a part of this.

In respect of the approach to hyper rush hours, the parties have agreed the following:

With regard to demand management:

- In 2019, NS and the national government will come to a joint proposal for the implementation of an instrument for discounts on the fringes of rush hours ("*schouderspitskorting*") on specific busy lines, possibly in combination with pilots using other forms of price incentives and other demand-management measures. Other authorities granting concessions and transport operators will also be involved in the formulation of these pilots. These measures will serve to allow more passengers currently travelling during hyper rush hours to travel on trains at the start and end of rush hours and outside of rush hours. This will create more flexibility for new train travellers during rush hours. NS, in consultation with the national government, will formulate a process in which local demand management initiatives can be designed in collaboration with all relevant stakeholders. In this way, NS and the national government jointly wish to come to proposals to tackle hyper rush hours that are supported by the general public. This will also involve setting up a monitoring and evaluation system that can be used to measure the progress and cost effectiveness of the various initiatives and pilots. Depending on its implementation, this proposal may entail additional investment. Relevant financial coverage will also constitute part of the proposal.
- The national government, NS and any other transport operators and authorities granting concessions will engage with educational institutions regarding the staggering of teaching times in order to create sufficient flexibility during hyper rush hours. The objective of this strategy is to ensure that, by 2023, the number of students during hyper rush hours will have decreased by 20% (corrected for autonomous growth). In addition to commuters, students make up a significant portion (approximately 1/3) of passengers during hyper rush hours, given that lectures and lessons often start between 8.30 and 9.00 am. Following up on the initiatives in Nijmegen, a survey will therefore be conducted as to the conditions under which educational institutions will be able to adjust their teaching times.

Formulation of these steps will take into account the regional circumstances and context (distribution of responsibilities), the costs that an educational institution will incur for adjustments and/or types of incentives and the impact on students and staff.

With regard to capacity expansion and optimisation of timetables:

- The national government, other authorities granting concessions and the parties in the sector will continue their existing efforts in terms of increasing capacity and the optimisation of train timetables. This will be accomplished by operating a high frequency of services on various lines and through the purchase of new rolling stock, among other methods.
- By the end of 2019, the national government, the Human Environment and Transport Inspectorate (ILT), transport operators and possibly other parties will examine if and how changes to standards can be achieved that would lead to an increase in existing rolling stock and/or rail infrastructure capacity without this being detrimental to safety. In this context, consideration will be given to changes to the interior of trains and changes to statutory maximum braking distances. Where necessary and possible, this may lead to optimisation in applicable laws and regulations. The objective is to consider how existing rolling stock and rail network capacity can be used more efficiently.
- The national government, ProRail, the ILT and any other transport authorities will examine whether, and under what conditions, pilot projects of transport operators with self-driving trains can be realised. The objective is principally to gain a better understanding of the efficiency impact of self-driving trains.

Mobility as a Service (MaaS)

p. In respect of the approach to Mobility as a Service (MaaS), the parties have agreed the following:

- The national government is currently carrying out seven nationally scalable MaaS pilot projects. The Transforming Travel coalition and the parties united in the Mobility Alliance (*MobiliteitsAlliantie*) will make efforts to contribute to the success of those pilots. In addition, operators will make efforts to collaborate on making available tickets with appropriate technology to the parties that are to carry out the pilots. They will independently shape this ambition within their commercial policies.
- The national government and local authorities will facilitate and encourage sharing concepts. Municipalities will include parking facilities and charging equipment in zoning plans in physical space, including close to public transport locations. Sharing concepts are part of the MaaS pilots.
- The national government and local authorities aim to jointly establish a standard language and protocol with market parties for providers within MaaS in order to facilitate maximum access to the various modes of transport. It is vital that various public authorities be able to use data and set out framework conditions for mobility and sustainability policy. Such policies must centre on passengers. MaaS can contribute to behavioural change in passengers and as such can contribute to carbon footprint reduction, for example through transparency of mobility use and the designation of environmental zones in apps – in these ways, the MaaS ecosystem will truly be able to contribute to modal optimisation. The MaaS pilots should provide more insight into this aspect.

Tyres

q. In respect of motor vehicle tyres, the parties have additionally agreed the following:

- The national government, RAI Vereniging, BOVAG, ANWB, the VNA, Stichting Band op Spanning, Milieu Centraal and the NSG will work together to ensure that, by 2030, a significantly increased number of vehicles will be using the most suitable and best available tyres for the vehicle, with the correct tyre pressure. The aim of the parties is to ensure that the entire vehicle fleet is elevated to a label that is one level higher in terms of rolling resistance compared to 2018. In addition, the parties share the ambition of the number of vehicles with the correct tyre pressure having increased by 50% by 2030 compared to 2018.

- The national government, RAI Vereniging, BOVAG, ANWB, the VNA and Stichting Band op Spanning will make efforts to take up a joint position in a national context with regard to tightening rolling resistance for tyres and implementing this in international umbrella organisations for the consultations in the negotiating platforms in Brussels and Geneva.
- The national government, RAI Vereniging, the VNA, BOVAG and ANWB will make efforts to ensure that the fitting of tyres, with the exception of winter tyres, should use products that are at least as efficient as laid down in the Certificate of Conformity (CoC). If an interim evaluation in 2022 should show that, in conjunction with EU lobbying, this has resulted in insufficient impact, the national government will consider additional measures to achieve this goal.
- The national government, working alongside BOVAG and ANWB, has developed e-learning materials for tyre professionals. The initial costs have been borne by the national government. BOVAG will ensure that employees follow the course; at least half of those employees will have completed the course by 2025. The employers of the tyre professionals will bear the costs of participation in the course.
- The national government, the VNG, the IPO, RAI Vereniging, BOVAG, ANWB, the VNA and Stichting Band op Spanning will select the best tyres based on the highest level of ambition for sustainable procurement criteria when purchasing replacement tyres for their own vehicle fleets or when entering into new procurement contracts for replacement tyres for their fleets.

It is expected that these measures will result in reduction of at least 0.1 – 0.2 Mt.

Car sharing

r. Car sharing:

- All parties support the objective of the Green Deal - Car Sharing II regarding growth to 100,000 car shares by 2021 and support the implementation of this Green Deal. Specific plans for the sharing of e-vehicles are listed under section C2.4.

C2.7 Shipping and aviation

The commitments regarding shipping and aviation do not constitute part of the agreements made by parties at the Mobility Platform of the Climate Agreement, given that agreements made in respect of shipping and aviation are chiefly made at an international level, due to the cross-border nature of these modes of transport. This was also agreed upon in the Paris Agreement. In line with the Paris Agreement, only emissions within the Netherlands fall within the national target of the Climate Agreement, such as those of airport operations and domestic flights. Nevertheless, major steps must be taken in the Netherlands to significantly reduce carbon dioxide emissions from shipping and aviation. The Netherlands wishes to take a leading position and by doing so lead the development of innovations, in addition to reducing carbon dioxide emissions.

International approach

In April 2018, the International Maritime Organization (IMO) agreed to a significant reduction of carbon dioxide emissions by the maritime sector. All 173 countries that are members of the IMO, including the Netherlands, agreed that overall greenhouse gas emissions from international shipping should be halved by 2050 compared to 2008 levels and that the sector should operate in an entirely climate-neutral fashion as soon as possible. In order to achieve these goals, a stepping stone was agreed upon: by 2030, vessels must already emit 40% less carbon dioxide emissions. These commitments are a crucial step toward the further development of measures for the accelerated greening of the international shipping sector.

In relation to aviation, it was agreed in the Paris Agreement that the International Civil Aviation Organization (ICAO) would be responsible for carbon emissions reduction for international aviation and that the Member States would be responsible for emissions

reduction for domestic flights. The targets to be pursued in relation to carbon dioxide reduction for international aviation are laid down in the ICAO Assembly Resolutions (2010; 2013; 2016). In addition, aviation businesses and knowledge institutes have committed themselves to reducing emissions in national and international aviation by 35% by 2030 through the "Dutch Aviation, Smart and Sustainable" action plan. The sustainable aviation platform will conduct further consultations on making this target more stringent.

National approach

At present, consultation platforms have also been set up in our country for the shipping and aviation sectors, with ambitions, targets and actions being formulated. These are being used to prepare an ambitious approach for sectors that have a major climate impact.

The shipping sector is developing an action plan within the Green Deal for Inland Shipping, Maritime Shipping and Ports aimed at realising the target of 40% fewer carbon dioxide emissions by 2030, which was adopted by the International Maritime Organization (IMO).

The Sustainable Aviation platform also wishes to make an active contribution via measures that relate to emissions from domestic aviation. The platform will therefore seek alignment with the Mobility Platform in the implementation of the Climate Agreement.

C3 Industry

C3 Industry

C3.1 Vision for 2050

By 2050, we envisage the Netherlands to be a country with a thriving, circular and globally leading manufacturing industry,²³ where greenhouse gas emissions are almost zero. We envisage a country where innovative businesses and initiators are willing to produce and innovate and where an innovative manufacturing industry, with ever dwindling carbon dioxide emissions, is able to contribute to our prosperity, our well-being and the nation's employment.

Achieving this goal will require a transition, given that current industry still emits too many greenhouse gases. This transition process involves system changes with regard to energy and use of raw materials. Dutch industry must and wishes to be a key driver of the transformation to a sustainable and circular economy. The Netherlands is in a position to demonstrate that complex system changes to industry are not only achievable, but can also provide competitive advantages. Synergy benefits can be achieved through the optimisation of the use of feedstock and materials streams through cooperation between businesses in industrial hubs. System changes require cross-sector cooperation between public and private sector parties, the flexibility to learn and experiment, the deconstruction of non-sustainable structures and the construction of sustainable structures.

C3.2 Target and ambitions for 2030

C3.2.1 Target

In order to realise this attractive prospect, the government has formulated the ambition to be climate neutral in a European context by 2050, and to achieve a 49% reduction in carbon dioxide emissions by 2030, compared to 1990 levels, as an intermediate step, with a view to achieving a 55% reduction by 2030. With this ambition, the Netherlands aims to undertake the transition necessary to realise the targets agreed on in the Paris Agreement sooner than other countries. This will require additional investments, from Dutch industry in particular. We would like the industry sector to make these investments in the Netherlands, as industry offers many solutions that are important elsewhere in society and also abroad.

The ambition for industry shared among all parties is by no means insignificant. With an indicative target of 14.3 Mt in carbon dioxide reduction to be achieved on top of existing policy in the baseline trajectory of the PBL, the emissions reduction for industry comes down to approximately 59% compared to 1990. In 1990, emissions amounted to 86.7 Mt. In 2015, the emissions figure for industry had decreased to 55.1 Mt. This means the indicative target for industry is a further 19.4 Mt in reductions by 2030. This is a combination of existing policy and the additional target (5.1 + 14.3 Mt). The target for industry is not only considerable in absolute terms, but is equally significant in comparison to the other sectors.

The underlying reason is that industry is able to reduce carbon dioxide emissions at limited costs compared to other sectors.²⁴ These reductions are cost efficient, although they still require a great deal from individual businesses.

The challenge facing the manufacturing industry requires a future-oriented public-private partnership approach in which businesses invest in a sustainable future, the government provides targeted facilitation of those steps and creation of new and existing value is key. The

²³ Industry in this case includes waste incineration plants and both ETS companies and non-ETS companies.

²⁴ Letter to Parliament of 23 February 2018, "Government commitment to the Climate Agreement".

key focus will be the emissions reduction target. However, in order to achieve that goal and simultaneously retain our prosperity, a transition will be needed, involving the building of new activities, the conversion of existing activities and the phasing out of activities that no longer fit within the climate-neutral and circular economy envisaged for 2050. This transition toward a new climate-neutral industrial sector is a system change, which will require coordination and cooperation between national actors: primary and manufacturing industry, other actors in the supply chain, public authorities and knowledge institutions.

In addition, international agreements will be required, on strengthening existing systems such as the ETS, support from the EU for innovation and infrastructures and for cross-border trade and cooperation. Last, but certainly not least, effective integration of the transition into society is crucial. This will require an industry sector that does not pass on costs to taxpayers and a society that is aware of the demands and restrictions set by international competition.

The success of the energy transition crucially depends on opportunities for the economy and employment being seized and on social risks, such as job losses in fossil-oriented sectors, being absorbed effectively. Everyone should have a suitable role to play in the labour market of the future.

In its advisory report entitled *Energy transition and employment*²⁵, the SER highlights the importance of cooperation, coordination and consultation in this regard. Cooperation between employers' and employee organisations, public authorities and regional organisations should help resolve growing labour market shortages. With regard to parties losing employment in fossil energy sectors, it is vital that employers and employees consult with one another in a timely manner. They will have to take initiatives together and reflect on career advice, training budgets and supervision from one job to another. In parallel, public authorities will also be responsible for helping people find work and making training accessible, as well as for providing a safety net for employees who ultimately cannot find another job. The national government will assume partial responsibility for ensuring a fair transition, which will also account for the social consequences of the transition.²⁶ Further implementation was outlined in detail in the Labour market and training chapter of the draft Climate Agreement (pp 193 – 206).

C3.2.2 Ambition

As is the case for the other sectors, we wish to realise a true transition for the industry sector. This means that we wish to offer industrial businesses prospects to ensure the transition to radical greenhouse gas emissions reductions in the Netherlands will take place. Although it would be possible to realise the national targets by shifting industrial activities abroad, increasing emissions abroad would ultimately not benefit the climate, and this shift would create a risk of loss of activity and jobs in the Netherlands. For that reason, the realisation of the reduction ambitions will have to go hand in hand with retaining a business climate that is attractive to businesses in the industry sector. This will contribute to our prosperity, our well-being and the nation's employment.

Broadly speaking, Dutch industry will be able to shape the transition through measures such as process efficiency, energy savings, CCS, electrification, use of blue and green hydrogen and acceleration of circularity (such as plastics recycling, biobased raw materials or steel2chemicals). This is by no means a blueprint for the transition, but rather the starting point for an adaptive process, in relation to which there are major differences in costs per

²⁵ <https://www.ser.nl/nl/adviezen/energietransitie-en-werkgelegenheid>.

²⁶ Social and Economic Council (SER) (2018), *Energy Transition and Employment* Advisory Report.

technology type. Green hydrogen and the circular economy are issues regarding which the Netherlands will be able to distinguish itself on an international level.

Transformation processes will take place within the region, where synergies will have to be created between businesses. This will, for example, also involve connection to the heating demand in the built environment.

Since the 1990s, Dutch policy has been aimed at strengthening regional clusters of connected businesses and knowledge institutes to support competitiveness and innovation. In recent years, Top Sector policy was chiefly responsible for strengthening the regions by way of the "triple helix" formula, which sees public authorities, businesses and knowledge institutions working together.²⁷ The fruits of this strategy are primarily discernible in urban regions, which focused significantly on strengthening one specific sector, such as the Brainport in the vicinity of Eindhoven and Food Valley near Wageningen. Recently, the government decided to modernise its Top Sector policy by shifting its scope from sector-driven policy to mission-driven innovation policy.²⁸ The agreements in the context of the Climate Agreement are expressly cited as examples of the modernisation of the government's innovation policy.

Our country has five principal industrial regions in which energy-intensive activities are clustered: Rotterdam/Moerdijk, Zeeland (Terneuzen and surrounding areas), the North Sea Canal Area, the Northern Netherlands (Eemshaven-Delfzijl and Emmen) and Chemelot (Geleen region). The 12 major energy-intensive businesses, which collectively account for over 60% of carbon dioxide emissions from industry in the Netherlands, occupy key positions in these 5 industrial clusters.²⁹ The operations of many of the businesses in these 5 regional clusters depend on the 12 largest industrial businesses ("Big Twelve") that operate in the Netherlands. Many supply chain relationships are in play. As a result, the realisation of frontrunner positions has an impact within the industrial environment and far beyond it as well.

In accordance with the SER *National climate approach for regional industrial frontrunners* advisory report,³⁰ these businesses will be asked to present themselves as pioneers in the global frontrunner programmes. This will allow the "Big Twelve" to encourage a similar development among their suppliers and customers and the SMEs in the region. The five regional clusters will thereby be positioning themselves as living labs and acceleration chambers, with the potential to attract new, ambitious and innovative businesses (both large corporations and SMEs), which will be able to prepare themselves for the new economy more quickly and effectively in the Netherlands and will be able to market this head start in knowledge on the international stage. In other words, the challenge will be to realise the changes in scale in these regions, which will be vital to the industry of the future and will lead to technological breakthroughs, substantial cost reductions, significant carbon emissions reductions and export opportunities. The developments that have recently taken place in wind and solar energy are inspiring examples in that regard.

²⁷ See also Social and Economic Council (SER) (2015), *The SER Agenda for Cities*.

²⁸ Letter to Parliament "*Mission-oriented innovation policy with impact*".

²⁹ The "Big Twelve" are part of the approximately 300 establishments that fall under the European Emissions Trading System (ETS). In addition, there are roughly 1,000 companies that are committed to energy efficiency (and, consequently, carbon savings) in their business operations through participation agreements (MEE and MJA). These agreements will be terminated as of 1 January 2021. The remaining companies fall under the Environmental Management Act, which requires companies to put in place energy saving measures with a payback period of five years or less.

³⁰ Social and Economic Council (SER) (2019), *National climate approach for regional industrial frontrunners* Advisory Report. References to the SER further along in this chapter will refer to this advisory report, unless otherwise stated.

The potential of carbon dioxide gains in the five regions referred to above in the period leading up to 2030 was identified from the bottom up in the preparations for the Climate Agreement. Each cluster has its own specific profile and potential – and that potential is significant.³¹ The industrial cluster of Rotterdam/Moerdijk alone will be able to yield a reduction in carbon emissions worth 10 Mt by 2030. In addition, a further 3 Mt can be realised through the use of carbon capture and the use of residual heat.

The survey consequently showed that it is in fact technically possible to achieve the envisaged 14.3 Mt reduction in carbon emissions through various technology tracks. It also showed that an additional 6 to 7 Mt of supplemental carbon savings could be achieved as a result of effects on the supply chain.³² The survey focused primarily on projects still situated in the demonstration and innovation phase, which would only have an impact over time. It is expected that the industry sector will have to invest 9 to 15 billion euros in order to actually realise these projects.³³

A broad variety of initiatives are currently being developed within the five regional clusters to capitalise on the cross-border synergy opportunities available. The 12 major energy-intensive businesses play a key role in these regional initiatives. For example, there are detailed plans to supply residual heat from industry operations to heat homes and buildings and to supply carbon dioxide to horticultural greenhouses. There are also plans in various industrial clusters for the large-scale production of green hydrogen. Green hydrogen is not only valuable to industry, but also to the electricity sector, the mobility sector and potentially the built environment.

Last but not least, initiatives are being implemented in each of the five regions for the reuse of raw materials. The regional interconnectivity provides excellent opportunities for the industrial energy transition to be tied in with the circular economy agenda, which aims to make the Netherlands fully circular by 2050. Mechanical recycling in Rotterdam-Moerdijk, for example, which includes waste-to-chemicals/circular plastic production/biomass, is one of the options that illustrates how climate policy and the circular economy can reinforce one another.³⁴

Alignment with the development of the circular economy is crucial. This is in line with the views of the SER Reflection Committee, which was set up at the request of the State Secretary for Infrastructure & Water Management.³⁵

³¹ Van Elburg, J.C. en M. Houwers (2018) *De industrietafel doorgerekend* (Calculations for the Industry Platform), Rebel, Rotterdam, p. 3.

³² In technical terms, this type of impact is referred to as "scope 2" impact (such as the provision of residual heat or carbon dioxide) and "scope 3" impact (sustainable use of raw materials, which contributes to making industry more sustainable).

³³ *Draft Climate Agreement*, p. 93.

³⁴ Van Elburg, J.C. en M. Houwers (2018) *De industrietafel doorgerekend* (Calculations for the Industry Platform), Rebel, Rotterdam.

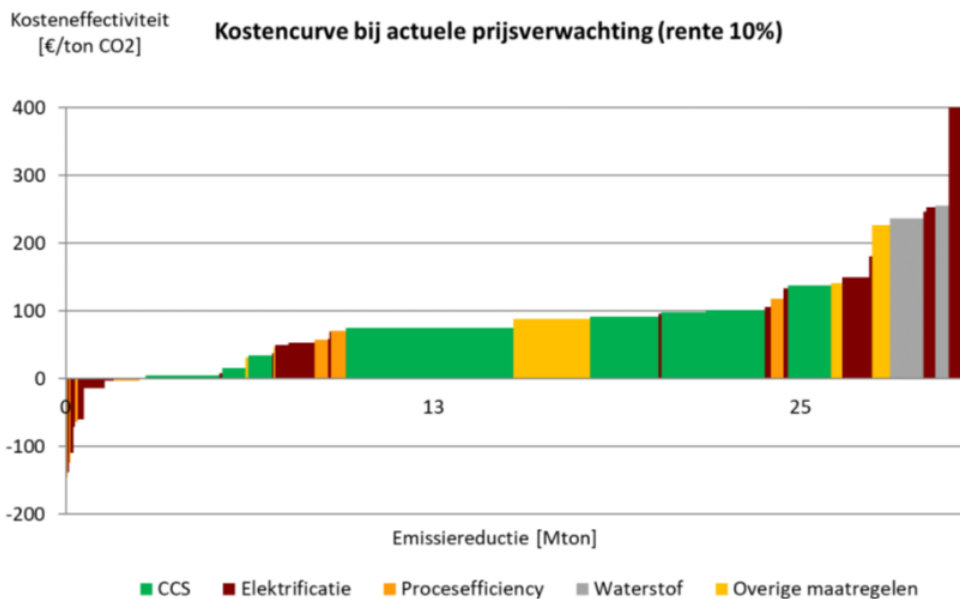
³⁵ The Reflection Committee stems from the Raw Materials Agreement, which sets out that the SER will be available during the implementation of the Raw Materials Agreement for "consultation and other types of facilitation, chiefly for reflection on the degree of focus, the impact/scope of proposed activities, the selection of indicators, cross-sector cohesion and the relationship with other transition tracks and SDGs." Reflection will take shape through the Reflection Committee, which will be chaired by the president of the SER and will consist of independent members. On 16 May 2018, the Reflection Committee sent a letter to State Secretary Van Veldhoven containing 11 key areas of focus aimed at facilitating the effective implementation of the 5 transition agendas, which form the basis for the Implementation Programme for the Circular Economy (see <https://www.ser.nl/-/media/ser/downloads/overige-publicaties/2018/reflectiegroep-transitieagenda.pdf>). In 2018, the consultation role was taken up by the SER Survey on Financial instruments for a circular economy.

Examples of industrial interconnectivity

1. In Delfzijl, BioMCN is the first company in the world to manufacture biomethanol on an industrial scale – biomethanol is a new, second-generation biofuel. The production process uses sustainable raw materials and excipients, including green hydrogen produced locally.
2. OCAP: capture of carbon dioxide at industrial sources for reuse as a nutrient in the greenhouse horticulture sector.
 - a. reuse of industrial residual heat by surrounding businesses and residences. Example: the Twence steam pipeline, which transfers residual heat from the waste processing company Twence for use by Nouryon in the form of steam. The pipeline is set to be expanded into a larger heat network with more industrial connections.
 - b. The Rotterdam heat network transports residual heat from the port to various districts in Rotterdam and the surrounding municipalities via a transport network, so it can be reused to heat homes and buildings. Similar heat networks are being developed at various locations.

Source: SER, 2019

The chart below shows an up-to-date indication of the rising costs of various technological options aimed at realising emissions reduction in industry. At a certain point, the costs will rise significantly. As a result, it is crucial that we focus on achieving cost reductions.



Source: PBL (2019). Background document on the impact of the draft climate agreement: industry.

The industry will put in place measures with immediate impact on its emissions (scope 1). This will also be a point of focus in the context of the 2030 target for the industry. In addition, climate gains can be made through reduction of heating and making it more sustainable,³⁶ increased use of renewable electricity and the supply of residual heat (or carbon dioxide), for example to the built environment or the greenhouse horticulture sector (scope 2 measures). On top of that, supply chain impact, such as sustainable use of raw materials, can contribute

³⁶ Such as geothermal energy and aquathermics.

to making industry more sustainable (scope 3 measures³⁷) and may lead to carbon emissions reduction in a cost-effective way. It is crucial in this regard that the sector should not only manufacture products and semi-manufactured products that everyone uses in daily life, but also products that are desperately needed during the energy transition, such as light-weight steel for electric cars, bicycles, wind turbines, insulation materials and heat pumps for houses, green fertilisers and plastics and metals for wind and solar energy. In this way, the circular use of raw materials, including the substitution and recycling of (critical) materials, can contribute to scaling up the energy transition and making it more sustainable.

C3.3 Instruments

In its advisory report, the SER states that the coherent use of various policy instruments is needed to achieve the carbon reduction target for industry and, at the same time, to keep the Netherlands attractive in order to invest in far-reaching greenhouse gas emission savings and circular production. The government supports this view. The joint commitment of the government and businesses consists, among other things, of the following elements:

- a. an ambitious innovation programme aimed at cost reductions for promising technologies, with a significant contribution from public funds;
- b. standardisation, where reduction options with a payback period of five years or shorter will be made compulsory;
- c. a hydrogen programme;
- d. a robust regional cluster approach;
- e. strengthening of the labour market;
- f. a price incentive in the form of a sensible carbon dioxide levy, where any funds generated are used for the greening of the industry sector;
- g. the expansion of the SDE+ scheme, where an annual amount increasing to a maximum of 550 million euros will become available by 2030 for the stimulation of carbon emissions reduction in industry, in relation to which the ODE will be structured in such a way that industry will be contributing an amount up to 550 million euros per year leading up to 2030;
- h. subsidisation of CCS in such a way that a sufficient budget remains available for other sustainable technologies, whilst also offering sufficient prospects for the industry sector to make the necessary preparations and achieve their reduction target in a cost-effective manner. To this end, CCS will be limited both in time and in scope.

C3.3.1 The European ETS

Energy-intensive industry largely falls under the EU-ETS system. Businesses are required to have emissions allowances for the emission of greenhouse gases. The amount of emission allowances with the ETS (cap) decreases by a reduction factor over time: until 2030, this will be by 2.2 % per year. Industry receives free emission allowances up to the level of the 10% European benchmark. This means that, if a plant is less efficient than the 10% of best performing competitors (based on which the European Commission sets the European benchmark), the owner must purchase additional emissions allowances for the emissions that exceed the European benchmark. The Dutch Emissions Authority (NEa) registers emissions for each plant at the stack itself and monitors whether the owner holds sufficient allowances for those emissions. The system ensures that the carbon price is equal in all participating countries. This is economically efficient, given that European businesses with the cheapest reduction options will be the first to take measures. For that reason, it also makes sense that

³⁷ In order to be able to determine the impact of cross-border scope 3 measures on Dutch emissions targets, a change of European legislation is required in addition to insight into the carbon footprint of products and raw materials. The government will be encouraging such an amendment.

the focus should first and foremost be on strengthening the EU-ETS in order to realise the national reduction target.

The carbon price has been very low for a long time ever since the 2009 recession, given that too many allowances were in circulation, resulting in a weaker incentive from the ETS to reduce emissions. However, partly as a result of European agreements in 2018 to accelerate the reduction of emissions allowances, the ETS price has risen more recently, and the PBL expects a further increase to approximately 46 euros per tonne by 2030. This is a positive development, given that this will go toward stimulating carbon emissions reduction in Europe on a level playing field. The analysis of the PBL shows that a higher ETS price would lead to an increase in the expected carbon emissions reduction by Dutch industry.

As a leader in sustainability, the Netherlands is able to set an attractive and replicable example to other countries – within the European Union in particular. Helping to shift the European benchmarks for energy efficiency within the European Emissions Trading System (EU-ETS) will contribute to an ambitious European climate and energy policy in concrete terms, as well as create a level playing field for businesses in which that ambition is embedded. Ultimately, it is also about using the EU's leverage to reduce the emission of greenhouse gases in global terms. The European product benchmarks of the ETS reflect the carbon emissions per unit of product of the 10% most efficient plants in Europe. This European benchmark is updated every five years, with the next updates taking place in 2020 for the 2021-2025 period and in 2025 for the 2026-2030 period. The more efficiently the industry sector in the Netherlands copes with carbon dioxide, which should consequently lead to tightening of the European benchmarks within the EU, the more strongly sustainability in the industry sector can be encouraged elsewhere. This interaction with the ETS will be embedded effectively.

However, the ETS system does not in itself guarantee that the Dutch industry reduction target of 14.3 Mt by 2030 will be realised. After all, the Netherlands aims to start the transition sooner than other countries. In terms of technological potential, this can be achieved, in part due to the fact that, contrary to many other countries, the Netherlands has strong regional clusters with significant potential where CCS can be applied relatively easily. Nevertheless, a degree of caution must be maintained, to ensure that CCS does not get in the way of other demonstrably cost-effective alternative transitional technologies. As such, a balance must be sought between preventing clean technologies from being crowded out and making use of the reduction potential that CCS offers to achieve the reduction target.

Any leakage of economic activities abroad due to a desire to avoid an ambitious climate policy will mean that the envisaged reduction of carbon dioxide emissions will not be realised in global terms and employment will dissipate at a national level.³⁸ This should not be the intended outcome. Instead, Dutch ambitions should provide an adequate incentive for emulation in other parts of the European Union (at least). It is for that reason that the national approach builds on the EU-ETS, in addition to the Dutch commitment aimed at building international coalitions for pricing and strengthening the ETS to retain the level playing field (see also C3.4.3).

³⁸ Cf. PwC (2019), *De effecten van een nationale heffing op broeikasgas in de industrie* [The effects of a national levy on greenhouse gases in the industry] (report commissioned by the Ministry of the Interior and Kingdom Relations).

C3.3.2 Innovation programme, pilots and demonstration

The development of offshore wind energy as a result of the Energy Agreement shows that rolling out technologies with an ambitious objective, relating to the prospects for the compensation of operating shortfalls, can lead to spectacular cost reductions. These types of developments are also possible for sustainable technologies in industry, such as process efficiency, industrial heat pumps, green hydrogen and power to heat. This agreement aims to make all that possible.

The success of the system transition in the industry is predicated on the development of new processes and technologies, which enable production to take place more efficiently, as well as differently and better. These new technologies and processes will not come about by themselves. Innovation, pilots and demonstration projects are crucial to making the required new technologies available, reliable and affordable. Technologies that are required to achieve near-zero industrial emissions beyond 2030 are at present still in the lower TRLs.³⁹ The focus is on achieving cost reductions and accelerating the launch onto the market of technologies that are crucial to realising the 2030 target and beyond, such as electrolysis of water (green hydrogen), electrification, CCU(S), circular processes,⁴⁰ better use of residual streams and green gas and thermal decoupling.

The Netherlands has a long tradition of public-private partnerships in the context of innovation stimulation. Many public and public-private institutes, and many schemes – both tax and subsidy schemes – support the private sector innovation process. Dutch parties can also make use of the support options for innovation provided by the EU.⁴¹ A number of instruments are exclusively available for the climate transition, whereas other have been steadily refocused on this in recent years. The existing support available will naturally be carried on. Businesses and the government will work together to reap the maximum benefits from European funds that are available for demonstrations and for first-of-a-kind facilities.

Furthermore, additional funds will be made available for innovation. An amount of up to 100 million euros a year will be made available by the government, which will be matched by a private sector contribution that will at least be equal to the public sector funds. This means an additional innovation stimulus of up to 2 billion euros in total will become available up to 2030.

The aim is to use these funds to achieve significant cost reductions in respect of the estimated cost⁴² of technologies in the baseline trajectory of the PBL through innovation, demonstration

³⁹ TRL = Technology Readiness Level (phasing of the innovation chain). TRL 1 and 2 relate to fundamental research, 3 – 5 relate to R&D, 6 and 7 deal with pilots and demos and higher numbers concern introduction to the market.

⁴⁰ The roadmap on circular use of raw materials will, among other things, focus on the instrumentation of the following measures aimed at carbon emissions reduction by 2030: 100% high-quality reuse of concrete rubble, as set out in the Concrete Agreement (*Betonakkoord*); at least 20% reuse of construction and demolition waste; innovations in GWW (also see C3.5.3); supply chain closure regarding plastics and consumer goods, such as electronics and textiles; and circular design and substitution of raw materials/facilities for the energy transition.

⁴¹ Horizon Europe (the ninth Framework Programme https://ec.europa.eu/info/designing-next-research-and-innovation-framework-programme/what-shapes-next-framework-programme_en) will enter into force in 2021 and focuses on mission-driven innovation; an amount of 94 billion euros has been budgeted for the 2021 – 2027 period. In addition, EFRO and Interreg provide options for stimulating innovations and demonstrations in the region using European subsidy funds (<https://erac.nl/actualiteiten/mfk-2021-2027-update-europese-programma-s-efro-en-interreg-onder-de-loep>). The EU ETS Innovation Fund also offers key opportunities.

⁴² The potential for doing so varies per technology. In addition to the reduction of initial investment costs (CAPEX), this also relates to measures that make the transition cheaper in other ways.

and pilots. There will be a significant focus on cost reductions (please see the box below on how the use of instruments will be structured).

Use of instruments

Use of the funds will be structured as follows:

- a. Public-private partnership roadmaps will be drawn up within Multi-year Mission-driven Innovation Programmes for each type of technology or theme. Each roadmap will formulate a clear ambition in the form of envisaged cost reductions by 2030. The roadmaps will cover the entire innovation chain, from early technology development to upscaling.*
- b. For the initial phases of research and applied research (TRL phases 1 through 4), agendas and programmes will be drawn up in the context of the National Research Agenda and the agendas of the Energy, HTSM and Chemicals Top Sectors. Existing instruments are available for these agendas (see also D3: IKIA), such as the funds for the National Research Agenda, the PPS surcharge, regional and European funds, etc.*
- c. An amount ranging from €60 million to €100 million (as of 2023 and including green hydrogen) is available each year from the Climate Budget for the realisation of the roadmaps. The focus will be on pilots and demos that are required for upscaling (TRL 5 through 8). The underlying principle is that businesses should also invest the same amount in the roadmaps.*
- d. Based on the roadmaps to be drafted by the Top Sectors in consultation with the public authorities, knowledge institutions and businesses and the envisaged cost reductions, a decision will be made on where and how the funds are to be used. Particular attention is required for projects that are not yet suitable for the expanded SDE++ scheme. Businesses and the government will have to work together to reap the maximum benefits from European funds that are available for demonstration and for first-of-a-kind facilities (such as the EU-ETS Innovation Fund).*
- e. The focus of the application of funds will be on three or four families of technologies, such as electrolysis of water (green hydrogen), electrification, CCU, circular processes, better use of residual streams and green gas and thermal decoupling. Furthermore, there will be room for a free category and for the frontrunner approach.*
- f. The roadmaps will be updated periodically, enabling the agenda to continually evolve.*
- g. Where relevant, roadmaps will also focus on framework conditions, such as laws and regulations, permits, infrastructure and financing.*

The government will work in consultation with the industry to further develop the combination of instruments to be applied (depending on TRL level) and will also focus on larger projects that are not yet suitable for the expanded SDE+ scheme.

C3.3.3 Hydrogen for industry

Achieving the 2030 and 2050 targets requires a radical change to our energy system and the industry and raw materials system. As a result of its extensive process industry, geographical advantages and gas expertise and infrastructure, the Netherlands will be able to create a leading international position for hydrogen in clean-tech industry and a knowledge position that will continue to add lasting value to the Dutch economy. This avenue must be pursued with vigour.

The most energetic and best sustainability transition for the industry sector from a sustainability perspective will be through direct use of renewable energy: use of geothermal heat and sustainable residual heat and of electrification from solar and wind farms. Where the

use of those energy carriers is no longer an option, green hydrogen will be an alternative. In the mid (2030) to long (2050) term, hydrogen can and must be able to carry out a number of critical functions within the energy and raw materials management system, both inside and outside the industry sector. The principal areas of focus will be:

1. a carbon-free feedstock for the process industry. Hydrogen is already widely used (approximately 100 PJ converted to energy value) and the need for hydrogen will continue to grow as a result of new sustainable chemical processes. In time, this feedstock will have to be carbon-free hydrogen. There is no alternative;
2. carbon-free energy carriers for the process industry. There are few alternatives for temperatures above approximately 600 degrees;
3. controllable carbon-free capacity, energy storage for prolonged periods and energy transport over longer distances;
4. mobility. Heavy road transport over long distances, shipping and rail are solid options for the longer term;
5. built environment, possibly for buildings and districts that cannot easily be made more sustainable in other ways for various reasons.

It is likely that a global hydrogen market will emerge, as a result of international plans and developments. The Netherlands is well positioned to take up a leading role in that market. Our extensive process industry sector, which already uses approximately 100 PJ of hydrogen, the enormous potential for wind energy on the North Sea and our gas infrastructure and expertise are key assets. In conjunction with its geographic location, in addition to the (gas) infrastructure, which would be relatively easy to convert, the Netherlands has excellent basic conditions that would allow it to be developed into a "hub" for the import and transit of hydrogen, comparable to the function occupied by the Netherlands for other raw materials and fuels. This would also accelerate the creation of a European market for large-scale applications. The development of the international market will also contribute to the security of the sustainable hydrogen supply and encourage the global production of sustainable hydrogen.

Within all regional industrial clusters, market and other parties are preparing for a growing role played by hydrogen, including through studies, the development of business cases and proposed investments. The plans for green hydrogen collectively add up to a total aim to achieve electrolysis capacity of over 800 MW and 15 ktonnes from biogenic fuels by 2025. In addition, there is a significant focus on hydrogen as a climate-neutral energy carrier on an international scale. It is expected that, in time, an extensive international hydrogen market will emerge, where the Netherlands can play a significant role.

The necessity of the development of hydrogen is also demonstrated by the development of demand. The potential demand for hydrogen was identified in the context of the Climate Agreement process. This showed that, by 2030, on the coast alone, there will be a large potential demand for hydrogen for industrial applications (approximately 125 to 213 PJ). The industrial cluster Chemelot in Limburg has a potential demand for hydrogen of approximately 25 to 40 PJ. In addition, additional demand may emerge on the coast for hydrogen for electricity production. This demand development will also necessitate stimulation of the production of green hydrogen, with the connection to additional production of cheap, renewable electricity being crucial in that regard.

a. *An ambitious hydrogen programme*

There is a broad consensus that hydrogen will play a highly critical role in the transition to a carbon-neutral society. An additional stimulus, however, is required and indeed is achievable. A large-scale hydrogen programme is to be introduced to capitalise on the opportunities that

are available more quickly. This hydrogen programme will entail corresponding development of research, pilots and demo projects, infrastructure and use of broad hydrogen applications.

b. Accelerated development of green hydrogen

Unfortunately, at present, too little green hydrogen is available. In order to accelerate the development of green hydrogen in the Netherlands, the national government will explore the options available for an offshore wind energy tender in which additional green energy capacity will be directly used for the accelerated increase of green hydrogen production and cost reduction. The ultimate goal of the overall hydrogen ambition is to arrive at a situation in which the growing demand for hydrogen can be met solely with hydrogen produced with renewable energy, i.e. so-called "green hydrogen". A number of parties expect that, as a result of the expected declining price of renewable electricity and the rising price of gas, green hydrogen will become cheaper than blue hydrogen in the run-up to 2030.

This means scaling operations and cost reductions in the use of hydrogen and the production of green hydrogen are an absolute necessity. At present, the government is designing pilot and demonstration projects that will establish the Netherlands as an international leader, in consultation with knowledge institutes and industry (Port of Rotterdam, Eemshaven). Acceleration, however, is very much desired. The development of a green hydrogen roadmap for 2030 will be a key step in this direction. However, in order for a proper infrastructure for hydrogen (which will also be necessary for green hydrogen) to be established and for new technological applications of hydrogen to be encouraged, allowing green hydrogen to be implemented directly, blue hydrogen will be needed temporarily.

c. Accelerating the hydrogen economy

- The hydrogen programme will shape the necessary conditions more quickly (policy, research, laws and regulations, organisation of the market).
- In the context of the IPCEI⁴³, the Netherlands will be focusing on a strong role for green hydrogen in Europe's competitive position in respect of other parts of the world.
- At present, an international initiative for sustainable hydrogen has been set up by the Netherlands alongside Japan, Canada, the US and the EU.
- Local authorities and industry will work on the accelerated construction and conversion of infrastructure. Projects that are currently ongoing: Chemiepark Delfzijl (20 MW), Hystock (test 1 MW), ENGIE/Gasunie (100 MW), Tata/Nouryon (100 MW), H2M Eemshaven, H-vision. The national government will actively support these initiatives.
- A targeted type of development will take shape in the field of hydrogen through mission-driven innovation policy (the Multi-year Mission-driven Innovation Programmes within the Integrated Knowledge and Innovation Agenda). Partnerships will be sought with research institutes in neighbouring countries.
- There are already a large number of schemes that can also be used by initiatives for the transition to hydrogen – at European, national and regional level. The financial sector (including Invest-NL) will be fast-tracked in terms of its involvement in ensuring that specific, promising projects, which have already presented themselves, are made ripe for investment (including projects in the Eemshaven and at Tata).
- Furthermore, additional funds to the amount of approximately 40 million euros per year will be made available from the Climate Budget for pilots and demo facilities. In addition to the crucial private sector contribution, at least 800 million euros in additional stimulus funds will become available over a period of ten years.
- As of 2020, work will begin on rolling out green hydrogen through the expanded SDE+ scheme, wherever this can be achieved cost effectively. Invest-NL will be able to play a

⁴³ IPCEI: Important Projects of Common European Interest – within this context, hydrogen is regarded as one of the most crucial issues.

role in financing projects that appear to be financially profitable, but for which the risks for the market are as yet too high.

- If, at any time, it appears that the cost of green hydrogen has fallen to such an extent that only limited additional costs apply in respect of the other options in the expanded SDE+ scheme, the application of part of the additional funds from the Climate Budget in support of green hydrogen through the expanded SDE+ can be considered as well.

C3.3.4 Standards

When focusing on reducing carbon emissions, it is especially beneficial to implement carbon-restrictive measures that have a payback period of five years, as these are the most cost-effective and cost-saving measures. The Environmental Management Act stipulates that businesses must put energy saving measures in place, of which the costs can be recouped in five years or less. In the update to the Environmental Management Act, the government will be focusing on a comprehensive climate approach, with both energy-saving measures and renewable energy production being among the available options. The update will be drafted in close consultation with the business community and SMEs, with the feasibility of these regulations, resulting in the lowest possible administrative and implementation burden, being prioritised. The updated Act will be submitted to the House of Representatives before 1 July 2020.

Businesses will first and foremost be responsible for putting carbon reduction measures in place. The provinces are the competent authority for permits, enforcement and oversight (including in relation to putting measures in place with a payback period of five years or less). The national government (NEa) will impose a levy on businesses that belong to the carbon levy target group and that emit more greenhouse gases than the exemption threshold allows in any given year. The method of oversight and enforcement will be integrated into the existing national enforcement strategy, which will guarantee maximum effectiveness and efficiency, both for businesses and for the relevant competent authority. Effective coordination between the local and regional competent authority (Environment Agencies) and the national government (RVO) is an absolute prerequisite in this regard. After all, the measures to be put in place must also be incorporated into the environmental permit.

The details of the system will be determined under the joint administrative responsibility of the national government and the local and regional authorities.

C3.3.5 Strengthening the regional approach

As stated by the SER, the region must play an important role in the implementation of the transition. The strong cluster structure of the largest section of industry also implies that enabling a cost-effective transition will only be possible through intensive collaboration within clusters. For that reason, the five regions with strong industrial clusters deserve special attention. Energy management within these regions is dominated by the energy demand and the heat supply from industry. Within these five regions, it is therefore crucial that the transformation in the industry sector be linked to other sector-specific targets in an integrated, cross-sector implementation approach. Coordination with the relevant Regional Energy Strategies (RES) will be sought in this regard. The necessary infrastructure for heat and renewable energy in industry should also be included in this approach. This type of integrated approach will be needed to achieve synergy between sectors in the region and to base decisions on spatial integration and infrastructure on a comprehensive picture of the development of the supply and demand of energy. A link will be established with solar and wind energy.

By starting at the existing industrial clusters, there will be clear ownership, allowing the necessary implementation drive to be mobilised. The challenge will be to effectively tie the transformation in industry in with other sectoral targets in an integrated, cross-sector implementation approach. Elements that will play a key role in an integrated approach in these industrial regions include:

- A regional implementation structure in which parties collaborate using a learning approach based on practices at a regional level. This implementation structure should combine the required expertise and action capacity at a regional level and aim to create as much synergy and support as possible.
- Including the infrastructure needs surrounding heat and renewable energy in the regional decisions, within the regions where industrial clusters are partly or entirely situated, is recommended.
- The parties are committed to setting up a knowledge and coordination centre for the regional transition in the five industrial regions, if possible in coordination with the National RES Programme. The centre will be able to support these regions in the exchange of knowledge and experiences and will facilitate coordination between the industrial regions. In addition, this centre will be able to identify issues at play within the regions that require solutions on a national level. This will ensure that these issues are put on the national agenda.
- Resolution of coordination issues that arise in relation to infrastructure. The construction and strengthening of grids (electricity, heat, hydrogen) will take years and will only begin once there is adequate certainty that the network capacity will be used. The National Energy Network Programme (*Programme Energie Hoofdstructuur*) will be referred to in the first instance in the event of any such issues.
- In relation to major, complex infrastructure or other projects, the national government may offer support through national coordination of combined permit pathways or through participation in programmes in which multiple subsidies (including European subsidies and/or funding) should jointly lead to the timely implementation of projects.
- Monitoring the progress of the industrial transformation in these regions and the impact of this transformation on infrastructure is crucial to the coordination in the relevant RES. This does not mean that the industry sector's heat and renewable energy needs should be seen as an additional task for the RES.
- The way in which the ambitious reduction targets that are being taken up in the clusters are accompanied by a desire to maintain the international competitiveness of businesses operating within those clusters.

Additional support from the Big Twelve

It was previously outlined that, as a result of the clustering of energy-intensive businesses, there are additional opportunities to achieve synergies that could be used to help cut the emissions of greenhouse gases to a greater degree and could lead to efficient solutions in the supply chain. Given their key positions in the clusters, the "Big Twelve", which are collectively responsible for over 60% of industrial carbon emissions, face the challenge of providing an additional boost to the envisaged industrial renaissance. They have an opportunity to become global players within their sector, meeting the most stringent carbon emissions requirements and continuing to raise the bar through innovation. Because of their key positions in the five clusters, the innovation efforts of the "Big Twelve" will have an impact on the supply chains and regional networks.

With support from the national government, a long-term industrial frontrunner programme will be developed in each of the five industrial regions that combines efficiency improvements with sustainability, carbon emissions cuts and preservation of global competitiveness. The obvious course of action is to focus on building on existing regional initiatives and plans. Given their position, influence and capabilities, the "Big Twelve" will be responsible for making a significant contribution to these frontrunner programmes. Businesses cooperating within clusters and chains can achieve more than individual businesses performing at the European "EU Best in Class" benchmark level. This approach will allow carbon dioxide emissions in industry as a whole to remain below the level of the European benchmarks in 2030 and will allow the reduction target of 14.3 Mt by 2030 to be achieved. The programmes will set out agreements on management, responsibilities, timetables, benchmark dates and other aspects. In addition to the commitment required from businesses, the plans will also reflect what is needed from the government and from other parties (infrastructure facilities, regulations).

Independent monitoring of these programmes and of their implementation will be provided in the form of a body of international experts, to ensure that the frontrunner programmes truly do push the economic potential of what can be achieved in the field of innovation and synergy application, taking into account best practices elsewhere in the world. The body will be given the authority to issue targeted recommendations to the competent policy decision-maker. Like other Member States and the European Commission, the Netherlands is committed to making efforts to achieve a future EU budget that focuses heavily on tackling climate problems. The government will consult with the regions to ascertain whether the Netherlands can prioritise the use of its national funds from the European Regional Development Fund (ERDF) in the forthcoming Multiannual Financial Framework (2021 – 2027) of the EU for programmes that support regional energy strategies and sustainability.

C3.3.6 Strengthening the labour market

The success of the energy transition crucially depends on opportunities for the economy and employment being seized and on social risks, such as job losses in fossil-oriented sectors, being absorbed effectively. Everyone should have a suitable role to play in the labour market of the future.

In its *Energy Transition and Employment* advisory report, the SER points to the importance of cooperation, coordination and consultation. Cooperation between employers' and employee organisations, public authorities and regional organisations should help resolve growing labour market shortages. For those who will lose their jobs in the fossil energy sectors, it is crucial that employers and employees engage in a dialogue in a timely manner. They will have to take initiatives together and reflect on career advice, training budgets and supervision from one job to another. In parallel, public authorities will also be responsible for helping people find work and making training accessible, as well as for providing a safety net for employees who ultimately cannot find another job. The national government will assume partial responsibility for ensuring a fair transition, which will also account for the social consequences of the transition.⁴⁴ Further implementation was outlined in detail in the Labour market and training chapter of the draft Climate Agreement (pp 193 – 206).

Within the region, it is crucial that labour market policy should respond to the regional energy strategy, with a view to achieving an optimal match between the supply and demand of employment in the region. This applies to the five industrial regions in particular. A comprehensive, widely supported and proactive labour market and training policy is required to enable the energy transition and to capitalise on the employment opportunities provided by

⁴⁴ Social and Economic Council (SER) (2018), *Energy Transition and Employment* Advisory Report.

the transition. Robust efforts, including in the field of policy, are required in order to prevent the transition from stalling as a result of a shortage of qualified personnel. Agreements have been made in the context of the Climate Agreement regarding the drafting of sectoral education and labour market agendas. The commitment to a proactive labour market policy with a sufficient number of training facilities will subsequently be fleshed out within the regions. Both in the manufacturing industry and in the fitting and maintenance sector, there are already shortages in terms of properly qualified staff.

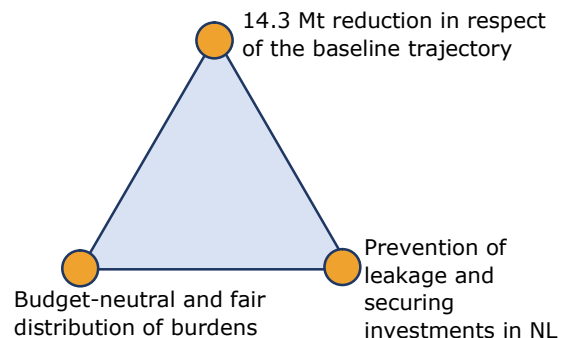
Jobs will disappear in gas and oil extraction and in refineries (including among suppliers). For that reason, it is crucial that people be actively guided in the transition to different work and that any corresponding training required be well organised. The categories of people with a lack of or with outdated competences should be given special attention. Another key area of focus is the funding from sectoral training and development funds, which can be used to create (or fund) cross-sector training programmes in collaboration, with the goal of increasing training opportunities and facilitating the labour market transitions from surplus to shortage sectors.

The parties are satisfied that the SER will use its mobilising role for lifelong development to foster stimulating, facilitating and collaborative capacity in close cooperation with the Technology Pact, the Top Sectors and the GroenPact platform. More specifically, the SER has undertaken to advance the effective embedding of human capital in the regional energy strategies. A clear section on the labour market in the Regional Energy Strategies may form the basis for effective labour market planning.

C3.3.7 National carbon levy for industry

A national levy on carbon dioxide will be introduced, which will guarantee the realisation of the 14.3 Mt reduction in emissions by 2030 in respect of the baseline trajectory and produce a reduction of 14.3 Mt in respect of the PBL baseline trajectory. The carbon levy will be structured in such a way that:

1. the comprehensive policy approach maximises efforts to achieve the reduction target (14.3 Mt compared to the baseline trajectory);
2. it simultaneously prevents businesses and/or production from relocating abroad or a decline in willingness to invest in the Netherlands as much as possible:
 - a. The carbon levy will be a government-established, objective levy based on verifiable measures that is as consistent as possible with the European ETS benchmarks currently applied by the Dutch Emissions Authority (NEa).
 - b. There will be no further amendment of budgetary frameworks.



BOX: Role of carbon levy within the broader range of instruments according to the SER

The SER notes that the industrial transformation can only be achieved through a broad policy package and cites four policy principles in that regard: i) strengthening the regional approach, ii) an effective and targeted labour market and training policy, iii) facilitation of innovation and subsidising of unprofitable investments and iv) social cost allocation. In the context of the latter principle, the impact of the enhanced ETS, the energy tax and the surcharge for sustainable energy (ODE) will be supplemented by a national carbon levy.

Additional carbon levy

The carbon levy will take effect in 2021 and will be designed in such a way that it encourages the industry sector as a whole to reduce carbon dioxide emissions in order to achieve the target of 14.3 Mt in reduction, given that it is cheaper and therefore more avoidable. Leakage of production and employment and decreasing willingness to invest will be prevented as much as possible. The SER advisory report that was published provides starting points for an effective structure and design of the carbon levy, which were used to shape the carbon levy as it is outlined in this section. The levy is a carbon levy with a progressively increasing base.

The level of the levy will be determined in such a way that it ensures that the reduction target for industry, meaning 14.3 Mt by 2030 in respect of the PBL baseline trajectory, is realised a priori. The government is relying on the independent expertise of the PBL for this. The government's aim is to achieve certainty. For that reason, the government is assuming realistic expectations on what carbon-reducing potential can actually be utilised (80% compared to the theoretical maximum) and a high degree of certainty regarding achieving the goal (75% probability). This means, according to current insights based on the option assessed by the PBL, that the carbon levy will start at €30 per tonne in 2021 and rise in a straight line to €125 – 150 per excess tonne of carbon dioxide emitted in 2030 including the ETS price (according to current expectations, this would be approximately €75 – 100 per tonne in 2030 on top of the ETS price).⁴⁵ It should be noted that, in calculating the impact of a carbon levy on the expected reduction, the PBL did not take into account subsidies available from the expanded SDE+ scheme. In 2020 and 2025, when the new European ETS benchmarks become available, the government will ask the PBL to once again conduct an objective and verifiable review of the required level of a carbon levy, within the specified preconditions. This means that the PBL will be asked in 2020 and 2025 what the starting level of the carbon levy should be and what the level of the levy in 2030 (and therefore also in the intervening years) should be in order to achieve the reduction target. The PBL will be asked to involve the available subsidies from the expanded SDE+ scheme in their analysis. An external party will then investigate the impact of the proposed levy on Dutch industry in the international playing field and business climate, after which the government will determine the price trajectory. These rates will be laid down by or pursuant to an Act of Parliament.

BOX How do we know what level of the levy is required to guarantee that 14.3 Mt in reduction compared to the baseline trajectory is realised by 2030?

The level of the carbon levy is determined in such a way that it provides a priori certainty on achieving the carbon dioxide reduction target for the industry sector.

Determining the level of the levy in an ideal world: cost efficiency

In an ideal world, we would only have to consider which carbon emissions reduction measures the industry sector would have to take to achieve the reduction target in the cheapest possible way. This could be mapped by looking at the marginal abatement cost curve, which ranks all the options for carbon dioxide reduction in 2030 from cheapest to most expensive. All measures up to the target of 14.3 Mt would have to be taken. The costs of the most expensive measure required would determine the level of the carbon levy by 2030. The figure below shows a stylised representation of this curve, with each bar representing a proportion of potential. Cheap potential is on the left, expensive potential on the right.

Uncertainties in the real world: potential realisation and development of cost

In reality, various types of uncertainties are involved. For example, it may sometimes be necessary for other prerequisites to be in place before certain technologies can actually be

⁴⁵ In accordance with the PBL report, all prices for 2018.

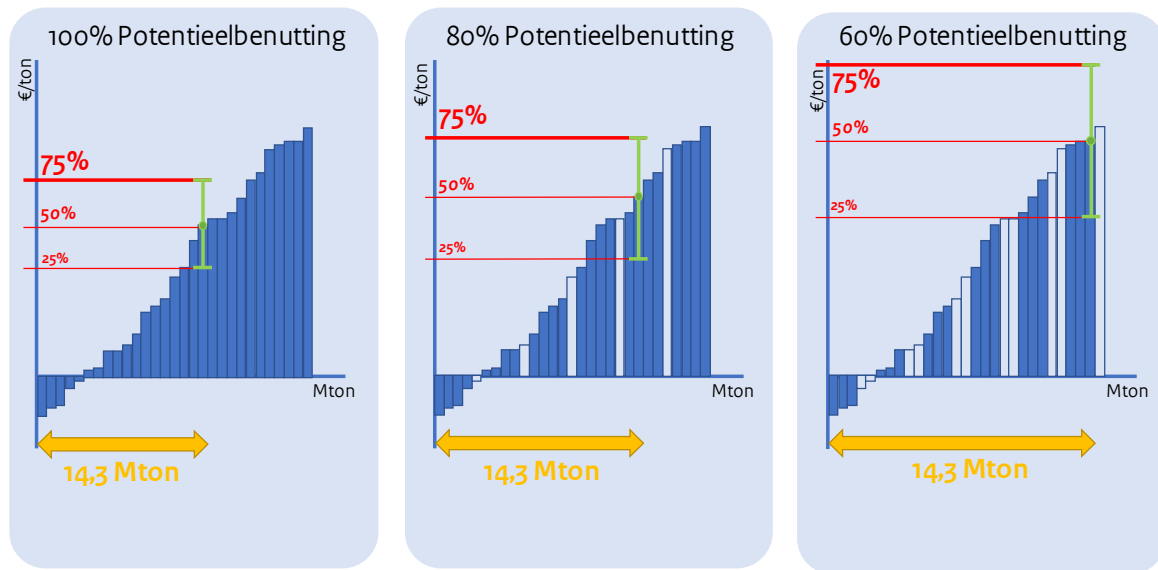
rolled out. CCS, for example, cannot be applied without an infrastructure for CCS. Under certain circumstances, businesses may also decide not to implement measures that are economically profitable, for example, because they would require a lot of effort (certain energy-saving measures). In all these types of cases, the carbon levy does not actually unlock the full potential of carbon reduction. The PBL takes this into account by working with a number of different scenarios for potential realisation. In an ideal case, 100% of the potential will be realised in the case of a levy. In reality, however, this percentage will be lower, such as at 80%.

The lower the potential realisation, the longer we have to "travel down" the marginal abatement cost curve before the carbon reduction target comes into view. Further down the curve, the costs for technologies are higher, which means a higher levy is required to ensure that technology is rolled out. This is represented by the image that is illustrated at the bottom of this box: lower potential realisation implies that more potential "is lost" in respect of the theoretically optimal situation of 100%. This leads to the yellow arrow, which is necessary for the target of 14.3 Mt, getting longer, and to the rate of the carbon levy having to be increased.

Potential realisation is not the only uncertainty that the PBL takes into account. It is also difficult to forecast what the exact costs of carbon-reducing potential will be in 2030. As such, it cannot be said with certainty how much exactly the rate of the levy should be to make a specific type of technology profitable. The PBL makes use of certainty margins. Assuming that we know how many % of the potential can be realised, it can be determined that a carbon levy to the amount of x with a certainty of y% should allow the carbon reduction target to be met. These uncertainty margins have been illustrated in the diagrams below by way of the green lines: a higher carbon levy leads to more certainty on the realisation of the carbon dioxide reduction target.

Determining the rate of the levy: finding an equilibrium

The government supports the realisation of the carbon reduction target, but is also aware that establishing a higher rate for a levy comes with a cost, as it can actually lead to higher costs for businesses. This means an equilibrium must be found. Moreover, the government has control over part of the uncertainties on potential realisation. For example, if the government were to make every effort to ensure the prerequisites were in place, this would increase the likelihood of greater potential realisation. Keeping this in mind, the government would like to increase the rate of the levy by 2030 to a level that, with today's knowledge and based on an assumption of 80% potential realisation, would lead to achievement of the carbon reduction target with a 75% probability. Thereafter, the final rate will be set after having been determined and following a request for opinion to the PBL. According to current insights, these requirements will be met with a levy rate starting at 30 euros per tonne (minus ETS) in 2021, rising in a linear fashion to 125 – 150 euros per tonne (minus ETS) in 2030.



Subsidy funds and levy interaction

At present, when determining the required rate of the levy, the available subsidies from the expanded SDE+ are not taken into account. In its analysis of the levy types for industry, the PBL pointed to the fact that there was interaction between the available subsidy funds and total unprofitable investment costs (operating shortfall, on the one hand, and the required carbon levy on the other hand). The PBL says the following: "If sufficient subsidy funds are available, a limited levy (typically some tens of euros/tonne of carbon dioxide) should already be enough to encourage businesses to take measures." This would be the case for the current ETS price forecast in combination with the variants of 80% and 100% potential realisation, meaning that – in combination – a lower levy rate could already be sufficient.

This type of rate, to prevent as much leakage as possible, would only make sense if the proportion of emissions that does not yet need to be cut in 2030 would be exempt from the levy. In this context, we distinguish between emissions that must be avoided in 2030 (and which can be avoided) and emissions that do not yet need to be avoided in 2030 (and are relatively hard to avoid).

Set against the background of the integrated policy package for industry, avoidable emissions not only include emissions that can be avoided at the individual level of the company through performance at the level of the European ETS benchmarks in force, but also emissions that can be avoided within regional clusters or chains through collective action through the regional frontrunner programmes. The total of emissions to be avoided is at least 14.3 Mt by 2030 compared to the baseline trajectory of the PBL. The use of green hydrogen is a much-desired game changer within the frontrunner programmes, with benefits that extend beyond the industry sector itself. By focusing on green hydrogen, Dutch industry will also be acting as a catalyst for carbon reduction in other sectors. Partly in this light, it will become possible for businesses to exchange individually allocated exempted emissions allocations (corresponding to a given calendar year) between one another.

The aim of the carbon levy is to encourage the industrial businesses to achieve the performance of Europe's top performers in terms of carbon efficiency and to participate in the frontrunner programmes with a view to regional industrial transformation. At the same time, the risk of leakage of business activity and a decrease in willingness to invest will be minimised through the inclusion of an exemption threshold: businesses will be able to avoid paying the carbon levy by investing in measures aimed at reducing their emissions in a timely

manner. The government is aware that emissions reduction in the industry sector will often have to take place in supply chains and clusters and that infrastructure facilities will often be prerequisite to such reductions. For that reason, it is committed to ensuring that businesses are able to obtain the required permits and infrastructure provisions in time both for their individual investment plans and for the frontrunner programmes. In addition, the government is committed to ensuring subsidy schemes are opened in a timely manner to advance innovation and cover any operating shortfalls.

Further specification of the carbon levy

a) Lead times of investments

As outlined by the SER, the lead times of investments in energy-intensive industry are on average quite long. It is therefore important that this be taken into account in the specification of the carbon levy. Studies by Navigant have shown that, as a result, projects will only take shape in the 2025 – 2030 period (see the SER advisory report). The design of the carbon levy has now taken this into account by having the levy base increase incrementally, in addition to the rate of the levy and through the possibility of transferring exempted emissions. When drafting the legislative proposal, in addition to the points mentioned above, we will look at ways of enabling businesses to bring their carbon dioxide reduction measures in line with their investment cycles. This should prevent specific design and structure choices from provoking strategic behaviour. Furthermore, this will entail that no public funds can be claimed in relation thereto and that the reduction target may not be affected. For that reason, this aspect will also be discussed with the PBL.

b) Target group

The carbon levy will apply to all industrial⁴⁶ greenhouse gas emissions insofar as they fall under the ETS, supplemented by substantial nitrous oxide emissions⁴⁷ and the carbon emissions of waste incineration plants. This accounts for roughly 82% of all industrial greenhouse gas emissions and largely aligns with the existing reporting obligations in respect of the NEa. The levy will affect some 250 plants/businesses. As such, the target group of the carbon levy corresponds to the target group of the ETS, with the exception of waste incineration plants, which do not fall under the ETS, but do fall under the carbon levy.

The remaining 18% of greenhouse gases that does not fall under the carbon levy is already subject to a specific reduction policy (8%) or is the result of emissions from overly small sources (10%), so the costs of imposing the carbon levy would not outweigh the benefits. To reduce this 10% of industrial greenhouse gas emissions, parties may be eligible for the expanded SDE+ scheme, for which the standard of compulsory measures with a payback period of up to five years applies. The table below shows an indicative breakdown of the reduction target.

Objective	Existing policy of 5.1 Mt	Reduction target of 14.3 Mt
F-gases	1.0 Mt	
Methane waste sites	1.8 Mt	
Measures with a payback period of up to five years	0.1 Mt	0.1 Mt

⁴⁶ This excludes emissions from electricity production, agriculture, mobility and the built environment.

⁴⁷ Insofar as can be measured.

Subsidies & EIA/VAMIL		0.2 Mt
Offshore methane flaring		TBD
Existing EIA, MEE, MJA policy	2.2 Mt	
ETS levy on carbon dioxide		12.0 Mt
Levy on waste incineration plants		1.1 Mt
Levy on N ₂ O		0.9 Mt

c) Objective tax base

The carbon levy must be objective, transparent and legally sustainable. If certain industrial actors were able to evade this responsibility, this would in principle mean that the other industrial actors would have to make a greater contribution, which would undermine the support for the more radical ambition envisaged by the Netherlands.

Set against this background, the ETS provides a solid basis for the additional carbon levy. Within the ETS, benchmarks are used for a large group of products (the so-called European product benchmarks). These product benchmarks reflect carbon efficiency in tonnes of carbon dioxide per unit of product, based on the average determined by the 10% of most efficient European plants. The European benchmarks are updated every five years and are dynamic in nature, given that the boundaries shift due to technological advances. The European ETS benchmarks are reviewed every five years.

The taxed carbon emissions are based on the most recent European product benchmarks in force and will increase over time, ensuring that the tax will align with the target of 14.3 Mt in 2030 in respect of the baseline trajectory. In the lead-up to 2030, an increasingly larger proportion of current emissions, in light of the foregoing, will therefore be presumed to be avoidable. When the tax base is established in the starting year, it will be determined in such a way that it will reasonably take into account the starting position of businesses and lead times of investments. In order to give businesses the opportunity to start investing, the carbon levy will start at a relatively low rate in 2021 and with a tax base that will allow businesses that perform less well than the European 10% benchmark not to pay the carbon levy yet. The tax base will subsequently gradually increase, however. By 2030, the tax base will be determined in such a way that the emissions reduction of 14.3 Mt compared to the baseline trajectory will be achieved.

The European ETS benchmarks for 2021 – 2025 will be published in 2020. This information will be used to determine what level of reduction per product category must already be realised based on expectations within a European context. In 2025, an update of the European benchmarks will take place for the 2026 – 2030 period.

The additional target in respect of the European benchmarks to meet the 2030 target will be distributed among businesses on a pro rata basis and will yield a uniform reduction rate in respect of the European benchmark that will be the same for each company. The allocated exempted emissions will be determined based on the European product benchmark, the reduction rate and the production volume per plant. This will create an independent reduction trajectory that also aligns with the system currently applied by the NEa and, as such, is feasible for the NEa.

In concrete terms, for businesses in the target group, this means the following:

- The plant/company must be among the best 10% of competitors in Europe in terms of carbon efficiency (the European ETS benchmark). Given that the Netherlands has a more ambitious target, this means that, by 2030, Dutch businesses will have to perform better than the current 10% of best businesses in Europe. The associated improvement will be the same for each company when compared to the European benchmarks applicable to that company. If businesses are currently already among the 10% of the best performing businesses, their task will not be as significant as that of those businesses with emissions that exceed the European ETS benchmark. This will give businesses that are lagging behind their peers an even greater incentive to reduce their carbon dioxide emissions. These businesses are also expected to have more options to reduce their carbon emissions (comparable businesses will already have lower emissions per unit of product, after all).
- Implementation will align with the EU ETS system.⁴⁸ In 2025, partly in light of European climate change efforts, a review will take place of the sectoral targets, which, where necessary, will translate into a review and recalibration of the range of instruments. For the carbon levy, this means that it will be recalibrated to the newly published European benchmark figures for the 2026 – 2030 period.
- In order to prevent businesses from reaching the threshold of the tax base simply by relocating production and thereby avoiding the carbon levy (a type of drain that will not benefit the climate), the NEa will be asked to adapt the tax base for individual businesses according to changing production volumes, in a way that aligns with the allocation of free emissions allowances in the context of the EU ETS.

d) Exchange option

The relatively high reduction target for industry of 14.3 Mt by 2030 was determined based on social cost efficiency across all sectors. In order to realise this target, it is crucial to encourage the most cost-effective measures within the industry sector as well. To do so within the system of the carbon levy, it would be preferable to allow the exchange and transfer of emissions allocations that are not subject to the tax base in any given year. This will allow businesses to reduce carbon dioxide emissions in a cost-effective way at the level of the cluster or region, resulting in already existing cluster benefits being perpetuated and reinforced. This is in line both with the SER approach to empower the five regional clusters and with the frontrunner programmes. In this way, differences between businesses that have been forced to take costly measures and businesses that have been able to implement cheaper measures can be accounted for, and measures can also be taken in stages over time. This type of exchange can only take place within the space of one year, rather than between years.

Review according to key principles

The calculations of the PBL show that the carbon levy outlined here will guarantee achievement of the reduction target by 2030. Additional levies will not be needed.

In a quick scan regarding the feasibility of the proposed carbon levy, the Dutch Emissions Authority concluded that, based on the design analysed by the PBL, the levy could be implemented in a feasible way and could align with the existing competences of the Authority. Investments would have to be made in implementation capacity, however.

The PBL considers the risks of leakage of industrial activities and the corresponding employment and carbon emissions to other countries to be low, assuming that the carbon levy would include a tax-free rate for industry and the yields of the levy could be redirected

⁴⁸ Aligns with existing reports for ETS companies submitted to NEa and is therefore very feasible.

back into investments in the industry sector. PwC expects that that there will always be a risk of leakage effects due to a national levy, but that this risk can be minimised through a number of mitigating measures, including providing security on the degree of subsidisation, the timing and the structure of subsidies aimed at encouraging investment decisions for emissions reductions.

The purpose of the carbon levy is not to generate revenue, but to encourage businesses to invest in the Netherlands. The carbon levy is actually expected to generate little revenue, given that businesses will be able to put measures in place on time and given the comprehensive policy approach on strengthening the region, adequate labour market policy and innovation and SDE+ subsidies, as well as due to the exchange option provided within the levy charging methodology. Any revenue generated by the carbon levy will be channelled back into making industry greener. This will be achieved through a generic subsidy scheme, which will be linked to an already existing subsidy scheme.⁴⁹

The government as a partner

Many carbon reduction measures are dependent on actions taken by the government, depending, for example, on permits or (connection to) infrastructure. This is particularly true for the promising frontrunner programmers, which are aimed at truly giving the Netherlands the opportunity to lead the way in terms of collective action at the level of the chain or cluster. Critically, industry needs the government as a partner.

The transition of the industry sector may not be derailed by a lack of infrastructure. At present, there is too little understanding of which additional types of infrastructure would be required. A taskforce will be set up by the end of 2019, which will identify the various infrastructure needs (particularly in clusters) and advise on the conditions for and the realisation of such infrastructure.

The government should preferably take on a more constructive, proactive and "unburdening" attitude. These efforts can be tied in with the system of the national coordination scheme, which will allow permit application pathways to be streamlined and accelerated.⁵⁰ In addition, the government will be able to assist regarding the application for European subsidies or in identifying opportunities for EIB financing. Moreover, in relation to specific targets, it may be considered whether a proactive arrangement of state shareholdings can be achieved. In this way, working alongside public and other network managers, it can be determined where investments can be accelerated.

Legal framework and practical feasibility

The key points of the carbon levy have been outlined above and assessed according to the key principles. Further specification and clarification will take place during the legislative process. The introduction of a carbon levy for industry, after all, will require new legislation. The carbon levy is set to enter into force in 2021 and will fall under the State Taxes Act (*Algemene wet inzake rijksbelastingen*). The target group, the tax base, and the level of the carbon levy will be defined in detail in the Act and will be accompanied by explanatory notes on what impact these measures will have on the administrative burden and enforceability. In

⁴⁹ This will align with the usual budgetary system that estimates ex ante revenue. Based on this ex ante estimate, the level of the additional subsidy scheme will be determined for the legislative period and will not be adjusted in the interim. Levy revenues that are lower than estimated will not lead to lower expenditure and vice versa.

⁵⁰ This means that, for projects that require multiple permits, the initiator of the project can request that the government coordinate the procedures, with the advantage of the procedures being accelerated. This could also be applied for larger industrial projects. Also see: <https://www.rvo.nl/subsidies-regelingen/bureau-energieprojecten/rijksco%C3%B6rdinatie-regeling>.

addition, the Act will outline which details can be specified by way of a General Administrative Order or by Ministerial Order.

The legislation should provide the executive organisation with a foothold for efficiently imposing the carbon levy and should provide the industry sector with clarity and allow the Court to test the intention of the legislator in the event of appeal proceedings.

From the point of view of feasibility, the primary focus was on existing reports and implementation methods, which resulted in effective and objective policy. Such objectivity is crucial to good legislation. Alignment with the ETS system will be recognisable to the target group and has a properly functioning implementation practice.

The feasibility of the obligation to take measures with a payback period of five years or less is comparable to the current system of energy savings for businesses.

The feasibility of the exchange of emissions allocations is no more than a registration system (similar to the Land Registry) based on private agreements between businesses.

C3.3.8 Roll-out of carbon reduction technologies (expanded SDE+ and funding)

The roll-out of carbon dioxide reduction measures will be supported by the SDE+ subsidy scheme. The scheme will be funded through people's energy bills, using the surcharge for sustainable energy (ODE), which is traditionally collected from households and businesses.

The government believes that everyone should make a fair contribution toward the transition. To this end, the government will increase the share that businesses contribute toward the Surcharge for Sustainable Energy (ODE) from half to two thirds with effect from 2020. This increase will be collected in full in the highest tax brackets (third and fourth brackets), meaning that it will be paid by large-scale consumers, including by those in industry. This increase will benefit the households and SMEs in the first and second tax brackets, and the industry sector will contribute 500 million euros to the ODE by 2030. As such, industry will contribute a total of over 5 billion euros to the ODE up to 2030. According to PwC, the increase in the ODE rates will make the tax burden on energy use, particularly gas, higher in industry than is the case in other countries.

In the same period, the industry is expected to receive more than €3 billion from the expanded SDE+ scheme cumulatively in order to achieve the target of a 14.3 Mt reduction in carbon dioxide emissions. This amount is based on calculations of the PBL. In addition to industrial options, industry can also make use of regular options for renewable heat and green gas.

BOX: Expanding the SDE+ scheme – how does this work?

Preparing for the energy transition will cost money, given that the transition to other forms of energy generation and use will require investments that are not yet able to recoup themselves on the market. For that reason, subsidy schemes are available in many countries, including Germany, which was one of the first to set them up. Although they may differ in terms of the way they operate, they have a number of similar characteristics: money is collected from energy consumers, both from households and from businesses, and that money is then used to subsidise the operating shortfalls of those parties generating renewable energy. In general, this is considered reasonable. After all, the schemes focus on realising the transition where it is cheapest to realise and the funds come from energy consumers. This

does not necessarily imply any relationship between what someone contributes to the transition in terms of tax and what someone receives in terms of subsidy.

The Netherlands has a similar scheme, the SDE+ scheme, which is paid for by a surcharge on energy consumption, the ODE. The ODE is funded in equal parts by households and businesses. The SDE+ scheme compensated operating shortfalls for the generation of renewable energy, regardless of the sector or type of investor. The Coalition Agreement states the commitment to no longer focus on the percentage of renewable energy, but rather on a climate target: 49% less greenhouse gas emissions compared to 1990 levels. The SDE+ scheme has been expanded accordingly. From now on, the scheme will not only compensate for the operating shortfall of the generation of renewable energy, but will also compensate carbon emissions reductions in other sectors, such as industry and agriculture, the built environment and mobility. This government has chosen to continue the old SDE+ schemes and to allocate resources to them in the years to come. The overall budget of the SDE+ scheme has not been increased. It may sound illogical to expand the scheme without increasing the budget, but it is a sound principle. By having more technologies competing with each other on price and by focusing the subsidy on the climate target instead of on the energy target, we achieve more tonnes of greenhouse gas reduction for the same price.

The SDE+ subsidy is only meant to compensate for the operating shortfall, which arises when a party invests in climate change measures. This means the SDE+ is not a net source of income for investors. It does not increase profits, but only compensates the "losses" on an investment that they would not have made without the SDE+ scheme. The SDE+ scheme does not create an advantage; it only removes a disadvantage.

The expanded SDE+ scheme will be suitable for projects with a minimum scale. With regard to smaller projects, and SMEs in particular, it will be determined how these may become eligible for SDE+ funds without businesses being confronted with a high administrative burden and with lower implementation costs for the government (Netherlands Enterprise Agency). This is intended to prevent small-scale but cost-effective reduction potential remaining untapped without this going to the detriment of an efficient SDE+ scheme.

C3.3.9 Preventing loss of employment

As previously cited in Section C3.3.7, the design of the carbon levy is intended to ensure that businesses align their carbon reduction measures with their investment cycles in various ways. This is in part aimed at preventing the leakage and loss of employment in energy-intensive industry.

Some businesses could still experience problems due to the cumulation of measures (including the shift in the Surcharge for Sustainable Energy, the carbon levy and the end of the ETS indirect cost compensation scheme). Businesses for which transition investments take time and are very expensive and/or where the necessary infrastructure is in danger of not becoming available on time are at highest risk.

The majority of the 300 major industrial businesses are active in the five previously mentioned clusters of Rijnmond/Moerdijk, the North Sea Canal Area, the Northern Netherlands, Chemelot (Geleen region) and Zeeland. The government will actively monitor whether these risks are in danger of materialising and will take action if the effects mentioned lead to a threat of job losses in intrinsically healthy businesses. To this end, the government will develop a plan setting out how the monitoring will take place, which method will be used to objectively assess whether there is a threat of job losses and what instruments the government can use to avert this threat. The Climate Policy Progress Monitor (*Voortgangsmontitor Klimaatbeleid*) will feature an annual report on the monitoring carried

out. The government has initially set aside €125 million for these instruments in the coming period, in addition to the €75 million in compensation for losses incurred already available for the switch to low-calorific gas. This can in any event include earmarking funds for the roll-out of more costly carbon dioxide-reducing potential needed by individual businesses in order to avoid the carbon levy, but for which they are probably unable to make a competitive bid within the expanded SDE+ scheme, support with infrastructure bottlenecks or compensation for the ETS indirect cost compensation scheme ending.

C3.3.10 Use of carbon capture and storage

Climate change has made it necessary for us to act quickly, with no time to lose. We cannot wait for better solutions that may or may not materialise and, for that reason, must focus all our efforts on what can help us reduce carbon emissions as quickly as possible.

Capture, transport and storage of carbon dioxide produced by industry (Carbon Capture and Storage, CCS) is regarded by the sector and by the national government as crucial in the combination of technological measures aimed at achieving the climate target in a cost-effective manner. Capture, transport and storage of carbon dioxide (CCS) produced by industry is regarded by the sector and by the national government as a crucial activity to achieving the 2030 target. In addition, capture and transport can serve as a prelude to the reuse of carbon (CCU). In the future (for example in conjunction with green hydrogen), captured carbon dioxide may be able to contribute to the development of synthetic raw materials and fuels (such as Steel2chemicals) and the ability to realise negative emissions (in addition to other options that may help realise negative emissions). The envisaged scaling-up matches the target of Dutch industry having virtually climate-neutral production processes by 2050 in a European context. CCU is expected to make up a significant part of industrial production, for example through reuse of carbon as a raw material or in construction materials or plastics. On the other hand, CCS may not impede the structural development of alternative climate-neutral technologies or activities for carbon emissions reduction.

During the drafting of the Climate Agreement, concerns were expressed regarding the use of CCS and in particular regarding the extent to which CCS projects would be able to monopolise the available SDE+ budget. In order to address these concerns and to ensure that the use of CCS should not be at the expense of technologies that are needed for the long-term transition, the subsidy of CCS will be restricted as outlined below. Using a sieve, a cap and a horizon, there will be sufficient investment security for the industry sector to realise their carbon reduction target at the lowest cost, as well as a guarantee that the funds that are needed for the long-term transition will remain available.

BOX: CCS restrictions

1. sieve: restriction through the sieve⁵¹ will ensure that CCS is only subsidised at sites where no demonstrably cost-effective alternatives are available at the time. The objective is to find a balance between preventing clean technologies from being crowded out and using the reduction potential that CCS offers to achieve the reduction target. The details of this will be determined each year based on independent advice. As long as the cap has not been reached (see below), the expanded SDE+ scheme will be opened up to measures for which there are no alternatives.
2. cap: in addition, the idea is that the CCS cap in industry in the expanded SDE+ scheme up to 2030 will facilitate a cost-effective transition up to 2030. In order to ensure that new insights on the development of technological sustainability options are taken into account, the cap can be adjusted whenever the Climate Agreement is reviewed. The level of the cap⁵² will be determined in such a way that CCS will be subsidised for a maximum of 7.2 Mt of the total 14.3 Mt of emissions reductions in the industry sector by 2030.⁵³
3. horizon: by eventually no longer granting new subsidy decisions for CCS (with the exception of CCS for negative emissions), a time limit is imposed that will provide a necessary incentive for the development of alternatives to CCS in places where this is currently not yet cost-effective. No more SDE+ decisions will be granted for CCS applications beyond 2035 (with the exception of negative emissions), underlining the temporary nature of the subsidisation of CCS technology. This will provide an incentive for cost reductions and for the development of alternatives. At the same time, it provides investment security up to and including 2035 for CCS projects that are needed in the short term to keep the costs of the transition as low as possible.

The sieve and the horizon (the time at which subsidy will be phased out) will be implemented in such a way as to provide sufficient prospects at present for businesses to take sustainability measures (using CCS in places where there are no cost-effective alternatives), while also ensuring that there are enough incentives to ensure that a sufficient amount of cost-effective alternatives to CCS will become available in the future. It is important to realise that the restriction of CCS is only a restriction to the subsidising of CCS. Where the industry is able to capture and store carbon dioxide without subsidy, the government will not impose any restrictions. The costs of CCS will be borne by the businesses capturing the carbon dioxide, with the relevant company at least paying a cost-covering rate to the consortium managing the transport, infrastructure and storage, retaining responsibility for monitoring the stored carbon dioxide and preventing any leakage.

The transition is rife with uncertainties, including with regard to the expected subsidy needs for CCS. The restrictions respond to this aspect. Nevertheless, in the years to come, the subsidy needs of CCS will be monitored and adjustments will be made where necessary (see box).

⁵¹ The term "sieve" refers to the fact that the government will be able to identify CCS categories for which it believes there are a sufficient number of alternatives, such that subsidy is not or no longer preferred. This can be reviewed periodically. These categories will therefore not be able to pass through the sieve and will not be eligible for subsidy;

⁵² In this instance, the cap relates to industrial CCS; CCS for the electricity sector (as used for the NUON blast furnace gas plants) has a separate cap of 3 Mt.

⁵³ The Netherlands Environmental Assessment Agency (PBL) analysis entitled *Impact of the government proposal for a carbon levy in industry* makes clear that, if almost all the cost-effective potential is used, CCS will be used for less than 7 Mt;

BOX: Dealing with uncertainties in relation to subsidy needs

Based on the PBL's recent estimates, more than half of the maximum industrial subsidy funding is expected to remain available for technologies other than CCS. The exact budget for CCS depends on a number of factors, such as the carbon price, the basic allocated amount for CCS in the expanded SDE+ scheme and the issue of whether and which projects will submit a subsidy application. As such, the exact budget is not yet known. However, at a carbon price of €46 per tonne of carbon dioxide, as applied by the PBL, the anticipated expenditure on CCS in 2030 is expected to be less than half of the €550 million maximum for industrial applications (around 6% of the total SDE budget in 2030). The annual monitoring of the scope of the expanded SDE+ will also examine the possible proportion of the available budget that CCS would take up. In the unlikely event that more than half of the expenditure on new industrial options should threaten to be used on CCS, a review should take place at that time to consider whether measures are needed and preferred. In this way, a sufficient portion of the budget will remain available for other sustainable technologies, whilst also providing the industry sector with adequate prospects to make the necessary preparations and realise their reduction target in a cost-effective manner.

Furthermore, for the period of the Climate Agreement, carbon dioxide from the CSS projects will only be stored underground under the sea. One of the possibilities includes storage in other countries that fall under the ETS, provided the international rules are adapted for this type of export.

There are strict regulations with regard to safety and the prevention of leaks. In principle, the legal framework is available for CCS permits to be granted based on these principles; moreover, the experience with monitoring plans for offshore production facilities is in principle sufficient to outline the required monitoring for CCS. The specific monitoring requirements per storage site will have to be identified, however. Further research is required for the high-pressure transport of carbon dioxide. Monitoring of the carbon dioxide in storage is necessary in accordance with the Mining Act (*Mijnbouwwet*). In principle, the national government will embed the statutory periods of responsibility and liability in the storage permit. The relevant company will at least pay a cost-covering rate to the consortium managing the transport and storage, including the costs for the construction of the infrastructure⁵⁴, monitoring and prevention of leakage.

The national government will develop principles on market regulation and various types of liability and will also consider the role played by public sector parties in this regard.

The government will award a permanent contract to EBN (Energie Beheer Nederland) (in partnership with TNO's National Geological Survey) to maintain a map of offshore fields suitable for CCS and to keep a study that has already been conducted updated.

The Dutch government will make efforts with regard to the amendment of European rules, including in the field of ETS, which are aimed at enabling transport of carbon dioxide (on vessels), carbon storage in materials and transport and processing of waste and making it possible to determine international supply chain impact (including cross-border transport of carbon dioxide).

⁵⁴ In accordance with the SDE+ system.

C3.4 Other agreements

C3.4.1 Structure

The success of the system transition and the creation of an entirely new type of industry not only requires a supply, but equally requires a demand for sustainably produced products. It is vital that essential new components of a climate-neutral and circular industry are able to develop in the Netherlands rapidly enough. In order to accelerate that growth, targeted action may be needed that will take a different shape for each of the development phases of the growth market. An acceleration approach for the priority growth markets will be specified further. The priority growth markets are derived from the roadmaps of the Integrated Knowledge and Innovation Agenda (IKIA).⁵⁵

Agreements:

- a. By the end of 2019, industry and the government will further specify the priority growth markets based on the roadmaps formulated by the IKIA.
- b. A working group, consisting of representatives of the industry sector and public authorities, among others, will consider for which technologies acceleration is needed. To this end, the working group will use its own set of guidelines containing criteria based on the study entitled "Make the future".⁵⁶
- c. On the part of the national government, shared responsibility for the development of each of the specifically selected growth markets will be assigned to the relevant ministries, thus ensuring that the acceleration measures are in line with existing and forthcoming policy (such as the transition agenda and the frontrunner approach).⁵⁷
- d. The national government will ensure that a central knowledge centre (such as the Netherlands Enterprise Agency) is made available to facilitate the implementation of the acceleration plans (frontrunner approach and/or gearbox for the circular economy). Alignment will be sought with the pilots and demos in the Integrated Knowledge and Innovation Agenda (IKIA), with knowledge sharing and making instruments accessible to SMEs and start-ups playing a pivotal role.
- e. The industry will cooperate with the implementation of the acceleration plans.

C3.4.2 Dealing with growth and newcomers

The Netherlands has an open economy in which businesses are able to grow and newcomers, in principle, are welcomed. As such, the system transition facing Dutch industry is open to newcomers who wish to make a contribution to the innovation of industrial production in the Netherlands. It is also inevitable that part of current production will no longer be possible, at least not in the same way. A dynamic perspective is crucial to achieving the system transition in the Netherlands and elsewhere.

When determining the tax-free threshold of a plant, significant growth and shrinkage of carbon emissions per unit of product will be taken into account. In this way, economic growth is not penalised if it is achieved in a greenhouse gas-efficient manner. This also ensures that new plants or plants that are being phased out do not disrupt the system. In this way, growth and new entrants will be able to fit into the levy system seamlessly.

⁵⁵ D3: Integrated Knowledge and Innovation Agenda.

⁵⁶ NewForesight study: Make the future, November 2018, source www.klimaataakkoord.nl

⁵⁷ Intensive support of frontrunners is crucial in order to effectively kick-start the transition and to shape subsequent roll-outs based on successes. Support will focus on assisting companies and accelerating the realisation of the target.

The reduction target relates to a reduction by 2030 compared to estimated carbon emissions by 2030 in the baseline trajectory of the PBL. This baseline trajectory assumes economic growth of 1.75% per year, with a growth in the industry's production of 0.7%.⁵⁸ In the event of higher or lower production growth, as a result of new entrants, for example, or termination or relocation of production, remaining emissions will end up higher or lower by 2030 than currently assumed in the baseline trajectory. The overall growth, entry, termination and relocation of activities will be included in the recalibration and review of the remaining targets and, by extension, the required commitment of existing and additional measures and instruments, which will take place every five years. At the time of this five-year review, a comprehensive perspective will be applied across the sectors, with a ten-year horizon (including a forecast toward 2050), based on the central carbon emissions reduction target. Residual emissions per sector will therefore not be a key area of focus (see part B of the draft Climate Agreement).

Nevertheless, it is vital that any growers and newcomers fit into the carbon emissions reduction pathway toward 2050 and participate in the levy system. The same rules apply to significant expansions, upgrades and newcomers as apply to existing businesses, which can be translated into, among other things, inclusion of all carbon emissions reduction measures in the design of new plants, with a payback period of five years or less. New entrants and existing businesses that expand will also be able to make use of the same instruments under the same conditions as existing businesses and will be able to take advantage of this earlier to arrive at facilities with minimal carbon emissions.

C3.4.3 International engagement and level playing field

The Netherlands will not be doing more than other countries. However, it will be putting the necessary measures into place more quickly. This policy will allow Dutch industry to respond more quickly to new market opportunities with the assistance of the government and establish a lead position in the international economic transition that is currently being shaped. The policy is aimed at preventing major disruptions and is based on the principle that waiting longer will entail increasingly higher costs to industry, to the government and to citizens themselves.

During the transition, the Netherlands must be able to compete with other countries. For that reason, the key focus will be on the following points:

- collaboration on a European roadmap and on action plans to facilitate a climate-neutral industry sector in Europe;
- actively focusing on achieving ETS recognition for relevant carbon reduction measures, such as CCU, circular technologies and electric boilers;
- focus on a minimum ETS price combined with measures to prevent a drain to other parts of the world;
- increasing the carbon reduction targets to 55% and actively working toward gaining the support of other frontrunner countries to increase the carbon reduction targets and working together to accelerate the transition.

Dutch industry competes at an international level and wishes to ensure that the range of measures it is implementing, as a sector, within the context of the national climate targets, are not carried out at the expense of its international competitiveness.⁵⁹ In this context, the proposal for key points states that measures may be taken that fit within the level playing

⁵⁸ The reduction factor for the carbon levy will take place based on the most up-to-date information.

⁵⁹ On the other hand, the competitiveness of a business climate for sustainable businesses should be visibly better.

field. In principle, the level playing field concerns a principle of fairness that aims to have all participants play according to the same set of rules. The competitiveness of businesses based in the Netherlands on the international field is determined by a combination of factors that can have both positive and negative effects: energy prices, labour market factors, geographical conditions, policies, and tax and other laws and regulations. Together, these factors constitute the current "playing field".

The government commissioned PwC to carry out a study⁶⁰ into the impact of a national levy on greenhouse gas emissions in industry. The conclusion drawn by PwC and the accompanying committee of experts is that a national levy would increase the risk of leakage effects (carbon leakage and drain of investments). The government took this advice into account in shaping the sensible carbon levy. The government will continue to monitor developments in the playing field periodically (see also the prevention of leakage effects, 3.3.9). To the government and the SER, preventing leakage of carbon emissions and loss of employment is a crucial issue. As outlined above, displacement of carbon emissions outside of the Netherlands will make a negative rather than a positive contribution to the issue of climate change and the Paris targets.

C3.4.4 Dealing with measures for scope 2 and 3 emissions

The range of instruments focuses on the measures that directly reduce industrial emissions. By using the European benchmark system, heat management for industrial products will be regarded as scope 1 emissions for that product category.⁶¹ Scope 3 emissions are emissions that originate from the front or back end of the national or international production chain. These types of emissions can often be reduced cost-effectively through sustainable use of raw materials (including better product design, recycling and lifespan extension).

Agreements:

- a. The government will take the lead, alongside the knowledge institutions, to examine how (including by way of carbon accounting) the supply chain impact of circular measures, such as recycling and the use of biobased and other substitution raw materials, can be identified and how this can be implemented into policy. Wherever and whenever possible, this will be supported by instruments such as the Climate Budget and the expanded SDE+ scheme.
- b. Every five years upon recalibration, the efforts of the industry in terms of scope 2 and 3 will be set out clearly.

C3.4.5 Spatial impact and infrastructure

The Government Position Paper on the National Environmental Planning Strategy states the following in relation to the industry: "The port areas and industrial clusters of large-scale consumers on the coast must maximise their energy savings and convert to new renewable energy sources. They have the potential to play a pivotal role in the energy transition through the generation, use, conversion and storage of offshore wind energy and by making the residual heat released available to the surrounding built environment." In the industry sector as well, coordination with other areas is relevant, for example with the built environment and the greenhouse horticulture sector when it comes to using residual heat and CCU. In addition, there is a demand for DC facilities on the coast.

The timely availability of infrastructure and affordable energy are necessary for the industry to be able to carry out the climate transition. This requires a long-term supply and demand

⁶⁰ <https://zoek.officielebekendmakingen.nl/blg-876198.pdf>.

⁶¹ The heat, which is not produced, but rather purchased, also counts toward the product benchmarks to determine the carbon efficiency of the production process.

survey across all sectors, better modelling and knowledge augmentation, but equally requires better insight into the organisation of the market in a timely fashion.

The Regional Energy Strategies will identify and set out the infrastructure needs for electricity, gases and heating, as well as the sites for the generation of renewable energy in the region and the associated infrastructure. In 2020, the national government, in part based on input from parties participating in the platforms and stakeholders, will adopt a broad strategy on market organisation & energy transition, including a policy agenda for 2030. Hydrogen will also be included in this strategy.

The government will lead a structured dialogue with neighbouring countries regarding cross-border infrastructure,⁶² which will in any case include the consultations with North Rhine-Westphalia and Flanders on the infrastructure approach for the ARRRa cluster.⁶³ Energy generated offshore will be connected to the main network in the vicinity of industrial clusters on the coast and will be used in the area as much as possible. These cases will take into account the spatial planning impact offshore, on land and in relation to the existing grid. Where appropriate, optimisation using DC grids, among other things, will be studied.

With regard to industrial clusters further inland, such as Emmen and Chemelot, alternatives in the electricity supply that lead to effective, timely and affordable solutions, other than a direct connection to energy generated offshore, will also be reviewed.

TenneT and Gasunie's investment plans,⁶⁴ in conjunction with similar documents of the regional network managers, make up the foundation for investments in infrastructure for electricity and gas between network managers and public authorities. The national government will ask network managers and operators of pipelines to identify what difficulties or hurdles they foresee in the context of the availability of infrastructure to the implementation of the plans of the industry sector as outlined by this Agreement, based on the existing plans.

The national government will provide more clarity on the organisation of the market for heating grids in the development of the Heating Supply Act 2.0. This may also involve amendment of the Electricity Act 1998 (*Elektriciteitswet 1998*) and the Gas Act (*Gaswet*). In 2019, the national government will review the ways in which financial support may be structured for industrial and other heating grids.

The provinces will play a key role in the spatial integration of infrastructure and will take into account the significance and value of effective infrastructure connections for Dutch industry in their spatial assessment. Full coordination between the RES and the National Energy System Programme is crucial in this regard. The relevant competent authorities can subsequently collaborate using the RCR system⁶⁵ to speed up the decision-making process for large infrastructure projects.

C3.4.6 Power2heat⁶⁶

Electrification of heating processes in the industry provides a significant opportunity for making industrial production more sustainable (provided sufficient renewable electricity can

⁶² This also includes possible cross-border infrastructure with Norway, Denmark and the United Kingdom.

⁶³ Antwerp-Rotterdam-Rhine-Ruhr area.

⁶⁴ Formerly QCD (Quality and Capacity document)

⁶⁵ RCR = National coordination scheme (*Rijks Coördinatie-regeling*) (<https://www.rvo.nl/subsidies-regelingen/bureau-energieprojecten/rijksco%C3%B6rdinatie-regeling>).

⁶⁶ See also: <https://www.klimaatkoord.nl/industrie/documenten/publicaties/2019/01/08/achtergrondnotitie-industrie-power-to-heat>.

be generated). Power2heat has tremendous potential to contribute to the targets. A joint working group of the Electricity and Industry Sector Platforms has demonstrated that this can lead to 5.3 Mt in reductions and an increase in the demand for renewable electricity from 8 to 24 TWh.

Until 2030, it is expected that a number of electrification technologies will have a relevant impact.

Agreements on the instruments of P2H:

- a. The parties will commit to a monitoring methodology that provides insight into the development of electrification in the industry, the built environment and mobility. The monitor will allow parties to consider to what extent electricity supply and demand are developing in a balanced way.
- b. The national government will endeavour to ensure the electrification of heat is incorporated in the expanded SDE+ scheme. Hybrid electrification will also be considered in this regard.
- c. In order to ensure that the source of the electricity that is used for P2H in the industry sector is as renewable as possible, the industry and electricity sectors will develop a budget-neutral proposal for the format of the expanded SDE+ scheme, in order to create a link with sustainable generation of electricity⁶⁷ in relation to the stimulation of the electrification of heating processes. The national government, in consultation with other parties, will review whether more flexibility can be provided in the Energy Act 1.0 (*Energiewet 1.0*), or through amendment of other legislation (including the codes), for dynamic tariff structures in the network tariffs for transport and distribution in order to facilitate more flexibility. Internet consultation for the Energy Act 1.0 is expected to take place in 2019.
- d. The industry will commit itself to improving its aggregation and dissemination of the required knowledge in relation to electrification in the industry, both inside and outside of the organisation, with due consideration of the applicable competition rules, and to that end will use the relevant existing bodies.

C3.4.6 Carbon footprint and circular procurement

In moving toward a circular economy, determining the carbon footprint of products and the maximum use of renewable and other feedstocks and materials is increasingly becoming more important. This knowledge is important to entrepreneurs, allowing them to ensure efficient and socially responsible business operations. Knowledge of the footprint is equally crucial to providing consumers with insight into the origin and environmental impact of products and services they wish to purchase (making choices⁶⁸). In addition, future policy stands to benefit from these insights. Public authorities and businesses are also consumers through their procurements and, as such, are able to contribute to the purchasing of eco-friendly products and services through their procurement policies. It is vital that harmonised carbon labelling systems be created to facilitate the creation of potential international markets for low-carbon products and services.

- a) The IKIA explicitly provides flexibility for research and implementation with regard to determining the carbon footprint of products and services. Development of a digital

⁶⁷ This may not be to the detriment of electrification

⁶⁸ Key examples include the CO₂ Performance Ladder (<http://www.co2-prestatieladder.info/co2-prestatieladder/>) or other methods of circular procurement or tendering (such as <http://www.copper8.com/>, <https://mvonederland.nl/wegwijzer-circulair-inkopen#tab=pane-title-step-1>, <https://www.circulairondernemen.nl/library/circulair-circulairder-circulairst-vergelijking-tools-circulair-inkopen> , etc.)

accounting system for carbon footprints in the supply chain (e.g. using blockchains) is part of this agenda.

- b) At a European level, the Netherlands supports the development of carbon labelling of finished or semi-finished products by the European Commission based on harmonised methodologies. Another potential option would be standardisation through the dynamic introduction of product standards (carbon-oriented and analogous to the European Ecodesign Directive successfully drafted in consultation with the industry sector⁶⁹), which would be based on transparent and gradual introduction, accompanied by responsible communication to businesses and consumers.
- c) Any knowledge gained will be shared with a broad variety of industries in which purchasing businesses operate, through the Green Deal on Circular Procurement and the Biobased Procurement Community of Practice.

Within the ground, road and water works sector, the national government and other public authorities will be stimulating climate-neutral and circular innovations within governmental construction and maintenance processes, partly by including measures in the field of materials (such as asphalt, concrete, soil and steel) and products, such as through supply chain agreements.

⁶⁹ <https://eur-lex.europa.eu/legal-content/NL/TXT/?uri=CELEX:32009L0125>.

C4 Agriculture and Land Use

C4 Agriculture and Land Use

C4.1 Vision for 2050

The foundation of a climate-neutral Netherlands

As a nation, we want to be able to eat, live and work comfortably and be able to move around in a healthy and pleasant environment. The agriculture and land use sectors make up the foundation of those ambitions.

The natural environment, trees, crops and agricultural land not only provide us with valuable landscape, but also capture carbon dioxide (CO₂) and, by doing so, act as a natural starting point from which to prevent climate change. In addition, they allow us to produce food and biomass, even in a changing climate. Biomass is used as animal feed and as a raw material for the production of energy, chemicals and materials. By 2050, this will be carried out in closed land-related cycles, as small or as large as necessary, in accordance with the government opinion of 2018⁷⁰ entitled "Valuable and connected" and the corresponding realisation plan of June 2019. This means that we will be closing the cycles for raw materials and natural resources at the smallest possible scale, whether that be regional, national or international. Arable farming, livestock farming and horticulture primarily use raw materials from each other's supply chains and waste flows from the food industry and food supply chains. Crop residues, food waste, process waste and manure will be reused or processed into new products. Circular enterprises use as little energy as possible, and the energy they do use is renewable as much as possible. Farmers and greenhouse horticulturists will be valued in society and will be able to earn a healthy income. Nature and landscape, including characteristically Dutch landscape, will be managed as valuable assets, meaning that we will be taking into account climate resistance, biodiversity and aesthetics.

The link between the climate target with the challenges set out in the vision of the Ministry of Agriculture, Nature and Food Quality ensures a comprehensive approach. This is critical, primarily for farmers and growers. After all, various measures will come together on the farmyard. An integrated approach significantly increases the chances of success. The various proposals that have been developed in this Agreement have taken into account the cohesion between the climate targets and other targets set out in the vision of the Ministry of Agriculture, Nature and Food Quality. While the climate target is the starting point, optimal synergy will at the same time be sought with these other objectives.

Since 1990, the agricultural and horticultural sector has made a significant effort to reduce greenhouse gas emissions, which altogether have decreased by roughly 17%. The agriculture and land use sectors⁷¹ will continue down the path previously set out and pursue significant emissions reduction at an accelerated pace. However, even by 2050, greenhouse gas emissions from this sector will be inevitable. This is because greenhouse gases are inherent to natural products, such as methane and nitrous oxide from animal husbandry and fertilisation (even from "green fertilisers"⁷²). At the same time, the sector will increasingly be capturing carbon in soils, forests and materials, produce biomass and generate renewable energy. The sector's aim is to achieve an equilibrium between the unavoidable emissions of greenhouse gases, on the one hand, and the capture of greenhouse gases and production of renewable energy and biomass, on the other hand, by 2050. This is expressly a joint ambition shared by

⁷⁰ "Landbouw, natuur en voedsel: waardevol en verbonden. Nederland als koploper in kringlooplandbouw" [Agriculture, nature and food: valuable and connected. The Netherlands as a leader in circular agriculture] (2018).

⁷¹ The agriculture and land use sector is characterised by a variety of secondary sectors in agriculture, horticulture and forestry, and by the various land use functions such as site management and nature conservation. This subagreement will impact all these actors as well as residents and recreational and other users.

⁷² Green fertiliser: fertiliser that does not involve the use of fossil feedstocks in its production.

farmers and greenhouse horticulturists, site managers, NGOs, food processors, suppliers and supermarkets. The next few years will be used to ascertain how the Agriculture and Land Use sector can achieve that equilibrium.

The parties in the agriculture and land use domain (including private land owners and lessors) aim to achieve the climate targets within natural and economic framework conditions, with improvement of biodiversity and improvement thereof, an adequate approach to other environmental issues and robust earning power, and food and biomass production. A robust supply chain, with firm ambitions, healthy businesses and a biodiverse natural environment, constitutes the foundation for sustainable food, wood and biomass production and management, which we can be proud to pass on to future generations. It is through their own strength, working in partnership with one another, come rain or shine, with both feet planted on the ground and without a day's rest, that farmers and land managers will meet this challenge in the years to come.

The realisation of this ambition will primarily impact the day-to-day operations of farmers and greenhouse horticulturists and will affect everyone in the Netherlands through its impact on the organisation and quality of the environment we live in and through possible changes in food and other consumption. This will certainly be the case if we take into account reduction of the dependencies on replaceable raw materials, from abroad or otherwise. This may even lead to new market opportunities for food producers in the Netherlands, for example through the export of new knowledge accrued through this agreement, supplemented with knowledge of "circular agriculture".

Innovative supply chains and businesses are needed to shape the 2050 strategy and ambitions, but are equally crucial to achieving the intermediate 2030 targets. For that reason, the parties of the Climate Agreement will be focusing specifically on innovations for:

- the reduction of greenhouse gas emissions in the production of food and non-food by 2050;
- the advancement of the national and regional extent to which activities are land-based, in parallel with the creation of closed cycles;
- the net production of renewable energy from the agriculture, horticulture and forestry sectors;
- the organisation of Dutch land and water surfaces for carbon capture and use;
- cutting the climate impact of purchasing decisions by Dutch consumers by half by 2050.

These innovation tracks have a scope that goes beyond the national climate impact scale. This vision, and the corresponding innovation tracks, will operationalise the targets and objectives of the Paris Agreement – which, in addition to climate adaptation and mitigation, also deal with eradicating world hunger and the conservation of ecosystems and forests – for the Netherlands in qualitative terms.

In the next few years, the measures and consequences of potential climate challenges and targets for the agriculture sector for 2050 will be examined. This will also involve a discussion within the EU, which, in the context of the level playing field, will examine what measures the various Member States have already taken and intend to put in place. The Netherlands will take an active role in this discussion and will advocate an agricultural climate policy, aiming for regional optimisation of agricultural and biomass production based on environmental and climate motives in a way that does not threaten food production and the affordability of food.

C4.2 Target and ambitions for 2030

"Maximising creation of closed cycles"

As previously outlined, the agriculture and horticulture sector has made significant efforts to reduce emissions of greenhouse gases since 1990, resulting in a collective decrease of

roughly 17%. For 2030, the government has tasked the agriculture and land use sectors with achieving an additional reduction of 3.5 Mt of greenhouse gas emissions by 2030 (in addition to existing policy). This strict contribution from the agriculture and horticulture and nature conservation sectors is required in order to meet the government's 49% target for the Netherlands and is the next step on the road to 2050.

It is referred to as the next step because a significant foundation for emissions reduction has already been established in the present period and significant investments have taken place in the generation of renewable energy, resulting in the production of approximately 25 PJ in renewable energy in 2016. This performance has provided the inspiration and faith necessary to take the next steps heading toward 2030.

The target has been allocated according to reduction of greenhouse gases from agriculture (methane) and greenhouse horticulture, each to realise at least 1 Mt⁷³ by 2030, and a reduction of emissions and improvement of climate performance in the land use sector of 1.5 Mt, as set out in Table C4.2.2 for methane and nitrous oxide. With regard to the implementation of the 3.5 Mt target, the Coalition Agreement sets out that "technical measures (e.g. manure processing, mixed feed and energy-producing greenhouses) will take preference over measures aimed at curbing volumes."

Table C4.2.1 Overview of measures, emissions reduction and funding

Theme	Measures	Envisaged emissions reduction (Mt CO ₂ -eq)	Financing 2020 – 2030 (million €)
Livestock farming	Precision fertilising dairy farming Low-emission dairy cattle housing and pig housing Lifespan extension and selection of dairy cattle Integrated approach to methane and ammonia emissions Study of nitrification inhibitors Pig farming sustainable housing systems Scaling back pig farming Fertiliser replacement Knowledge and development	1.2 – 2.7*	252
Livestock farming around Natura2000 areas	Measures to strengthen nature value in Natura2000 areas Measures for the livestock sector		100
Peat meadow areas	Stimulus approach to peat meadows Pilots and demos Roll-out of measures Measures relating to nature and agriculture Development of earning models	1.0	276
Agricultural soils and outdoor cultivation	Pilots, knowledge dissemination, technological innovation, training of advisers	0.4 – 0.6	28
Trees, Forests and Natural environment	Forest strategy Reduction of deforestation in N2000 Climate-smart management Development of government-owned land Landscape elements	0.4 – 0.8	51
Greenhouse horticulture	Intensification of the Greenhouse as a Source of Energy programme EU Greenhouse as a Source of Energy	1.8 – 2.9	250

⁷³ Compared to the emissions trajectory for unchanged policy in 2016.

	scheme Additional geothermal energy Residual heat Electric heating		
Food waste, residual streams and biomass	Advising entrepreneurs on circular agriculture Combating food waste	0.0	13

* of which at least 1 Mt CO₂-eq in methane emission reduction (in accordance with the Coalition Agreement)

The participants of the Agriculture and Land Use Platform have adopted this target and have identified additional opportunities. The aim for 2030 consists of achieving a CO₂-eq reduction of 6 Mt⁷⁴ in the Netherlands. In addition, climate gains can be made through the contribution of energy generation, less intensive tillage and more sustainable tractors and through limitation of the import of feedstocks from abroad. This is also in line with the government's aim to draw up an additional 0.5 Mt in land use emissions. This additional commitment of the parties to the Sector Platform will furthermore contribute to a potential increase of the national reduction target to 55% by 2030.

Agriculture and horticulture do not always get recognition for their contribution to carbon reduction. Examples include the generation of various forms of energy and the reduction of the use of fertiliser (industry). This lack of recognition is the result of international agreements on the system of allocation of achievements in this area.

Table C4.2.2 Climate impact outside calculations of the Agriculture and Land use subagreement

Climate commitment with impact from "other Platforms and/or abroad"	Measures
Realised by the efforts of the partners of the Platform, but not attributed to the Agriculture and Land Use Climate Platform in quantitative terms	
Eco-friendly Consumption through food chains	Measures that require behavioural changes from consumers: <ul style="list-style-type: none"> - less food wastage; - more consumption of fruit and vegetables and larger percentage of plant-based protein, lower protein intake; - eco-friendliness of public foodstuffs.
Other commitments with climate impact	Energy: <ul style="list-style-type: none"> - energy savings and generation of renewable energy; - reduction of greenhouse gas emissions by farming vehicles. Less artificial fertiliser based on fossil fuels Domestic biomass production (offshore, ...) Impact from abroad: <ul style="list-style-type: none"> - reduced import of palm kernels and soy.

Our approach to realising the A&L climate target revolves around the vision for 2050 outlined above, which comes down to combining projects efficiently. Our preference goes to interventions that not only result in an improved carbon balance, but which also contribute to the transition of Dutch agriculture to circular agriculture, in accordance with the 2018 government opinion entitled "Valuable and connected" and the corresponding realisation plan

⁷⁴ This also relates to energy-related emissions and capture, concerning the climate performance of these sectors.

of June 2019. Key elements of that opinion include achieving a robust socio-economic position for the agricultural profession, more biodiversity in green spaces, healthier soils, more attractive landscapes for our rapidly urbanising population, increasing the resilience of the Netherlands to the effects of climate change and contribution to effective water management.

We are convinced that this type of linkage will contribute to achieving both cost effectiveness and support among relevant groups and in society as a whole. A key condition of successful coordination and linkage is the smart and undogmatic application of policies, as well as finding an effective combination of targeted application in the short term (meaning immediate application) and in the long term.

It will certainly be the case that choices will have to be made between conflicting social objectives (for example, should this forest be managed chiefly for the purpose of capturing carbon or to strengthen biodiversity?). In such cases, we will apply the following principles:

- The commitments are based on maximising land-based activities and further closure of cycles; they are therefore in line with the government opinion on agriculture published in 2018. In this regard, it is vital that nutrient cycles be closed at the smallest and most appropriate scale possible.
- The commitments will not only be cost effective in the climate domain, but will also align in a positive sense with at least one other sustainability objective deemed important by society, such as public health, animal welfare, soil quality, nature conservation, biodiversity or environmental quality. Operating efficiency, the well-being of employees and entrepreneurs are also key aspects. On balance, the commitments may not cause additional adverse transfer of these public objectives or efforts aimed at their realisation.
- The sector is characterised by a large number of family businesses and cooperative structures, the survival of which is predicated on a step-by-step transition. The long-term goals will set out the general direction and will advance any steps in the short term. It is vital that investments in eco-friendly adaptations can be made in a way that is justifiable from a commercial perspective as well. Organic investment opportunities will be used as much as possible.
- We take a cascading approach to the use of biomass: primarily for soil fertilisation, subsequently as a human food and as animal feed, then as a feedstock for materials (long-term carbon capture), chemicals and lastly for energy production, as outlined in chapter D2 of this Agreement.
- Experiences in the past decades have shown that maximum stimulation of projects in which farmers and cultivators experiment, learn and demonstrate opportunities is always a winning formula for achieving progress. This process is often aided by research, information or education. It is a strategy of action rather than words. In the past, these projects were referred to as study groups; these days, we refer to them as Living Labs. LTO Nederland (the Dutch Federation of Agricultural and Horticultural Organisations) will take the initiative for the organisation of labs on themes from the agreement during the term of the agreement and will encourage other parties to also adopt and apply this method.

This agreement is not a blueprint for the road to 2050 through the 2030 targets. Research, pilots and demonstrations will in some cases yield innovation tracks and opportunities for accelerated implementation and in other cases may require pause for thought. In the context of the look ahead to 2050, a scenario study will be carried out under the auspices of the parties, which will focus on the long-term impact of making agriculture more sustainable in terms of the climate, land-based activities and closing cycles.

The Platform parties will collectively discuss, interpret and draw up the results of the scenario study as soon as they become available. This will include an analysis of whether the measures and corresponding instruments that are to be used at present will be sufficient to achieve the 2030 climate targets. In addition, in their conclusions, the parties will jointly assess the

support capacity for the period leading up to 2030, their solidity in the period following 2030 and any positive and negative climate impact on the road to 2050, including in global terms. If any of the conclusions lead to shared insights on any changes to the package of measures (and/or instrumentation thereof), these will be taken into account in the general reviews following specific consultation.

C4.3 Standard criteria

C4.3.1 Investments and funding

The parties realise that, in the coming years, many billions of euros will be needed in private and public investments in order to realise the ambitions for the 2030 and, ultimately, 2050 climate targets. Such investments will also be crucial to other transitions in the rural domain, including for the greening of agriculture and biodiversity.

Clarity on the financial frameworks in the long term is essential to stakeholders' willingness to invest. The parties equally realise that there will always be uncertainties and that financial clarity across such lengthy periods cannot always be provided on all fronts. The terms of office of the relevant public authorities are an obvious example of this.

However, the parties see opportunities to take meaningful and transparent steps, including in terms of the private sector financial basis for their aspirations and commitments, based on the following principles, chiefly aimed at instruments in the public sector:

1. The existing budgets of public authorities constitute an important underlying principle and, as such, a key starting point for private sector financing aims. Where possible, existing budgets will be linked to the realisation of climate targets, such as in the context of nature conservation policy, asbestos removal and the current and future Common Agricultural Policy (CAP). The ambitions that are expressed in this part of the Climate Agreement will be incorporated into the National Strategic Plan that will be drawn up under the CAP.
2. A number of existing instruments will be adapted to focus more on climate policy than in the past and can be used in the Agriculture and Land Use sector as well. Schemes such as the SDE+ scheme and green loans (*Groenfinanciering*) are key in this regard. The Ministry of Agriculture, Nature and Food Quality has made a guarantee facility of 70 million euros available to the National Green Fund, which the Green Fund will use to attract additional funds to finance projects that contribute to the climate targets of the Agriculture and Land Use sector. The SDE++ scheme, with its focus on cost-effective carbon reduction, also provides options in relation to the implementation of the Agriculture and Land Use Climate Ambitions. The aim is to conclude further research into the relevant techniques with a view to opening up the SDE++ scheme by 2021.
3. The MIA and VAMIL schemes, alongside the EIA and the RNES, the guarantee scheme for geothermal energy and the knowledge and innovation programme for geothermal energy, will remain crucial to climate-related investments in the future.
4. Where possible, agreements will be made with Invest.nl (by commission) to examine whether and, if so, how Invest.nl may play a role regarding the investments in this transition, such as investments in animal housing, the energy transition in the greenhouse horticulture sector and the cultivation of forests.
5. Investments in innovation and knowledge will be based on current and amended Top Sector policy, with corresponding opportunities and intensification. In addition, contributions can be made to investments in knowledge and innovation from the Climate Budget and the additional funds, with an emphasis on the demonstration component and on implementation and innovation on the farmyard.
6. The parties recognise the critical importance of the development of reliable, structural earnings models in these sectors, including the development of instruments to provide access to additional funds from the private sectors (such as carbon credits).

Based on these principles and the corresponding expectations, it will be possible to take the necessary steps in the next few years and jointly develop new instruments in consultation, in cases where this can contribute to a more cost-effective realisation of the ambition.

The national government will make an amount of €970 million available in the 2020 – 2030 period to realise the 6 Mt ambition, of which €330 million will come from the Climate Budget.

In the unhoped-for event that there should be any substantial changes to this package of measures, the parties will consider what alternatives are available. The impact on pace and level of ambition may come into question, particularly if a change is part of a broader support package and if the corresponding measure cannot be introduced without that support package.

The implementation of specific funding and instrument packages for the measures from this subagreement will take place in the near future and will be ongoing, in line with the financial frameworks provided and with a view on any new developments (both public and private, and in the market). Cost-effective packages, both for public authorities and suitable for private sector investment opportunities and the associated pace of investments, are to be the key starting point. This requires continued commitment from all parties

The parties have agreed the following:

- a. Public, social and private parties will work together to ensure the finalisation and implementation of the financial instrumentation process as a tailored product before 1 January 2020.

Earnings models

Farmers, citizens, land managers and consumers will take action, including in respect of the climate, when they are faced with opportunities and prospects. These prospects may range from "information" to financial or other appreciation. This subagreement includes several key building blocks, which together form a robust basis for the development of earnings models, in terms of social appreciation, affordability for consumers and gains.

The product-specific or more general carbon footprints to be developed, for example, provide a good basis for the objective demonstration of the climate performance of a product and for the valuation of the underlying efforts.

The parties have agreed the following:

- b. The signatories to this subagreement have been invited by LTO Nederland to develop a plan, within existing competition rules, by 1 January 2020, for parties to systematically identify and, where possible, develop earnings models for sustainable feedstocks and foodstuffs from production from agriculture and/or land use. This plan will focus on, among other things:
 - strengthening the position of farmers and growers in the supply chain;
 - using instruments, such as the Sustainability Initiatives Act (*Wet duurzaamheidsinitiatieven*), which is currently being considered by the Council of State, and the tasks and responsibilities of producer's and industry associations (in the new CAP);
 - opportunities for closed and/or shorter supply chains;
 - the realisation of higher selling prices for farmers and growers that demonstrably contribute to sustainable production, including the reduction of greenhouse gases.

C4.3.2 Changes to applicable laws and regulations

The parties to this subagreement have expressed the need for components of laws and regulations to be amended to make them more specific regarding the realisation of climate targets (such as through quality control and associated instruments). It has been recognised

that these desired changes cannot be expressed in terms of an outcome obligation. This will often require the cooperation of third parties who are not party to the obligations of this agreement. To give an example, this is the case in relation to cooperation of the European Commission, with regard to directives and regulations.

The parties have agreed the following:

- a. If the desired changes cannot be achieved or cannot be achieved in time for the aims and targets agreed upon to be achieved, consultation will take place on possible alternative instruments in order to guarantee that the target is met or on adjusting the aims.
- b. The national government will ensure the speedy amendment of the Competitive Trading Act (*Mededingingswet*), to allow for collaboration between businesses in the agriculture and horticulture sector and the advancement thereof, including in service of the commitments under this subagreement.
- c. In the event of results falling short of the mark, the national government will work with local and regional authorities to implement compliance guarantees at a sector-wide and/or company level (free riders), through laws and regulations where possible and necessary. To that end, the national government will develop the necessary instruments (order declaring a collective agreement binding, compulsory sustainability standards through regulations) in 2019, which will take into account the specific circumstances in the various sectors.
- d. These instruments will have been developed and prepared for consideration by parliament by the end of 2019, after which implementation will take place (following adoption). If interim progress reports/monitoring should show that the results agreed upon may not be achieved, then these more robust instruments can be implemented.

C4.3.3 Innovation

Continuous development of innovative technologies, techniques and measures is needed to achieve the targets and ambitions by 2030 and 2050. This requires intensification of the innovation programmes in accordance with the IKIA (also see Chapter D3), which is essential in the years to come. The focus will be on the innovation goals, rather than on the resulting techniques, precisely because the challenge is so comprehensive and the time frames require adaptive innovation management. This approach was previously chosen in the greenhouse horticulture sector ("The greenhouse as a source of energy") and will be the basis of the approach for the entire Sector Platform.

The Knowledge and Innovation Agenda that was drawn up for the benefit of this agreement is based on the following research topics:

- by 2050, food and non-food to contribute to the 80 – 95% in emissions reduction in the Netherlands:
 - emissions reduction in soil and land use in agriculture;
 - livestock farming: methane and nitrous oxide emissions reduction;
- energy: user reduction to zero emissions by 2030 and generation of 100 PJ by 2050:
 - energy efficiency;
 - small-scale energy generation;
- 100% of land and water to be geared toward carbon capture and use by 2050:
 - development of blue space for seaweed production and development of the natural environment, taking into account the navigability of wind farms;
 - biomass cultivation with doubled photosynthesis by 2050;
 - protein for human consumption to come from new and existing plant-based sources by 2050;
 - natural environment that adapts to climate change: captures carbon dioxide each year, with greater biodiversity and a greater harvest of biomass by 2050;

- carbon footprint of consumers to halve (in food and non-food, including globally) through purchasing choices by 2050:
- all consumers to make the most eco-friendly choices by 2050:
 - healthy selection of foods to be related to raw material choices in ethical terms (the why of preference in soil use: food or non-food);
 - use of solid biomass as capturing medium to be maximised as use as construction material.

The implementation of this Knowledge and Innovation Agenda will take place in consultation with all parties and stakeholders in the knowledge and innovation domain to the extent possible, including with private sector parties. In order to make innovation applicable to daily practice, there will be specific focus on pilots and demonstration projects.

In addition to this agenda, there are also a number of promising start-ups, including several on cultured meat and insects for animal and human consumption.

In this way, the Knowledge and Innovation Agenda covers all the domains of this subagreement on Agriculture and Land Use.

C4.3.4. Labour market and training

Entrepreneurs and their successors in the agriculture and horticulture sector, as well as all farm advisers and financial experts that operate and provide advice for the benefit of the agriculture, horticulture and forestry sector, must start producing and operating in a climate-smart manner. All of this will take place in the broader context of the vision of the Ministry of Agriculture, Nature and Food Quality and the National Strategic Plan of the CAP. The ambitions of this subagreement provide sufficient insight into this change assignment, which not only relates to techniques and systems, but also to people. Ensure that there are enough people who are sufficiently qualified to use their talents and knowledge in this area is a key aspect in this regard. Financial experts and other farm advisers will be responsible for bringing the right knowledge to the farmyard. For financial experts, this will mean taking an independent position, and other farm advisers will require thorough knowledge of the new policy goals. Where necessary, they will be offered targeted courses in the context of the vision of the Ministry of Agriculture, Nature and Food Quality. Knowledge of climate policy is a part of that.

To realise the agenda set out above, entrepreneurs and business successors, but equally land managers, will have to have climate-related competences and knowledge. This will allow parties acting directly to act "with knowledge of the climate". Professional education may contribute to this through the development and provision of modules, teaching packages and training programmes for graduate and post-graduate learning. Furthermore, climate-smart production should be an integral part of the programmes in the field of livestock farming and plant cultivation at all levels (senior secondary vocational, higher professional and university education) and will be embedded in greater depth in the development of the existing GroenPact platform. This applies, in particular, with regard to:

- training and knowledge transfer for innovation. Sufficient influx and turnover of talent and the translation of scientific knowledge into practical applications in the business community, for example through climate-proof programmes, practice-oriented research and learning communities;
- embedding green skills in lifelong learning programmes. In this regard, it is crucial to emphasise the importance of the integral nature of issues and new technologies (circularity, systematic approach), for example through education, digital learning materials and learning networks, both inside and outside the green domain;
- advice, education and information for social acceptance and participation. Gaining awareness of the necessity of and opportunities for innovations, for example through

sustainability in education with the *Duurzaam Door* programme, the mobilisation of green vocational education and the Green Knowledge Network (*Groen Kennisnet*) for the development and professionalisation of an independent knowledge and advisory function, and creating awareness alongside young people regarding the climate urgency for agriculture and land use;

- the increasing willingness and ability to work and think in a cross-sector manner that is required. Knowledge, skills and competences will be developed and implemented through cross-sector cooperation, for example through collaboration between green education and the hydrological sector and programmes.

This will create a crucial change assignment for the agriculture and nature conservation knowledge and innovation system, which also applies to relevant education.

The parties have agreed the following:

- In order to meet the requirements for available manpower with the right abilities and skills in the decades to come, a review of the focus on the climate theme in the GroenPact platform, to be realised before the end of 2020, with consultation of all relevant parties, is crucial. This part of the Climate Agreement will provide the substantive basis for such a review.
- The national government will ensure that targeted focus will be incorporated in the GroenPact platform from the green education sector for the purpose of knowledge dissemination and impact, for example for practical research for the incorporation and impact of climate innovations in professional practice. In addition, the national government will request that the green education sector, in the same framework as the GroenPact platform, set up a "business-friendly" central service desk, so questions from professional practice can be put to the green education sector.
- The national government will request that the green education sector continue to update the curriculum in the context of the GroenPact platform to include newly developed knowledge and experiences, in any case by 1 January 2025, for the teaching of up-to-date knowledge. The green education sector will take the initiative for this, and updating the course materials can be carried out in partnership with practical experts on the various climate themes.

C4.3.5 National Biomass Roadmap

During the establishment of this agreement, the government assigned an additional challenge to this Sector Platform, to bring about sustainability improvements in other sectors through the supply of biomass cultivated in the Netherlands. The government asked the signatories to this subagreement, as these are the only producers and processors of biomass, to identify by means of a roadmap what additional sustainable biomass production on Dutch soil (including national waters) could be achieved.

The parties have agreed the following:

- To this end, the signatories will set up a working group, which will make its findings available to the Minister of Agriculture, Nature and Food Quality in the form of a roadmap within six months after adoption of the integrated sustainability framework conditions. This roadmap will be implemented if the working method and structure of the follow-up phase of the Climate Agreement necessitate such action. The roadmap – taking into account current government policy (including the vision on agriculture and biodiversity) – will clearly outline what quantities of biomass could be made available for applications, in addition to human food and animal feed, and what side effects this would have. A key component of this roadmap would consist of identifying economic and spatial planning incentives, based on the assumption that the users of biomass produced on request should make this financially attractive.

C4.3.6 Spatial planning changes

The spatial planning impact of the plans of the Climate Agreement, insofar as they relate to traditional spatial planning, will be embedded in spatial planning and environmental policy. Nevertheless, developments within the Agriculture and Land Use domain, also known as the green domain, which generally falls outside of the remit of the traditional spatial planning domain, also require attention, given that they compete with one another and with other spatial planning issues for claims to space.

The parties have agreed the following:

- a. The various, increasing and partially conflicting claims in the green environment resulting from the climate and broader sustainability agenda will be identified in the National Environmental Planning Strategy (NOVI) under the priority: future-proof development of rural areas. Further consideration of spatial claims and the planning of space will take place in regional or local area processes, including in the RES. In the context of the NOVI Monitor, the PBL will periodically report on implementation compliance for national interests and priorities, which will also involve the progress of the area-based approach. Based on this picture, where necessary, the parties can consult on what new and existing activities and instruments should be implemented to safeguard collective and public interests.

C4.4 Emissions reduction in livestock farming

The government would like special attention for farms located around Natura 2000 areas. The Coalition Agreement provides relevant points of departure for this ("Together with farmers situated near Natura 2000 areas, we will look at whether agricultural nature management can contribute to less intensive land use and thus to climate goals and nature restoration."). The government wishes to offer flexibility to continuing farms by doing so aims to provide young farmers with prospects for the future. There is an emphasis on voluntary participation in measures, with a view to ensuring that the reduction achieved via these measures helps to reinforce the ecological value in the Natura 2000 areas and half of developments in the livestock farming sector. The national government will make €100 million available for this purpose.

C4.4.1 General livestock farming agreements

The dairy, pig, poultry, sheep, goat and veal farming sectors contribute to achieving the climate target. We have chosen to take a sector-specific approach, with the following principles applying to all sectors:

- The focus on climate measures supports the further development toward the comprehensive sustainability of the livestock sector and the transition to circular agriculture. The realisation of the climate ambitions requires a joint approach of agricultural entrepreneurs, processing industries, supplying industries (livestock feed, fertiliser), public authorities, civic organisations, banks and retailers from each sector.
- A sectoral outcome obligation for 2030.
- The sectors will use a business-oriented approach involving entrepreneurs taking measures to reduce greenhouse gas emissions at company level. Processing industries, the feed industry, public authorities, civic organisations, banks and retailers will support the entrepreneurs according to their ability within the statutory competition framework.
- The private sector will encourage and advance the implementation of climate measures. The public authorities will support this. The national government, in consultation with other public authorities, will enable accountability of individual businesses based on climate performance to realise the sectoral greenhouse gas reduction target if necessary.
- Climate performance will be measured, monitored and made transparent at company level.

- Focus on the development of earnings models that pay for and add value to sustainability performance, including climate performance.

Based on the principles above, action plans are being and/or will be drawn up and implemented per sector.

The parties have agreed the following:

- e. The joint implementation of the action plan for "A climate-conscious dairy sector in the Netherlands" (dairy farming and production) and for "Revitalisation of the pig farming industry and the Climate Agreement" (pig farming).
- f. These action plans will be developed in 2019 in an Implementation Agenda for Livestock-Climate, in which the agreements will be further specified. The parties will discuss progress once a year. Based on the progress monitoring, the Implementation Agenda will be adjusted if necessary. The livestock farming development group will coordinate this process.
- g. The action plans for the poultry, goat, sheep and veal farming sectors will also be jointly drawn up and adopted in 2019. LTO Nederland will lead this process. The relevant public authorities will provide the necessary support.
- h. The government will take the lead in the development of schemes for the development and stimulation of innovations and investments in entirely sustainable and low-emission animal housing systems that reduce related emissions of greenhouse gases, ammonia, offensive odours and particulates at source and from animals. These schemes will cover both innovation and pilot projects and emissions measurements, as well as investment projects for "first movers". In addition to management measures (livestock, livestock feed, manure additives) and the development of measurement and sensor technology, this relates both to the adaptation of existing animal housing systems and the development of new housing systems that are geared toward, among other things, the quick removal of manure from the housing, storage outside the housing and manure treatment.
- i. It is crucial that innovative techniques can be incorporated into the animal housing assessment rapidly. This is vital in order to facilitate the transition to circular agriculture by entrepreneurs. The State Secretary for Infrastructure and Water Management will inform the House with regard to actions that were undertaken to tackle barriers in relation to the animal housing assessment that were identified for new applicants (Lodder Motion of 4 September 2018 regarding: barriers in the testing of housing systems, meeting document 28 973 No. 202). The key point will be tackling the process of replicating emission reduction technologies by limiting the copying of technology without conducting individual measurements. RVO.nl will also hold a number of sessions for advisers and supervisors of innovative projects in the livestock sector to provide them with better support at the start of the assessment process. The State Secretary for Infrastructure and Water Management will furthermore draw up a schedule and approach for the entire animal housing assessment system. The Environment and Planning Act will provide more possibilities for a tailored approach by municipalities to allow innovative animal housing systems. The national government will support municipalities in this endeavour, for example, by making relevant knowledge available.
- j. If farmers are able to combine the removal of asbestos with the installation of solar panels, this may be a financially appealing proposition. In addition, farmers may be eligible to receive SDE+ subsidy. Under this agreement, the government will request that the provinces and municipalities encourage farmers and growers to make use of the available schemes as much as possible; this is already being done by a number of provinces and municipalities. In addition, the Climate Measures Service Desk, as yet to be set up, will be given an active role in informing farmers and growers regarding the opportunities available to combine these schemes.

C4.4.2 Dairy farming emissions reduction

"The road to an energy-neutral dairy farming sector by 2030"

The objective is to achieve a climate-conscious dairy sector and energy-neutral dairy farming by 2030. The dairy industry will approach the challenge regarding the climate from a supply chain perspective and has identified opportunities to achieve climate gains through measures aimed at reducing greenhouse gas emissions (carbon dioxide, methane, nitrous oxide), carbon capturing, energy efficiency and the production of sustainable energy:

- measures in the field of "Animals and Nutrition" and "Manure storage and Fertilisation", which will allow methane emissions to have decreased by 0.8⁷⁵ Mt of carbon dioxide equivalents by 2030. Manure processing will take into account improvement of soil fertility;
- measures in the field of "Soil and Crops" (also see the paragraph on land use/soil), "Energy efficiency" and "Production of sustainable energy" with which greenhouse gas emissions can be reduced by 0.8 Mt CO₂-eq by 2030;
- in addition, decreased dependence on the import of high-protein concentrates from abroad. This will result in climate gains abroad (estimated at approximately 1 Mt CO₂-eq by 2030).

If the framework conditions and contributions, roles and responsibilities of all parties cannot be adequately implemented, this will affect the feasibility and realisation of the aims formulated by the dairy industry for 2030.

The parties have agreed the following:

Approach: climate performance in the dairy supply chain and at farm level

- a. The parties will opt for a comprehensive business-oriented approach. Dairy farmers will implement appropriate greenhouse gas reduction measures at their farms and will be responsible for reducing greenhouse gas emissions there as well. The dairy industry, the feed industry, public authorities, civic organisations, banks and retailers will encourage and support entrepreneurs in this regard. The parties will measure and monitor the results at farm level using the carbon footprint monitor.
- b. The dairy sector will take responsibility for the development and outline of a farm-specific approach, including the development of the packages of technical and other measures to reduce greenhouse gas emissions. The dairy sector, the feed industry, the national government, the provinces and the municipalities will, in 2019, set up an independent expertise centre to advise and facilitate dairy farmers in taking greenhouse gas reduction measures and with regard to the possibilities for using funding, investment, subsidy and tax instruments.
- c. In determining greenhouse gas reduction measures, the impact on other sustainability goals, which are considered vital by society and the sector itself, will have to be taken into account to guarantee the comprehensive scope of sustainability measures. For these sustainability efforts, the opinion of the Committee on Land-based Activities is a key prerequisite to the sectoral parties.
- d. The national government will ensure the obligatory nature of the implementation of the climate measures. The national government, in consultation with other public authorities, will enable accountability of individual businesses based on climate performance to realise the sectoral greenhouse gas reduction target if necessary. Ahead of 2020, the national government will examine if the carbon footprint monitor instrument can be used to support legal instruments for farm-specific monitoring and accountability.
- e. If, during the period leading up to 2030, greater reduction gains for greenhouse gas emissions are achieved by the dairy industry and by individual dairy farms, these may be

⁷⁵ In accordance with Regulation (EU) No 525/2013 of the European Parliament and of the Council of 21 May 2013 on a mechanism for monitoring and reporting greenhouse gas emissions and for reporting other information at national and Union level relevant to climate change and repealing Decision No 280/2004/EC, including Annexes

taken into account and settled with a target beyond 2030, in order to encourage dairy farms to keep carrying out greenhouse gas reduction measures.

- f. New insights and developments in the future in the field of carbon capture in the soil may be attributed to the target achievement of the dairy sector and will not be formulated as an additional target. New insights in respect of the role of methane in the carbon cycle will be charged to the dairy sector target.

Measures at farm level

- g. Dairy farmers have various options available to implement greenhouse gas reduction measures suitable to their farm. Dairy farmers will determine the combination of measures they will apply at the level of their farm to reduce the greenhouse gas emissions at their farm in conjunction with the reduction of ammonia emissions. To this end, a package of measures was developed, which contains, for example:
- measures for "Animals and Nutrition": lifespan extension, adjustment of the composition of feed, additives and improvement of roughage use;
 - measures for "Manure storage and Fertiliser": changes to livestock facilities, whether or not in conjunction with outdoor storage of methane oxidation, manure mono-fermentation and replacement of part of the grass with clover to reduce the amount of artificial fertiliser used;
 - measures for "Soil and Crops": less tillage of grassland, improvement of crop rotation, catch crops through sowing after harvest or undersowing;
 - measures for "Energy efficiency/production of sustainable energy": such as pre-coolers, frequency regulators and lighting, as well as solar PV and wind turbines.
- h. A key measure in the selected approach is the enhancement of insight and knowledge among livestock farmers so they can take suitable measures at their farms. For the entire duration of the agreement, the dairy industry will be carrying out knowledge and demo projects aimed at supporting livestock farmers when taking and implementing measures at their farms. The parties in the supply chain and public authorities will also provide such support (also see financial instruments).

Optimisation of feed

- i. The dairy industry and feed sector will come to an agreement on reducing methane emissions through feed by:
- improving feed conversion (development of feed that contributes to lower methane emissions);
 - responsible use of additives by setting up an approval committee as of 1 January 2020 for the approval of additives in animal feed, with the aim of reducing methane emissions (with regard to animal health, food quality and safety);
 - making the climate footprint of livestock feed transparent to dairy farmers. Ahead of 1 January 2020, Nevedi (the Dutch Feed Industry Association) will examine the options for drawing up guidelines in consultation with the feed sector and give direction to this, including through certification schemes.

Where there is a desire to make measures universally obligatory, a decision must be made regarding whether a cooperation agreement with Nevedi is the most appropriate method. An order declaring a collective agreement binding may be one of the possibilities for an appropriate organisational legal form.

Integrated approach to methane and ammonia through feed and animal trace

The government has set out a concrete package of measures for an integrated feed-specific and animal-specific approach to methane and ammonia, which will allow the emission of both of these substances to be tackled by making use of the natural capabilities of and variation in animals' digestive systems. A method of this type would allow an approach to tackling methane to contribute to reducing ammonia emissions. This integrated approach establishes a link with initiatives proposed by the business community. The approach consists of a coherent

set of measures, ranging from research to implementation, aimed at the reduction of both methane and ammonia in the form of a trinity for dairy farming.

4. Research conducted at trial farms will allow the relationships of animal-specific (nature and nurture) and ration-specific management measures to be clarified. The adjustments will subsequently be assessed on their effects.
5. A group of demo farms will demonstrate the proven measures in an accessible way to realise a situation where "farmers learn from farmers" and to clarify the relationship with a closed cycle.
6. Additional training for or retraining of information officers and other farm advisers will allow the new knowledge and insights to become part of the advice package, after which information officers will be able to provide farms with tailored advice on how to apply the measures and offer farms a scan of their management measures.

Given that the package of measures focuses on a rapid connection with and succession of knowledge development, knowledge application and knowledge dissemination and implementation, a significant impact can be expected in the period up to 2030, driven by the desire/necessity of entrepreneurs to achieve multiple objectives in their farm-specific context with a comprehensive approach.

Sustainable energy

- j. The dairy sector will be pursuing the generation of energy to realise its contribution to the climate target and to strengthen the earnings model. On that basis, the provinces and municipalities will be including the role and position of dairy farming in the development of the Regional Energy Strategies (RES) in 2019.
- k. Energy efficiency, production of sustainable energy and carbon storage by the dairy industry will be taken into account in the target performance for which the sector is responsible. The current supply chain approach to greenhouse gas reduction and monitoring in the dairy industry will remain the key point of departure.

Carbon capture

- l. In 2019, the municipalities, the provinces and the dairy sector will examine the opportunities for strengthening landscape structures (such as wooded banks) and for the capture of carbon dioxide and the increase of landscape quality, with carbon capture being attributed to the climate performance of the dairy sector.

Measures and added value of sustainable products

- m. The parties support the earnings model for dairy farmers through higher yields and/or lower costs and/or more room for development and/or functional space. Responsibility lies with multiple parties in this earnings model.
- n. The dairy sector focuses on realising higher market prices for sustainable dairy, including dairy with a lower carbon footprint component. The national government will support this, including through the development of the agri-nutri monitor by the Netherlands Authority for Consumers and Markets (ACM), allowing for transparent price formation, as a tool to help create earnings models for sustainability. The CBL will encourage its members to contribute to a better position for farmers and growers who demonstrably contribute to sustainable production, including the reduction of greenhouse gases. The Minister of Agriculture, Nature and Food Quality will make agreements with customers, such as supermarkets, including with regard to their responsibility in relation to the sustainability of their products and the establishment of reasonable remuneration for the sustainability efforts of farmers and growers. A review will take place of whether inclusion of climate performance in the SPECS (product specifications, which shape purchasing policy) may be a possibility.

Innovation task in the period leading up to 2030

- o. Realisation of the task requires innovation, not only for the short-term targets, but also to identify the opportunities ahead for greenhouse gas reduction in the long term. The

Knowledge and Innovation Agenda (KIA) is the principal guideline for that process and a derivative knowledge and innovation agenda for the dairy industry has been included in the action plan for the sector.

Policy instruments (general)

- p. The Ministry of Agriculture, Nature and Food Quality, in the context of the manure legislation review, which was launched in December 2018, will examine how manure legislation can contribute to closing cycles, specifically looking at "district contracts", updating manure limitations and achieving balanced fertilisation.
- q. The national government, supported by all parties, will work to secure the recognition of the EU for products from manure processing, such as fertiliser ("green fertiliser") aimed at reducing the use of fertiliser, resulting in a reduction of fossil energy and nitrous oxide and allowing more organic matter to build up in the soil.
- r. The provinces and municipalities will facilitate the implementation of climate measures (such as adjustments to livestock facilities) and the generation of sustainable energy on dairy farms as part of their environmental policy. In 2019, the dairy industry, the provinces and the municipalities will identify the opportunities and challenges in this regard and, where necessary, will implement improvements (such as the development of the periodic inspection instrument for livestock facilities in cooperation with the national government).
- s. The dairy sector, the provinces and the municipalities will pursue the expeditious processing of permit applications for climate measures from the dairy sector. In 2019, the sector and relevant public authorities will examine what opportunities and challenges there are in relation to acceleration and, where necessary, will implement improvements.
- t. The national government will produce proposals in 2019 for the revision of agricultural lease policy, in which long-term relationships between lessors and leaseholders and sustainable soil management will be key. In this regard, land management organisations will focus on achieving lower agricultural lease prices for organic matter build-up in the soil and longer lease periods.

Financial instruments (general)

- u. The Ministry of Agriculture, Nature and Food Quality and the dairy sector will ensure that existing funding, investment and fiscal instruments, such as the MIA/Vamil and green financing, will become accessible for measures aimed at reducing greenhouse gases and that sufficient financial resources will be made available.
- v. As of 2019, the provinces and municipalities will incorporate the climate task for agriculture into provincial innovation and incentive policy for agriculture and the agriculture supply chains. The provinces will examine options for a more uniform approach, which will also involve the link with the asbestos removal obligation.
- w. The national government and the provinces, in their consultation with the dairy sector in 2019, will include measures in the CAP/Rural Development Plan (RDP) aimed at advancing eco-friendly dairy farming (innovation, knowledge sharing and dissemination, demos and investments (animal housing)). The national government and the provinces, in consultation with the dairy industry, will include the greenhouse gas reduction target (and sustainability in general) in the development of the National Strategic Plan in the context of the new CAP.

C4.4.3 Pig farming

"Circular and energy-neutral pork production"

The pig farming industry, in collaboration with public authorities and others, aims to develop a sustainable pig farming industry in the Netherlands. The Action Plan for the Revitalisation of the Pig Farming Industry (*Actieplan Vitalisering Varkenshouderij*) (hereinafter referred to as the Action Plan) will be the framework for such efforts. The implementation of this Action plan

has been taken up by the Coalition for the revitalisation of the pig farming industry⁷⁶ (*Coalitie vitaliserend varkenshouderij*) (hereinafter referred to as the Coalition). The pig farming industry will be taking the following measures ahead of 2030:

- improvement of the environment through restructuring of the pig farming industry, with buying up and cancellation of pig rights and demolition of pig sheds;
- the development and roll-out of entirely sustainable, source-oriented, low-emissions animal housing systems through new constructions, but also in existing housing and circular manure processing chains;
- narrowing and closing nutrient cycles in animal feed, including through the use of more residual and co-products in pig feed;
- processing and creating value out of all fresh pig manure in circular regional clusters into green energy, replacements of fossil fertiliser and valuable fertilisers.
- energy generation, energy efficiency and greening.

The Coalition's goal is to reduce methane emissions from the pig farming industry by up to 1.3 Mt CO₂-eq per year by 2030 through the implementation of these measures. Of this 1.3 Mt, 0.3 is a performance requirement and 1 Mt relates to an ambition. In addition, the Coalition aims to increase the percentage of residual flows in animal feed by at least 10% in the period leading up to 2030, on the condition of availability of good quality feedstocks.

With regard to 2050, the Coalition aims to achieve an energy-neutral pig supply chain. The pig farming industry has spotted opportunities in this regard for the further reduction of greenhouse gas emissions to a total of approximately 3.5 MT in CO₂-eq/year by 2050, including through:

- the creation of an energy-neutral pork supply chain by 2050 through pig farms that also supply energy. The sector will be pursuing energy production from non-fossil sources, recovery and reuse of heat and energy savings and energy greening in all links of the supply chain;
- the development and roll-out of new entirely sustainable and low-emissions animal housing systems with which source-oriented harmful emissions from animal housing (methane, ammonia, smell, particulate matter) will be entirely and preventively avoided;
- circular economy: key aspects in this regard include frequent removal of manure from pig sheds and the separation of manure and urine at the source, after which the fresh pig manure is processed in closed regional clusters. Products will include replacements of fossil fertilisers, valuable soil improvers, raw materials for the chemical and textile industry and green energy.

If the framework conditions and contributions of all parties, as formulated in the Action Plan, which is included in an annex to this Climate Agreement, cannot be executed adequately, then this will have an immediate impact on the feasibility and realisation of the ambitions for 2030 formulated by the pig farming industry. The following agreements have been made regarding those framework conditions.

The parties have agreed the following:

Climate performance of the pig supply chain and at farm level

- a. The Coalition, the national government, the provinces, the municipalities and civic organisations have chosen a comprehensive business-oriented approach, including for the supply chain. To this end, within the framework of the Action Plan, instruments will be developed in 2019 aimed at the carbon footprint of the pig farmers and of the pig supply chain as a whole. This will also involve examining whether a link with a "dashboard" of national and international sales concepts can be achieved. In 2019, agreements will also

⁷⁶ Consisting of the Producers' Organisation for Pig Farmers (*Producenten Organisatie Varkenshouderij*, POV), the Rabobank and the Ministry of Agriculture, Nature and Food Quality. The partners VION, For Farmers, Agrifirm and Topigs-Norsvin have joined this Coalition.

be made regarding the introduction and roll-out of this approach and these instruments. This will allow pig farmers to focus on climate performance at the level of their farms. Dutch businesses, public authorities, civic organisations, banks and retailers will support pig farmers in this regard.

- b. The Coalition will take responsibility for the development and implementation of the tasks of the Action plan, including the development of (technical) measures to reduce the emissions of methane and other greenhouse gases.
- c. The parties will monitor the results of the implementation and execution of the tracks of the Action Plan. Based on the results, it will be determined whether further commitments are required to achieve the aims formulated or whether the aims should be adapted. This will involve a decision on the necessity for measures of a more binding and obligatory nature in addition to additional incentives.
- d. The national government will ensure that the implementation of the climate measures will not be optional, in accordance with the agreements in Section C4.3.2. Private sector parties will commit themselves to reducing greenhouse gases at farm level in conjunction with reduction of other emissions. The national government, in consultation with other public authorities, will facilitate supply chain parties to enable accountability of individual farms for climate performance in order to realise the sectoral reduction target for greenhouse gas emissions. Ahead of 2021, the national government will examine if the carbon footprint monitor instrument can be used to support legal instruments for farm-specific monitoring and accountability.
- e. If, in the period leading up to 2030, the pig farming industry and individual pig farms realise a greater reduction of greenhouse gases than indicated by the target and ambitions, then such gains may be settled with the target post-2030, in order to encourage individual pig farms to keep taking measures that reduce greenhouse gases.

Restructuring of the pig farming industry

- f. The Ministry of Agriculture, Nature and Food Quality will lead the development of the restructuring scheme, for which €120 million will be made available (in accordance with an existing agreement). In Q3 of 2019, the first tranche of the restructuring scheme for the pig farming industry will be opened up.
- g. In addition to a restructuring scheme for pig farming, the Key Points agreement sets out that the provinces, the municipalities and the supply chain partners of the Coalition will develop and implement a joint approach with regard to accompanying measures aimed at awareness, support and facilitation of pig farmers terminating operations. It is critical that regionally tailored solutions be provided for the incentive-based restructuring of the pig farming industry. The Coalition partners have concluded agreements in this regard. In high-intensity areas, teams consisting of representatives of the municipalities and the province, independent advisers and partners from the supply chain will be set up to facilitate pig farmers in terminating their operations, with pig farmers retaining control of their own future. That tailored approach is carried out at a local or regional level and is linked to the schemes. This process will be continued in 2019.
- h. The provinces and municipalities will contribute to the demolition of animal housing at farms participating in the restructuring scheme and the cessation scheme, chiefly through the use of spatial planning instruments, such as the Red for Red (*rood voor rood*) scheme and the rezoning of sites. This will also involve making links with programmes and schemes for asbestos removal.

Low-emission animal housing systems

- i. The Coalition will develop schemes and instruments for animal housing innovations and other innovation tracks (creating value out of manure, circular feed, energy efficiency and generation and market instruments). By the end of 2019, the innovation schemes that will stimulate the roll-out of low-emission animal housing systems will be set in motion. The actual introduction of technical measures can be achieved if it is permitted through the validation of the innovative animal housing systems. The validation phase will take place

up to the first half of 2020, after which roll-out at the first pig farms will kick off. Scaling up will take place as of 2021. Preparations for the roll-out will take place in 2019, provided that the systems are also legally applicable through provisional recognition. If there is adequate financial support, the scaling up process can take place according to a normal investment rhythm in the years thereafter, for an approximate lifespan of 25 years. The acceleration process can be sped up to approximately 7.5% per year using incentive schemes.

- j. The national government is leading the development of schemes to stimulate innovations and investments in entirely sustainable and low-emission animal housing systems that reduce emissions of greenhouse gases, ammonia, offensive odours and particulates at source. These schemes will cover both innovation and pilot projects and emissions measurements, as well as investment projects for "first movers". In addition to management measures (livestock feed, manure additives) and the development of measurement and sensor technology, this relates both to the adaptation of existing animal housing systems and the development of new housing systems that are geared toward, among other things, the quick removal of manure from the housing, storage outside the housing and manure treatment at pig farms, followed by manure processing in regional clusters. An amount of €40 million in public funds has been reserved for that purpose for pig farming, and €26 million has been pledged by the Coalition in the form of private sector funding until 2023. The first round of the schemes is anticipated in 2019.
- k. In 2019, the Coalition and public authorities (Ministry of Infrastructure and Water Management, provinces, municipalities) will identify the challenges in relation to accelerating the innovation and implementation process for new entirely sustainable animal housing systems and modifications. This will in any case include:
 - o procedures for trial housing;
 - o application of the Technical Advisory Committee on Ammonia and Livestock Farming Regulations (Tac/Rav) validations;
 - o opportunities for stacking systems (Ammonia and Livestock Farming Regulations (Rav) and Regulations on Odour Nuisance and Livestock Farming (Rgv));
 - o acceleration of the streamlining of permit procedures for animal housing modifications and new housing;
 - o development-oriented environmental policy (spatial planning) in conjunction with improvement of the living environment.

Clear and harmonised laws and regulations from the national government, provinces and municipalities are critical to the effective and short-term implementation of new technologies.

Manure processing

- l. The pig farming industry, the national government, other public authorities and civic organisations will work to secure EU recognition of manure processing products such as fertiliser replacements ("green fertiliser") to reduce the use of chemical fertilisers, resulting in a reduction of the use of fossil energy and the emission of nitrous oxide. Due to improvements in agricultural practice and the use of soil improvers, more organic matter can be built up in the soil.
- m. A joint taskforce consisting of the Coalition, the national government, provinces and municipalities will, in Q1 of 2019, examine the possibilities of a master plan, which can be adjusted each year, in relation to the sites that have been designated and can be licensed within a short period of time as potential sites for the development of high-quality manure processing techniques, where manure processing is focused on integral processing and creating value out of all fresh pig manure in regional clusters. This extends to replacements of fossil fertilisers, high value soil improvers, raw materials for the chemical and textile industry and green energy.
- n. In Q1 of 2019, the provinces, the municipalities and the pig farming industry will explore the difficulties regarding the permit procedures for large-scale low-emission manure

processing in regional clusters and will examine and implement improvement and acceleration options.

Energy generation

- o. The pig farming industry will pursue energy generation for the realisation of the climate target, to strengthen the earnings model and with regard to its own contribution to the climate target. On that basis, the provinces and municipalities will be including the role and position of the pig farming industry in the development of the Regional Energy Strategies (RES) in 2019.

Measures on added value of sustainable products

- p. The pig farming industry will focus on achieving higher market prices for sustainable products, including meat with a lower carbon footprint component. The national government will support this, including through the development of the agri-nutri monitor by the ACM, allowing for transparent price formation, as a tool to help create earnings models for sustainability. The CBL will encourage its members to contribute to a better position for farmers and growers who demonstrably contribute to sustainable production, including the reduction of greenhouse gases. In this regard, the Coalition will review whether inclusion of climate performance in the SPECS (product specifications, which shape purchasing policy) may be a possibility. Civic organisations will contribute to the development of, and will actively support, quality marks and national and international market concepts that have resulted in a proven improvement to the climate, the environment, biodiversity and animal welfare.

General application of financial instruments

- q. In 2019, the parties will make agreements on a coherent use of financial instruments and funds by the national government, the provinces and the sector – which will also examine additional funds from the Climate Budget – to accelerate the realisation of the 2030 targets.
- r. The broad roll-out of source-oriented solutions, associated with manure processing and creating value, will be stimulated through generic subsidy and tax instruments (such as MIA/Vamil and SDE+) to allow new technologies and facilities to become available to pig farmers more quickly and in a commercially viable form. The Ministry of Agriculture, Nature and Food Quality and the pig farming industry will ensure that, by 1 January 2020, existing funding, investment and tax instruments will become accessible to the pig farming supply chain and can be used effectively. This will also involve exploring options for new financial instruments. If possible, the SDE+ scheme will be made accessible to investments in the manure processing chains.
- s. In 2019, the national government and the provinces, in consultation with the pig farming industry, will explore the options for measures aimed at advancing eco-friendly and low-emission pig farming (innovation, knowledge sharing and dissemination, demos and investments (animal housing) in the current CAP/RDP and will draw up a corresponding proposal. The national government and the provinces, in consultation with the sector, will integrate the greenhouse gas reduction target (and sustainability in general) in the development of the National Strategic Plan in the context of the new CAP.
- t. In 2019, in consultation with the Coalition, the provinces will make further agreements on the facilitation of the climate and emissions objectives through provincial innovation and incentive policy for the pig farming industry.

Innovation task in the period leading up to 2030

- u. Realising the climate target and task requires innovation, not only for the short-term targets, but also to identify the opportunities ahead for greenhouse gas reduction in the pig farming industry in the long term. To this end, in 2019, the national government, the provinces, the pig farming industry and knowledge institutions will draw up a multi-year demand-driven research and innovation agenda as part of the Action Plan.

C4.5 Land use

"Production in a biodiverse landscape with high-value organic CCS"

The way in which land and soil are used has an impact on the emission and capture of carbon dioxide. The objective is to orchestrate at least 1.5 Mt CO₂-eq in improvements in accordance with the EU LULUCF system.⁷⁷ Improving the climate performance of land use is a new and relevant component of the climate dossier, which brings together various social challenges and domains (spatial planning, biodiversity, climate) in slow biological processes.

A great number of knowledge gaps can still be observed in this component, resulting in a focus on pilot projects, accompanied by monitoring and knowledge acquisition and dissemination.

The key principle underlying assessment of the climate performance of the land use sectors is maintaining and/or increasing organic matter levels, compared to historical reference levels.

The agreements, due to the various administrative and existing financial frameworks and incentives, fall into three different sub-categories, each with an individual indicative climate performance:

- peat meadow areas;
- trees, forests and natural environment;
- agricultural soils and outdoor cultivation.

C4.5.1 Peat meadow areas

"Learning and supported changes in heritage areas"

The target for the peat meadow areas in the Netherlands is a CO₂-eq reduction of 1 Mt by 2030. Public authorities, farmers and civil society organisations feel this is a joint responsibility that must be realised using an adaptive, area-specific approach.

The peat meadow areas of the Netherlands are valuable and vulnerable. A key characteristic of the areas is that they are used for dairy farming to a significant degree. Our aim is to be the first country in the world to develop a climate-based approach to peat soils. Through the development of knowledge through long-term research, this controlled experiment with a global scope has the potential to make the Netherlands a leader in this field and make a substantial contribution to preventing climate change, in part through the dissemination of this knowledge.

Measures must be tailored to farmers' future prospects, water management options and the type of peat soil. This will also create more space for meadow birds and will strengthen biodiversity. All of this requires a customised approach, rather than a uniform one-size-fits-all approach. The key starting point is the business perspective of farmers, where existing earnings models will only be cast off once alternative earnings models are available.

Peat meadow areas will receive a stimulus, which will involve identifying where the most urgent problems lie. In some situations, this may relate to supporting farmers in relocating, in less intensive farming (including compensation for loss of income) or voluntarily cessation of farming operations. In other situations, there will be a greater emphasis on technical modifications, such as drainage techniques. This will require various types of instruments: land use, compulsory land consolidation and voluntary plot exchange (which may also involve government-owned land), fiscal support, write-off of land with financial compensation, etc. A

⁷⁷ The LULUCF Regulation, or Regulation (EU) 2018/841 of the European Parliament and of the Council of 30 May 2018 on the inclusion of greenhouse gas emissions and removals from land use, land use change and forestry in the 2030 climate and energy framework, and amending Regulation (EU) No 525/2013 and Decision No 529/2013/EU, in which references to IPCC guidelines, based on agreements from the Conference of the Parties, serving the Meeting of the Parties to the Paris Agreements, are set out.

financing system in which farmers are paid to store carbon dioxide will be essential and must be developed.

Special attention will be given to farms situated around Natura 2000 areas. Furthermore, this may yield opportunities for the reduction of nitrogen deposition in these areas. This will align with the passage set out in the Coalition Agreement ("Together with farmers situated near Natura 2000 areas, we will look at whether agricultural nature management can contribute to less intensive land use and thus to climate goals and nature restoration. Participating farmers will be compensated for this by the government, making full use of the instruments provided under the Common Agricultural Policy (CAP).") This approach will lead to future prospects for the peat meadow areas and for the farms involved. In short, the approach will combine efforts relating to climate change, the natural environment, agriculture and the management of meadow birds with the conservation of our beautiful landscape.

The roll-out of the approach as of 2021/2023 for approximately 90,000 hectares of peat meadows will consist of a combination of measures with a substantial contribution of approximately 10,000 hectares of conversion to agricultural nature (including peat moss cultivation), transition to wet crops, increasing summer water levels to benefit meadow birds and underwater drainage techniques. The government has earmarked €100 million for the voluntary cessation scheme (including the buying of rights), will enter into a dialogue with provinces, water boards and municipalities regarding additional funding for supporting policies and has set aside €176 million in total for other measures up to 2030.

The parties have agreed the following:

- a. The parties will jointly commit themselves to the target of achieving 1 Mt of CO₂-eq in reduction in the peat meadow areas. To this end, the parties will implement the necessary measures, which must fit within a long-term approach that extends beyond 2030.
- b. An area-specific approach will be the basis for arriving at an area-specific combination of measures. This will also provide opportunities to link up with other social challenges and tasks in rural areas, and will allow for ongoing processes to be used, such as the Delta Plan for Agricultural Water Management (DAW).
- c. The "Key Points for a Climate Agreement" set out the technical potential of a number of measures, such as underwater drainage. Knowledge development will indicate what measures will be effective regarding achieving the target of 1 Megatonne of CO₂-eq in reduction. The actual combination of measures that is required to realise this target will be determined on that basis and will be realised on an area-specific level.
- d. The parties will jointly monitor the progress and effectiveness of the measures. Based on these results, there will be multiple opportunities a year for parties to discuss whether interim adjustment of the measures or ambitions may be necessary.
- e. In order to strengthen knowledge and experience, the next few years (2019 – 2021/2023) will focus on the implementation of the pilot projects within the four peat meadow areas, whilst linking up with existing programmes. These pilot projects will be short term in nature (e.g. three years). In this way, knowledge can be gained and immediately applied through this short-term cycle. This will take place at the level of the polder or water level area.
- f. The process of implementing the roll-out (2021/2023 – 2030) will take place as much as possible through existing organisational structures (area committees, existing partnerships, agricultural collectives). During this period, the short-term cyclical approach to gain knowledge and apply innovations will also apply. The provinces will facilitate this phase of the process. Within these area processes, implementation at polder level will take place together with actors/owners from the given area.
- g. Scaling up measures and the implementation thereof will take place at a regional level (2021/2023 – 2030). The starting point is that measures should be applied in all Dutch peat meadow areas, insofar as the measures are deemed to be effective under those conditions. Ongoing area processes will be used as much as possible in this regard.

- h. The parties will jointly set up an intergovernmental steering group by 1 January 2020. This group will consist of a broad selection of representatives: public authorities, entrepreneurs, nature conservationists, civic organisations (NGOs) and knowledge institutions. The steering group will facilitate, connect and manage the research programme and aim for joint realisation of the target. In addition, the steering group will place any potential challenges, in terms of regulation and available funds, for example, on the agenda. The steering group will also monitor coordination with other relevant processes (National Delta Programme, European regulations).
- i. The national government, the provinces and the water boards will work alongside the parties in the steering group to create a joint quality control system, to enter into force by the end of 2019, which will allow realisation of the targets to be monitored and guaranteed. Within the quality control system, the parties in the steering group will also make agreements on measures that public authorities may apply should this be required for the realisation of the target. Where necessary, the Minister of Agriculture, Nature and Food Quality will be the relevant point of contact within the government.

Regional Peat Meadow Strategy

- j. The provinces will organise/facilitate a process with land users (including farmers), civic actors, residents and local and regional authorities aimed at the preparation of a programme for each specific peat meadow area (Regional Peat Meadow Strategy). In 2020, a draft programme will be drawn up that in any case contains:
 - a general combination of measures, aimed at the 2030 target;
 - a perspective on 2050, including management aspects;
 - commitments on monitoring;
 - a financial analysis;
 - a follow-up process (detailing at polder level);
 - a link to existing processes;
 - the role of actors in the area;
 - existing instruments and identification of absent instruments.
- k. Based on the elaboration of this plan, the parties will jointly consider to what extent it is expected that the 1 Mt in CO₂-eq reduction agreed upon will be realised through these measures. To this end, in 2020, the parties will jointly identify what CO₂-eq reduction is expected as a result of the draft programmes.
- l. Following the pilots phase, the draft programme will be adapted if necessary, based on the insights gained. Insofar as there are shortcomings in the resources or instruments, the four government authorities will come to joint final agreements on this issue. Local and regional authorities will ensure the visions are embedded in environmental policy and in the water plans.
- m. The provinces and municipalities will use this draft programme, in conjunction with the Regional Energy Strategies and other elaborations of the Climate Agreement, in the preparation of their environmental strategies in 2020 and beyond.
- n. Public authorities, land users and civic parties will elaborate the target in more detail within area processes (at polder level). This process will be initiated by local and regional authorities, under the auspices of the provinces. Civil society parties and farmers will actively take part in the area processes.
- o. Ongoing implementation (such as the realisation of the National Nature Network (NNN) in the peat meadow areas) will be continued. Where possible, the relevant implementing parties will seek alignment with the peat meadow programme, including in relation to the monitoring and research components.

Learning area processes

- p. The parties will commission the National Knowledge Programme on Soil Subsidence (*Nationaal Kennisprogramma Bodemdaling*) to draw up a joint programme:
 - for evaluation and knowledge development;
 - issues from the areas, including sustainable business and land management models;

- knowledge development from pilot projects (2019 – 2021) in order to identify the technical potential and feasibility of measures.
- q. The parties, facilitated by the knowledge programme, will jointly develop a monitoring programme, building on existing monitoring programmes, that will allow the progress of measures and carbon dioxide emissions in peat meadow areas to be monitored.
- r. These parties will ensure that new pilot projects, such as those being set up in the context of the Regional Deals and the Inter-administrative Programme for Rural Prosperity (IBP-VP) projects, will be linked to this programme. The method of monitoring/research in these projects will be aligned with the joint knowledge programme. Existing civic and other initiatives, such as in the Krimpenerwaard, from the Commonland/Wij.land initiative, the peat meadow information centre and the peat innovation programme, will also be involved. All of these initiatives demonstrate that there are indeed opportunities in the area of agriculture and nature. At the same time, they show that these opportunities need a boost if they are to be implemented on a practical scale. The national government aims to provide this boost through the additional commitment to the peat meadow areas.
- s. The parties will jointly explore the way in which CO₂-eq emissions can be added to existing research programmes.
- t. The parties feel it is crucial that such a knowledge programme should be launched in 2019.
- u. The knowledge programme will be asked to identify the required funding and management of this programme in the first quarter of 2019. Thereafter, the parties will jointly come to an agreement on the funding for this programme.

Funding

- v. The national government will provide a contribution of €176 million in total up to 2030, on the condition that the provinces, water boards and farmers also contribute to realising the 1 Mt by 2030. In addition, the government will be making incidental funds available to boost the peat meadow approach.
- w. The national government, the provinces, the water boards and the municipalities will in 2019 jointly identify what contribution existing programmes (Climate Agreement funding, regional funds, existing subsidy instruments) can make to the funding required for the peat meadow approach and where necessary will modify the conditions.
- x. The relevant parties will ask the national government for flexibility regarding agreements on additional funds and new instruments if the draft programmes for 2019 should provide insufficient coverage.
- y. The national government and the provinces will make efforts to apply the opportunities and options provided by the new CAP to the peat meadow challenge and to take them into account in concrete measures at a national level through development and incorporation in the National Strategic Plan.
- z. Public authorities, farmers, banks and other parties in the supply chain will develop earnings models and new types of funding for the peat meadow areas, in conjunction with the other objectives in respect of agriculture and land use, an example of which may be the biodiversity monitor.
- aa. The Green Deal for the National Carbon Market will be supported and any obstacles will be removed where possible in order to encourage the valorisation of carbon credits from peat meadow areas. Agreements will be made with the parties of the Green Deal in this regard.
- bb. By 2020, these steps will lead to a financial substantiation of the large-scale rolling out of measures, which will also provide insight into the costs that cannot be borne by the private sector. Cost effectiveness will be included in this. Based on this substantiation, the supply chain parties and public authorities will jointly come to an agreement regarding the implementation of these measures.

C4.5.2 Trees, woodland and nature

"Biodiversity and biomass in most attractive carbon storage facility in the Netherlands"

Trees, woodland and the natural environment already capture a great deal of carbon dioxide. As such, an increase of trees, woodland and nature (compared to the business as usual scenario) will lead to "climate gains", which will contribute to the targets for 2030 and 2050 specifically. For that reason, starting early, with a view to 2050, is critical. This is because natural carbon capture is a lengthy process. The parties will work toward climate-inclusive nature conservation policy and management, each within their own role and responsibilities, and will support one another where necessary and possible. The parties in this domain will jointly commit to implementing four measures that should lead to climate gains of at least 0.4 Mt in CO₂/year by 2030 and will, if possible, aim to achieve 0.8 Mt/year by 2030:

- prevention of deforestation. The decrease of carbon capture through deforestation must be prevented as much as possible;
- increasing carbon capture. Existing forests, nature conservation areas, landscape elements and public spaces provide opportunities to increase carbon capture, including through changes to their management;
- expansion of woodland and landscape. Planting and creating additional trees, woodland areas and nature conservation areas inside and outside the National Nature Network, in public spaces, in infrastructure and on agricultural land, will increase carbon capture. This will see maximum coordination with national parks and objectives in relation to biodiversity, spatial quality, urbanisation challenges, recreation, etc.;
- enhancing carbon capture in the supply chain. The use of timber, cuttings and other natural products (cascading) in the supply chain that are produced as a result of the management of green spaces will increase carbon capture and will prevent carbon dioxide emissions as a result of the use of alternative building materials.

It is vital that win-win combinations in relation to biodiversity and spatial quality are actively sought for these measures. In the short term, this will require the development of a scientific knowledge base, which can be developed with the help of pilot projects.

The parties have agreed the following:

- a. In order to realise these measures, the working group will continue as a project group, chaired by the provinces. This project group will in any case consist of land managers, public authorities and umbrella organisations of farmers. The project group will develop the measures, including funding/earnings models, spatial requirements, cost effectiveness and feasibility. In relation to spatial requirements, where possible, coordination will take place with the spatial development of other tasks and targets under this Climate Agreement (also see section C4.3.6). The group will also formulate a number of pilot projects aimed at testing the effectiveness and feasibility of the adopted measures and will set up a governance structure for the monitoring and management/adjustment of these pilots.
- b. The parties will also commit to the creation of a programme with practice-oriented research for climate-smart management of woodland, trees and the natural environment, and will examine whether this can be linked to the existing Restoration and Management of Nature in the Netherlands (OBN) programme.
- c. The national government and the provinces will draw up a joint Forest Strategy in 2019. The national government has allocated €51 million worth of climate funds for:
 - a Natura 2000 deforestation approach/creation of a compensation pool;
 - development of government-owned land (including infrastructure networks);
 - the restoration of landscape elements/agroforestry, subsidy scheme for farmers planting forests on their land;
 - research pilots.

Preventing deforestation

- d. The parties (national government, provinces, municipalities, water boards, land managers, farmers, landowners) will make a concerted effort to limit deforestation to what cannot be avoided. In cases where deforestation is necessary, for example as a result of international agreements on the natural environment, the parties will make collective commitments regarding adequate carbon compensation. In the context of the Forest Strategy to be drawn up, the national government will make funds available for a compensation pool – yet to be established – (a way to have parties that have felled a forest elsewhere fund the planting of a different forest).

Increasing carbon capture

- e. In the management of the natural environment/landscape/public spaces, the parties (national government, provinces, municipalities, water boards, land managers, farmers, landowners) will make a concerted effort to combine objectives relating to, among other things, biodiversity and spatial quality with enhanced carbon capture in the management of the natural environment/landscape/public spaces.
- f. Given that marshland, peatland and coastal ecosystems (blue carbon), in particular, contain a large carbon stock that must be protected, but also have a significant carbon capturing capacity, the water boards, the provinces, the Directorate-General for Public Works and Water Management and the Ministry of Agriculture, Nature and Food Quality will take this into account in the implementation of water management and environmental policy and the management of large bodies of water, such as the Delta Programme, the Water Framework Directive, the Ecology of Large Water Bodies programme, water management programmes, the provincial environmental plans and management of the IJsselmeer, the Wadden Sea, estuaries, etc.

Expansion of woodland and landscape

- g. The parties (national government, provinces, municipalities, water boards, infrastructure managers, farmers, landowners) will jointly seize opportunities to increase the acreage of woodland and nature and the number of trees outside those areas. The Association of Netherlands Municipalities (VNG), for example, will recommend that its members strive to achieve 1% more trees on Dutch territory each year. It will facilitate this by working toward realising an optional instrument in the municipal spatial planning range of instruments in relation to this ambition. The national government will capitalise on the opportunities through the use of government-owned land, including infrastructure networks. This will be developed in the Forest Strategy.
- h. Public and private sector land managers, in consultation with the provinces, will actively explore the possibilities for new woodland areas within their management areas. A package worth 6000 hectares of additional woodland is currently being considered.
- i. The provinces and the other parties to the Climate Agreement, in accordance with the agreements of the Nature Pact, will complete the National Nature Network by 2027 and will always select the most climate-smart options in its realisation. This means that, by 2027, at least 80,000 hectares of new nature area will be realised, of which over 35,000 hectares was realised by 1 January 2018.
- j. In respect of its members and in collaboration with local, regional and national authorities, LTO Nederland will focus on advancing the inclusion of more trees and woody landscape elements on their farms. The parties will take the initiative to arrive at an "Action plan to strengthen scenic identity through landscape elements". The national government is committed to creating opportunities in this regard within the new CAP, in consultation with local and regional authorities, and will make a financial contribution to a subsidy scheme, as yet to be set up, for trees, woody landscape elements and agroforestry on farms to facilitate the transition, for which the key points of departure will be detailed in the Forest Strategy to be drawn up.
- k. The provinces and municipalities, in the review of their environmental strategies in their spatial planning policy, will ensure that realisation of new districts will also result in the

realisation and funding of new woodland. This will not only boost the contribution to carbon capture, but will also benefit the quality of life of residents.

- I. The parties, supported by institutions such as Invest.nl (by commission), Rabobank and the Green Fund (or, in broader terms Green Financing), will set up a process aimed at the governance and funding of the creation of new woodland areas. Cooperating with a type of development agency is something that is being considered in this context. In preparation for this:
 - o the public authorities will be identifying the potential for the development of additional hectares of woodland, nature areas or landscape elements on their own land in conjunction with housing/urban development projects, energy (such as wind turbines/solar farms), water storage and biodiversity;
 - o the municipalities will additionally identify the potential of creating additional forest areas alongside new construction projects to benefit the climate and the living environment;
 - o land managers (nature organisations and private nature conservationists, farmers, public authorities) will identify the potential for the development of additional hectares of green space/nature areas on their own land, and for the restoration and strengthening of landscape elements.

Enhancing carbon capture in the supply chain

- m. The parties (national government, provinces, municipalities, water boards, infrastructure managers, land managers, farmers, the construction sector) will jointly seize opportunities to increase the application of wood, cuttings and other natural materials resulting from the management of green space, for example in construction and ground, road and water works.

C4.5.3 Agricultural soils and outdoor cultivation

"Carbon farmers: valued ecology as a basis for food, energy, biomass – capture in soil and landscape"

The joint ambition of the signatories to the Climate Agreement is to realise an additional capture of 0.5 Mt of CO₂-eq per year by 2030, based on the current approximately 1.85 million hectares of agricultural land in the Netherlands. The parties will achieve this through an increase of organic matter levels and reduced formation of nitrous oxide in these soils. This requires a comprehensive approach (sustainable soil management), given that issues such as organic matter content, soil life and soil compaction are inextricably linked.

The approach to agricultural soils will in part be shaped by the development of the soil strategy and programme (see the Soil Memorandum of 23 May 2018 and the letter on the National Programme for Agricultural Soils of 25 April 2019) and will be endorsed by businesses, civic organisations, the water boards and public authorities. The parties will endeavour to achieve a circular agriculture scenario. The parties aim to realise emissions reduction through the following measures:

- increasing carbon in the soil on arable land through a sustainable cultivation plan, including the following components:
 - o increase in acreage, less intensive tillage; increase in acreage of catch crops and green manures;
 - o increase of acreage of protein and intermediate crops;
 - o use of organic soil improvers;
 - o stimulation of the use of organic and other circular fertilisers.
 Additional effects of these measures include strengthening water buffering capacity, soil resistance and reduction of the application of nitrogen fertiliser;
- reduction of nitrous oxide emissions through the use of precision agriculture on at least 50% of the available acreage of land used for agriculture by 2030; optimisation of site, weather, soil and time-specific dosage of the appropriate fertiliser dependent on the crop

and the crop yield; increased use of fixed driving paths; greater use of machinery with a low ground pressure for cultivation activities, without farmers being forced to make additional expenditures, as outlined in C4.5.3 under agreement aa.

- reduction of greenhouse gases on grassland as a result of less tillage of grassland; improvement of crop rotation; sowing or undersowing of catch crops for corn; use of grass clover for new seeding. These measures are also part of the plan for "A climate-conscious dairy sector in the Netherlands", which was drawn up by the sector itself. The climate commitments for agricultural soils and livestock farming, as well as the realisation thereof, are intertwined with one another.

This means that the strategy will focus on taking measures in the short term, whilst simultaneously, focusing on research into entirely sustainable soil management, carbon capture and nitrous oxide reduction in the long term. There is a shared view on the measures regarding both the build-up of organic matter in the soil and the reduction of nitrous oxide formation, whereas there are uncertainties with regard to the extent of the impact of the measures. Increasing knowledge is a prerequisite to being able to further quantify and improve climate performance of land use ahead of 2050. The parties will strive to achieve a package of measures that provides flexibility of choice to individual farmers to allow for tailored solutions.

The parties have agreed the following:

Increasing carbon in the soil on arable land

- a. The national government, BO Akkerbouw (the industry association for arable farming) and LTO Nederland aim to produce a package of measure aimed at recognising carbon capture as a "plus package" in the new CAP. In order to make this plus package more attractive, the private sector parties will endeavour to attract additional funds from the market for further value creation (part of development of earnings models). This may include carbon credits above the 2030 targets agreed upon or a higher price for products on the consumer market.
- b. The Ministry of Agriculture, Nature and Food Quality, in consultation with BO Akkerbouw, the Dutch Dairy Organisation (NZO) and LTO Nederland, will develop a robust soil labelling system for all agricultural soil types. A soil label should relate to issues such as the amount of carbon in the soil and soil fertility. Pilot projects and demonstrations to be kicked off in the 2019 – 2022 period.
- c. The soil programme of the Ministry of Agriculture, Nature and Food Quality, in which various parties have collaborated since 2018, will see knowledge development at and transfer into agricultural businesses and agricultural contractors take shape, including the inclusion of possible measures in the green education package. This will involve the use of private funds from collective labour agreements in respect of training for the training of staff.
- d. Ahead of 2021, the food and arable farming sectors will jointly examine further sales opportunities for protein crops for human consumption in the period leading up to 2021.
- e. The national government and LTO Nederland will make efforts to realise crop derogation for crops that contribute to carbon capture (such as winter cereals, grass seed and winter rapeseed) as of 1 January 2022. This means the possibilities for application for organic manure will be expanded at the expense of the options for fertiliser. This will be taken into account during the review of the manure policy. The time leading up to 1 January 2022 will be used to establish pilot projects to provide scientific substantiation of the application in Brussels.
- f. As of 1 January 2020, there will be more flexibility within the phosphate application standards for the use of organic soil improvers in accordance with the 6th Nitrates Action Programme. This will be followed up during the manure policy review.

- g. The national government and relevant organisations will realise a review of leasing policy aimed at guaranteeing sustainable management of the leased areas ahead of 1 January 2021.
- h. BO Akkerbouw, LTO Nederland and the national government will consult with plant breeders with the aim of accelerating improvement of these crops into crops with a higher balance yield. The objective is for protein crops and intermediate crops to be able to compete with the balance of other arable and vegetable crops by 2030.

Reduction of nitrous oxide emissions

- i. Between 2019 and 2022, the agricultural and agricultural contract work sectors will work with the government and the water boards to develop agreements aimed at the realisation of higher nitrogen efficiencies and reduction of the formation of nitrous oxide, without jeopardising other sustainability themes. This will include research into the impact of nitrification inhibitors.
- j. The agricultural business community, the agricultural contract work sector, machinery manufacturers and the installation contracting sector will develop an approach for machinery with a lower ground pressure in the agricultural sector by 2021. BO Akkerbouw will assume the responsibility of organising consultation on the approach.
- k. The national government will make efforts to develop an investment scheme for precision agriculture by 1 January 2021 to finance the operating shortfall, aimed at the further and accelerated roll-out of precision agriculture. The focus will be on stimulating investment in precision agriculture through use of the MIA/Vamil.
- l. The government, LTO Nederland and Cumela will focus on the development of infrared sampling equipment (NIRS) for the measurement of the quality/composition of animal manure. NIRS equipment, as soon as it is technologically and scientifically valid and robust, will be included in an investment scheme for precision fertilisation techniques and will be incorporated into manure legislation.
- m. The government will make efforts to develop an incentive scheme for low-emissions manure storage for both ammonia and methane, which will be accessible to farmers, contractors and processing parties. This means, among other things, that the manure storage capacity in areas with a larger demand for organic fertilisers than the available supply will be expanded. Regional and local authorities will actively cooperate on positive permit authorisation. The objective is to create conditions in which manure application occurs at the right time for crop growth by alleviating manure placement pressure.
- n. The effect of using specialised mineral fertilisers, additives and/or organic fertilisers and soil improvers with a net reduction impact on greenhouse gas emissions will be examined by BO Akkerbouw and included in the monitoring of greenhouse gases. Use by food processing parties will subsequently be stimulated after 2025. A key prerequisite is that use of the fertilisers should have been made possible in legislation.

Grassland and grassland management

- o. Regional collaboration between dairy farmers and crop farmers (including through "district contracts") will be developed as part of the implementation of the opinion of the Committee on Land-based Activities for the dairy sector. LTO Nederland and NZO will flesh out that regional collaboration in the 2019 – 2021 period. The sectoral parties will commit themselves to having implemented the Land-based Activities opinion by 2025.
- p. In the context of the review of manure legislation, the Ministry of Agriculture, Nature and Food Quality will examine how manure legislation can contribute to closing cycles, which will specifically involve review of "district contracts" and the updating of fertilisation standards
- q. Less tillage of grassland, improvement of crop rotation, sowing or undersowing of catch crops in addition to corn and use of grass clover for new sowing will be supported and stimulated by the national government and the provinces in the context of the new CAP.
- r. In 2019, BO Akkerbouw and Nevedi will explore the opportunities available to boost the cultivation of protein-rich crops for animal feed.
- s. In 2019, BO Akkerbouw, LTO Nederland and NZO will examine the optimisation options between dairy farmers and arable farmers in respect of the cultivation plan within the context of circular agriculture.
- t. The government and the sector will set up practice research into grassland improvement through less tillage and roll-out of knowledge. Grass clover mixes must be considered in relation to the sowing of grassland.
- u. The national government and LTO Nederland will commit to realising a crop derogation for grassland as of 1 January 2022 that will contribute to carbon capture. This means the possibilities for application of organic manure will be expanded at the expense of the options for fertiliser. This will be taken into account during the review of the manure policy. The time leading up to 1 January 2022 will be used to establish pilot projects to provide scientific substantiation of the application in Brussels.

Carbon and nitrous oxide: experiments in manure policy

- v. BO Akkerbouw, LTO Nederland and NZO will take the initiative to undertake up to 20 pilot projects in which the relationship between carbon and fertilisation effects is monitored scientifically. The Ministry of Agriculture, Nature and Food Quality will provide room for experimentation for these tests within the framework of manure policy for up to three years. The precise nature of this room for experimentation will be jointly determined by the government and parties from the business community.

Soil & Climate knowledge programme & monitoring

- w. The availability of calculation tools/decision support systems for calculating the emission, prevention and capture of greenhouse gases for a farm and the impact of measures is a decisive link in the chain to providing agricultural entrepreneurs with insight and perspectives for action in the field of greenhouse gases. The government and the agricultural business community will make efforts to further develop the Carbon Footprint Monitor, the Nutrient Scale for Arable Farming, the Cool Farm Tool and the underlying calculation variables in the field of greenhouse gases in compliance with international requirements in the period leading up to 2021. Innovative measurement methods will be included in these efforts. In addition, there will be additional focus on the quality control regarding the parameters, with agreements to be made on data exchange between public and private sector parties.
- x. The government, the primary sector (LTO Nederland) and the industry associations for the arable farming, dairy, contracting work and organic sectors will draw up a communication plan in 2019, containing the key message and approach to knowledge dissemination in the first three years, within the framework of the Ministry of Agriculture, Nature and Food Quality's soil programme. This should lead to the implementation of climate measures.

- y. The government, the primary sector (LTO) and the industry associations for the arable farming, dairy, contracting work and organic sectors will draw up a monitoring plan in 2019 in the field of carbon capture and nitrous oxide. The monitoring system will establish a link between monitoring at farm level and national monitoring. The system to be developed will be consistent with the international system and will be able to be used to monitor the carbon footprint. The knowledge requirement for the monitoring system will be specified in more detail and integrated into the research programmes in the first half of 2019.
- z. Knowledge and perspective for action are prerequisites to an effective approach to the climate. All parties will make efforts to achieve more fundamental and applied research in the field of soil, carbon and nitrous oxide. BO Akkerbouw will take the initiative to undertake research into the following innovation tasks: improvement of plant varieties that are more easily adaptable to climate change, the impact of bio-stimulants to produce resilient crops, pilot projects aimed at small-scale production of green fertilisers, the arable farms of the future, the impact of reduced tillage and the prevention of weeds and the impact of water management.
- aa. The national government will facilitate this ambition through additional efforts aimed at a structured approach of knowledge dissemination and innovation targets through:
 - o scaling up practice pilots in different areas;
 - o facilitating additional training of comprehensive soil advisers;
 - o an additional boost of knowledge dissemination to farms;
 - o strengthening of regional initiatives through the Delta Plan for Agricultural Water Management (DAW);
 - o additional financial boosts to annual innovation targets.

It is crucial that the agro-food supply chain have a strong commitment to innovation targets (lighter machines, new varieties, new cultivation systems, new manure systems in livestock farming) that allow for the full implementation of the measures with a good yielding capacity. The key issue in this regard is that farmers – and this applies chiefly to the purchase of other machines – should make the most innovative choice when investing, rather than being forced into additional expenses. To prevent soil densification, for example, it is crucial to develop and use lighter and smarter agricultural machinery. Such efforts can build on the work done by the National Living Lab for Precision Agriculture (*Nationale proeftuin precisielandbouw*, NPPL), for example. Other crucial innovations to enhance soil quality and additional carbon sequestration, for example, include the development of high-yield plant species with deeper and more intensive root systems that can be harvested early; new cultivation systems with sufficient rotational mowable crops or mixed crops and strip-tilling; and new housing systems that will produce a higher content of organic matter in manure.

Timely and sustained commitment to these innovations is critical to enabling the full application of sustainable soil management and additional carbon capture with a good yielding capacity by 2030.

The national government will use the new CAP to promote sustainable soil management to ensure that, by 2030, all Dutch agricultural soils are managed in a sustainable way.

C4.6 Greenhouse horticulture

"On the road to sustainable, economically attractive & climate-neutral production"

The greenhouse horticulture sector aims to reduce carbon dioxide emissions by 2.2 MT a year by 2030 through the necessary commitments in the Climate Agreement. This will result in an overall carbon dioxide reduction of approximately 3.5 Mt compared to average emission levels between 2015 and 2017. This ambition will lead to a climate-neutral greenhouse horticulture sector by 2040 and is 1.65 Mt stricter than the target set out in the Coalition Agreement, judging by the reference scenario for 2030 (NEV 2017) without the SDE+ scheme.

The transition approach used consists of commitments on long-term goals, such as the sectoral CO₂ system developed. The parties will build on the Innovation and Action Programme "The greenhouse as a source of energy" which focuses on a climate-neutral greenhouse horticulture sector with an additional strong focus on area-specific translation and dealing with the energy transition.

More so than ever before, framework conditions to achieve the ambitions relate to the strategies of other Climate Platforms, such as in the field of geothermal energy, use of residual heat, sustainable electricity and carbon capture and supply, which is crucial to this sector. For example, at least 35 successful new geothermal projects must be realised in the greenhouse horticulture sector up to 2030, in addition to the 17 existing projects.

Energy supply in greenhouse horticulture consists of an optimal combination and application of various technologies in an integrated electricity and gas market. Within an integrated energy system (see D1 Systems integration), low-carbon sources such as geothermal energy, residual heat and biomass are being developed to an increasingly greater extent, and are being integrated at company and cluster level and combined with the remaining gas-fired plants (CHP and boiler).

The scenario for "on the road to a climate-neutral greenhouse horticulture sector by 2030" entails that the focus on cogeneration will decrease significantly both for electricity supply to the grid and for private generation of electricity for lighting. The purchase of electricity will increase to replace cogeneration for lighting and through electrification of the energy supply (heat pumps, thermal storage, power to heat, pump energy, geothermal energy).

The following three iconic projects demonstrate how innovation, professional practice and collaboration in the greenhouse horticulture sector can result in concrete contributions to the climate challenge:

- The "Daylight greenhouse" is a new greenhouse design that is double glazed and bundles incoming sunlight, which is used for heating heat collectors. This heat is stored and used for heating purposes later on. The collectors follow the sun to achieve maximum gains. An additional result is better growth and increased yields for entrepreneurs, particularly for businesses that cultivate shade-loving potted plants. The Daylight greenhouse is able to provide approximately 75% of its own heat needs. Two entrepreneurs have already constructed the innovative Daylight greenhouse.
- Cucumber grower Dion van Mullekom, of Multigrow BV in Grashoek, was one of the first growers in the Netherlands to follow the "New Ways of Growing" (*Het Nieuwe Telen*) in 2013. That knowledge enabled him to improve his cultivation strategy and realise significant savings on heat consumption in his greenhouses. Van Mullekom learned to use the energy screen for a longer period of time and to reduce the use of heating. In addition, he fitted a second energy-saving energy screen and an air dehumidification and heat recovery system. These measures collectively resulted in energy consumption falling by 25%, without any adverse effects on growing conditions and production.
- *Warmtesysteem Westland* (Westland Heating System) is a plan and a partnership for a heating network covering a whole area, which is supported by parties including greenhouse horticultural businesses in the area, the municipality of Westland, Warmtebedrijf Westland, the Port of Rotterdam Authority and Gasunie. Existing and new geothermal energy sources and local heating sources are systematically being connected with one another in a heat distribution network and subsequently connected with the residual heating systems from the Port of Rotterdam and the built environment in Westland and Midden Delfland. The use of geothermal heat and heat generated by the port will be optimised in a market system, to provide the entire region with a reliable and affordable low-carbon heating supply. The system will enable carbon emissions reduction of over 1 Mt per year.

The parties have agreed the following:

Quality control

- a. The carbon emissions target for 2030 will be guaranteed through the continuation of the CO₂ sector system⁷⁸ beyond 2020 and up to 2030.
- b. To achieve a cross-sector approach and the realisation of a level playing field, the parties will make efforts to ensure that all greenhouse horticulture businesses fall under the CO₂ sector system by 1 January 2021. To this end, the parties will commit to an opt-out provision from the EU-ETS for greenhouse horticulture businesses that currently still fall under the European emissions trading system.
- c. An addition to the CO₂ sector system, with individualisation of carbon dioxide emissions areas, company standards, carbon yardstick or market incentives, will be examined by Glastuinbouw Nederland (the association for the Dutch greenhouse horticulture industry) in collaboration with the Ministry of Agriculture, Nature and Food Quality (in the context of The Greenhouse as a Source of Energy) and will be adopted no later than six months following the signing of the Climate Agreement in the same framework.
- d. With regard to a sectoral approach for issues such as financial contributions or company standards, the possibility of imposing binding standards on so-called free riders is essential. This may be achieved through an order declaring a collective agreement binding. The Ministry of Agriculture, Nature and Food Quality will provide clarity on the availability of the order declaring a collective agreement binding no later than six months after the agreement has been signed.
- e. In the context of commitments a through d, the parties will have a study carried out and completed, no later than six months after the Climate Agreement has been signed, into the energy prices and energy costs of, the opportunities for and alternatives to the tax on natural gas in the greenhouse horticulture sector. This study will also extend to effective support of carbon emissions reduction, the development of taxation and levies on energy, the realisation of a sector-specific contribution to the energy transition of at least €200 million for the 2021 – 2030 period, the application of a redistribution channelling mechanism, a system of individual carbon emissions areas (company standards) in supplement to the CO₂ sector system, the necessity and use of an order declaring a collective agreement binding, the destination and allocation of the available budget and comparison with and alternatives to increasing the energy tax. This study will provide the basis for the agreement under commitment m.
- f. LTO Glaskracht Nederland, the Ministry of Agriculture, Nature and Food Quality, the provinces, the municipalities, Greenports and civic organisations will set up a national transition body for The Greenhouse as a Source of Energy no later than six months after the Climate Agreement has been signed. The transition body will assume responsibility for the realisation of and quality control for the carbon emissions target for 2030 and the corresponding commitments in the Climate Agreement. The duties and responsibilities of the members of the transition body are linked to the agreements of the Climate Agreement.
- g. The commitments will be laid down in a new cooperation agreement for the greenhouse horticulture sector for the 2020 – 2030 period in succession to the Cooperation Agreement on Carbon Emissions in the Greenhouse Horticulture Sector 2020 (*Convenant CO₂-emissieruimte glastuinbouw 2020*), the Multi-year Energy Transition Agreement for the Greenhouse Horticulture Sector 2020 (*Meerjarenafspraak Energietransitie glastuinbouw 2020*) and the Cooperation Agreement for Clean and Efficient Agricultural Sectors (*Convenant Schone en Zuinige Agrosectoren*).
- h. Each year, the carbon emissions of the greenhouse horticulture sector will be monitored by WEcR. The parties hope to be able to synchronise the method of determining carbon

⁷⁸ The greenhouse horticulture sector has a sectoral carbon emissions cap, accompanied by sanctions if that cap is exceeded.

emissions used by the PBL/Statistics Netherlands (national carbon dioxide emissions registration/National Energy Outlook) with the WecR method. The discrepancies between both methods will be analysed and resolved. This will have been completed by 1 January 2020, to allow work to continue using a single method as of that year.

- i. The Greenhouse as a Source of Energy and Greenport West will develop an area monitoring system in conjunction with the national monitoring system for use by regional authorities.

The Greenhouse as a Source of Energy transition programme

- j. The Ministry of Agriculture, Nature and Food Quality and Glastuinbouw Nederland will continue the existing approach of the Greenhouse as a Source of Energy programme in the 2021 – 2030 period. This includes the implementation of sector-specific research, development, communication, pilot, demo and early-to-market projects, stimulation of a broad introduction and monitoring. The agreements, commitment and programme will be valid until 2030 and will be evaluated every five years, for the first time in 2024.
- k. The Ministry of Agriculture, Nature and Food Quality and Glastuinbouw Nederland will accelerate and intensify the overall package of activities within the Greenhouse as a Source of Energy programme aimed at the realisation of the ambition for 2030 through the acceleration of energy savings and low-carbon sources with a strong focus on the implementation of knowledge and technical options.
- l. In addition, the Ministry of Agriculture, Nature and Food Quality and Glastuinbouw Nederland will commit to expanding the range of instruments for investments that are deemed necessary, such as an incentive instrument for carbon emissions reduction (for the decoupling of sources of carbon dioxide and residual heating sources), heating grids (transport and distribution), SDE+ (in favour of geothermal energy, biomass, all-electric, solar thermal and aquathermal energy) and a knowledge and innovation programme for geothermal energy.
- m. The Ministry of Agriculture, Nature and Food Quality and Glastuinbouw Nederland will extend and intensify the PPP financing agreement (50% public sector: 50% private sector) and the incentive framework (Proof of Principle, Energy Efficiency in Greenhouse Horticulture (EHG) and Market Introduction of Energy Innovations (MEI)) of the Greenhouse as a Source of Energy programme for the period leading up to 2030. The current commitment and budget will be expanded through application of the Climate Budget funds.
- n. By 1 July 2020 at the latest, a revision of the sector-specific incentive framework will be carried out based on an analysis, aimed at introduction by 2021. Key areas of focus in that regard include the annual flexibility of the investment list in the EG, the annual flexibility in the focus of the MEI and the consideration and consistency in respect of the generic incentive framework.
- o. The national government proposes further intensification of the Greenhouse as a Source of Energy programme to achieve the climate ambition for greenhouse horticulture:
 - Proof of Principle, demonstration projects and knowledge development and exchange, also aimed at stimulating electrification in artificially lighted cultivation;
 - expansion of the budget for the Energy Efficiency in Greenhouse Horticulture scheme (EG) to incentivise additional energy-efficient elements in approx. 55 hectares of modern greenhouses per year in particular, with the aim that these greenhouses should meet the requirements for Green Label greenhouse certification. This incentive will lead to carbon emissions reductions in addition to "standard" new greenhouses.
- p. Focus on the modernisation of 300 hectares of greenhouses per year under the recent Horticulture Agreement (14 March 2019 "National Horticultural Agenda 2019 – 2030"; modernisation of greenhouses is one of the key priorities) and the area-specific approach under the Greenhouse as a Source of Energy programme. The EG incentive for additional energy-efficient elements in new greenhouses (see agreement o, second point) will also encourage the realisation of these new structures.

Area-specific approach

- q. The Transition Body, referred to under f, will develop and realise a structured area-specific approach. Under the denomination of Greenport NL, the collaborating organisations will organise an accelerated area-specific implementation of a low-carbon energy supply in combination with the modernisation of greenhouse horticulture infrastructure.
- r. The regional Greenports will establish agreements ahead of 1 January 2022 on the modernisation of the businesses, allowing entrepreneurs to realise 300 ha of energy-efficient greenhouses per year.
- s. By 1 January 2021 at the latest, Greenport NL will have drawn up an area vision in all regions with greenhouse horticulture, in which the development toward a climate-neutral energy supply is established with a translation to 2030, including spatial planning, overground and underground spatial requirements and acceleration of the development of business cases for the supply of carbon dioxide, heating and electricity.
- t. The result of the area visions will be comprehensively taken into account in the RES and their implementation by the relevant regional authorities. The relevant regional Greenports will ensure that the information that is required for the RES process will be made available. The local and regional authorities will also be responsible for embedding the area-specific approach and actions that have been developed for the sustainable energy supply and the modernisation in, among other things, environmental strategies, spatial planning policy and licencing policy.
- u. Greenport NL will set out the necessary activities that will be taken up by each of the cooperating parties, for which they will allocate the necessary manpower, resources, funds and work organisations and the necessary competences and will organise the management measures that should result in binding cooperation and commitments within the area-specific approach.
- v. The local and regional authorities will provide flexibility in the rules and the granting of permits for frontrunners and innovations that contribute to the reduction of CO₂ in the greenhouse horticulture sector.

CO₂ supply

- w. The parties are committed to adequate measures to enable the necessary supply of CO₂ for the greenhouse horticulture sector. By 2030 at the latest, the shift to a CO₂ supply with a magnitude of approximately 2.0 Mt per year will have been secured. The commitment and approach focuses on cost-effective capture, transport and supply of carbon dioxide, the realisation of independent CO₂ transport, integration and optimisation of carbon storage (CCS), maximum access to CO₂ from biogenic sources and innovation and development of CO₂ extraction from the outdoor air.
- x. The parties have agreed that the required level of the investments and feasible cost reductions will be established no later than 1 January 2020, based on engineering studies, and will be translated into an approach and a range of instruments that will allow investments to be made in carbon capture for the supply of carbon dioxide to the greenhouse horticulture sector.
- y. The national government is committed to the development of a legal ruling, which will allow regional environment agencies to assess and honour applications for non-waste status of CO₂ captured by waste energy plants and used in greenhouse horticulture.
- z. The parties will endeavour to guarantee the supply of carbon dioxide to the greenhouse horticulture sector and to prevent the supply of CO₂ to the greenhouse horticulture sector from becoming uncertain as a possible result of CCS or other types of taxation of carbon dioxide emissions within the industry. Within six months after the Climate Agreement has been signed at the latest, the parties will have carried out a study into the options that would prevent the supply of CO₂ to the greenhouse horticulture sector from being limited as a result of the development of CCS or other types of carbon emissions constraints or taxation in the industry.

- aa. The parties have agreed that natural gas and cogeneration and boiler installations will remain available as a back-up supply of carbon dioxide to greenhouse horticulture businesses, for as long as the security of supply of external CO₂ has not been secured.

Residual heat and geothermal energy

- bb. The parties will commit to sound measures to enable a total supply of external heating to the greenhouse horticulture sector of 10 PJ a year by 2030 at the latest, aimed at the preparation for and realisation of decoupling, the preparation for and realisation of transport and distribution networks, quality control for filling-up and underutilisation risk, integration of and priority for sustainable heating and contracting of heating based on a system of open networks and market forces.
- cc. By 1 January 2022 at the latest, the national government will realise the necessary legal framework conditions for investments in thermal decoupling and heating grids for the supply of residual and other heat to greenhouse horticulture in conjunction with the built environment.
- dd. The national government, in consultation with parties from the energy and heating supply sector and organisations that represent parties purchasing heating, will establish a market regime for heat transport networks by 1 January 2022 at the latest.
- ee. The geothermal energy sector has already committed itself to scaling geothermal energy, both in the greenhouse horticulture sector and in the built environment, through the Geothermal Master Plan. In this regard, the sector is committed to achieving further cost savings, the development of a geothermal heat proposition alongside heat suppliers, broadening the base and further professionalising the sector across the entire value chain and ensuring a local and regional social dialogue on geothermal heat in the context of the energy transition.
- ff. The national government will intensify the commitment to geothermal energy by alleviating the barriers in laws and regulations and through implementation of a mission-driven knowledge and innovation programme aimed at risk management in the operating phase, professionalisation of the sector, advancement of standardisation, knowledge of the subsurface (seismic) and a cost reduction of 50%. In addition, the national government will uphold the RNES guarantee scheme covering risks for terrestrial heat and the SDE+ scheme for this technique.
- gg. Additional budget for greater capacity of the heating grid of the Trias2 geothermal heat project in Westland, as a prerequisite and initial step toward the development of the Westland Heating System in combination with 100 MW residual heat from the Port of Rotterdam.
- hh. The national government will develop a range of instruments to incentivise residual heat projects, with a view to inclusion in the expanded SDE++ scheme.
- ii. Focus on the use of geothermal energy. Geothermal energy is a key energy source for the greenhouse horticulture sector, which will enable the planned transition to a climate-neutral and fossil-free future. At present, there are around 17 ongoing projects at horticulture businesses that use geothermal energy, for which funding can be obtained, including through the SDE++ scheme. The goal is to realise 35 additional projects in the period up to 2030.

A knowledge agenda has been drawn up by the Ministry of Agriculture, Nature and Food Quality and the Ministry of Economic Affairs and Climate Policy, which will be expanded into a knowledge and innovation agenda that will identify the various financing options and any relevant gaps.

Flower bulbs and bulb flowers

- jj. The flower bulb sector has an integrated approach in the field of energy and the climate with, in addition to land use in open cultivation and energy consumption in covered cultivation, a specific commitment to the energy-neutral drying and preservation of flower bulbs in sheds. Innovations in the flower bulb sector have a spin-off to other agricultural sectors where storage plays a key role, such as for potatoes and fruit. The Royal General

Bulb Growers' Association (KAVB), in consultation with the national government and Greenports, will take the initiative to expand its efforts with regard to the climate through the issues referred to above.

C4.7 Food consumption and supply chain

A consumption pattern that reduces the burden on our climate cannot be achieved in just one day. Nevertheless, it is clear where we ought to start if we wish to reduce the burden on the climate. Less food wastage, increased consumption of vegetables and fruit and a greater percentage of consumption of plant-based proteins is regarded as a significant contribution to long-term climate policy. It is our goal to achieve this without restricting citizens' freedom of choice.

In the approach to food wastage and the protein transition, as expressed in the Transition Agenda for Biomass and Food, climate policy and the circular economy come together.⁷⁹ In line with the Circular Economy in Food Task Force, the parties have set themselves the goal of halving food wastage among consumers in the Netherlands by 2030, compared to 2015, including food losses in the supply chain. Commitments with regard to both issues (climate policy and the circular economy) are complementary to one another.

The parties aim to achieve a healthy balance in the ratio of animal vs plant-based proteins in the national diet of the Netherlands by 2050, in accordance with the recommendations made by the Nutrition Centre. In addition to this shift in our diet, an average reduction in the intake of protein of 10 to 15% is desirable in the Netherlands. The parties support this objective. The government formulated its commitment to the transition agenda, including "Biomass and Food", in an Implementation agenda on 29 June 2018. Reducing food wastage and "the transition to different production and consumption of proteins" are key points, in relation to which the link to climate change policy is cited as well. The government makes a direct link between these subjects and climate change policy. It will be necessary "to achieve a healthy balance between sustainable, healthy, safe and affordable food and the correct balance between animal and plant-based proteins".⁸⁰

In order to pursue these objectives, the following three working fields have been identified:

- reduction of food wastage throughout the supply chain. The "*Samen tegen voedselverspilling*" (Stop food wastage together) platform brings together all parties in the food chain and aims to halve food wastage across the entire food supply chain in the Netherlands by 2030, compared to 2015.⁸¹ In 2015, food wastage amounted to roughly 2 million tonnes of food. Carbon emissions will be prevented by monitoring and tackling food wastage at as many businesses and consumers as possible. Moerman's Ladder will determine all efforts that can take place at businesses, institutions, supply chains and partnerships between businesses; For businesses, preventing food wastage and creating more value out of residual flows may also provide a useful business case;
- development of the Carbon Footprint (CFP) as a monitoring and comparison instrument. This requires clear and unambiguous European and national definitions. If these are available and simple to apply, this standard will be implemented by food producers,

⁷⁹ See also the government's accompanying letter of 15 January 2018, "Creation of the transition agendas of the Raw Materials Agreement". In this letter, the government refers to the commitment in the Coalition Agreement that the government will implement the agreements in the Government-wide Circular Economy Programme and the transition agendas from the Raw Materials Agreement as part of its climate commitment in order to accelerate the transition to a circular economy. For the relationship between food consumption (proteins) and the climate in particular, see p. 35 and 37 of the *Transitie-agenda Circulaire Economie – Biomassa en Voedsel* [Transition Agenda for the Circular Economy – Biomass and Food].

⁸⁰ 29 June 2018, House of Representatives 2017 – 2018, 32 852, No. 59, p. 20 – 23, quote on p. 22.

⁸¹ Source: *Transitie-agenda Circulaire Economie – Biomassa en Voedsel* [Transition Agenda for the Circular Economy – Biomass and Food], 2018.

whether or not on an industry basis, and made publicly available by 2025. In order to reduce the CFP of consumption, multiple consumption categories should be taken into consideration, in all forms of biomass application, in addition to those of foods. This CFP could potentially also be used as a basis for earnings models (See Section C4.3.1, commitment b);

- changing consumption. The parties believe that climate-friendly consumption by citizens will not materialise on its own. Insight into the impact of citizens' own consumption may help those who wish to change their consumption. A publication is expected in 2019 in which the sustainability and carbon footprint of multiple types of proteins (vegetable/animal) are categorised to allow the proteins to be ranked in order of their footprint.

The parties have agreed the following:

Reduction of food wastage

To strengthen "*Samen tegen Voedselverspilling*":

- a. The parties will make efforts to ensure that, within five years, 80% of their members will actively take part in the approach to tackle food wastage, preferably along the lines of the approach taken by "*Samen tegen Voedselverspilling*".
- b. The national government will take part as a food buyer (through commercial catering), act as a funding or co-funding body and contribute to initiatives on a smaller scale.
- c. The national government, where necessary, will make efforts to achieve changes to the rules and regulations that are unnecessarily conducive to food wastage – or that unnecessarily hinder the prevention thereof.
- d. The VNG aims to realise living labs in as many municipalities and/or regions as possible to build community coalitions to prevent food wastage.
- e. The parties concerned will provide input to the Enrichment of Waste products Task Force (*Taskforce Herijking Afvalstoffen*) in 2019 for the further creation of value out of residual streams and by-products in the supply chain.

Clarifying the carbon footprint

- f. Businesses in the production chain will calculate their CFP at the level of the product group. The Dutch government will make efforts to achieve a clear and simplified European standard for the CFP at product group level (such as the PEFCR). Businesses will contribute to the development of this standard and new categories for which no rules are available yet.
- g. By 2025, based on this European standard, provided it is available and easy to apply, manufacturers of food for the Dutch market will determine the CFP per kilogramme of nutrients of their product groups and, if possible, of their products.
- h. The businesses will make the carbon footprint of their products publicly available, through the industry or otherwise, and will systematically lower the CFP of their production chains, explaining to their customers and stakeholders which measures they have taken to offer customers more climate-friendly products.
- i. As of 2019, businesses will take lowering their products' CFP into account in the development of their products.
- j. Supermarkets will encourage sales of climate-friendly products in their stores, by positioning these products as the "easiest and standard" choice for consumers. In particular, they will contribute to the protein transition and to convincing consumers to consume more vegetable proteins compared to animal products and more products from the five basic food groups in accordance with the prevention agreement. In addition, they will perform an active role in the Alliance for Food Sustainability (*Alliantie Verduurzaming voedsel*), including implementation and monitoring.

Changing consumption patterns

- k. The parties will make use of the most recent insights of scientific research to facilitate citizens in the realisation of a varied consumption pattern that brings the Netherlands closer to the objectives agreed upon in this Climate Agreement.
- l. The parties will agree to realise further in-depth research in relation to the definition of climate-friendly products by 1 January 2020.
- m. The parties agree that all interventions shall be documented and will be made centrally accessible in a database.

C5 Electricity

C5 Electricity

C5.1 Vision for 2050

Between now and 2050, limiting climate change will require a carbon-free electricity system. This transition is part of the shift toward a circular, carbon-free economy and society. Among other things, a carbon-free electricity system means that existing fossil sources of electricity will be replaced by renewable sources. This process is already in full swing, as large wind farms are being built offshore and citizens generate their own electricity using solar panels. This transition should be accelerated, including for the purpose of covering the additional demand for electricity generated from renewable sources as a result of electrification in the mobility, agriculture, built environment and industry sectors.

The transition toward a carbon-free electricity system belongs to everyone. This is crucial to maintain and improve social support. The transition is a collective task and challenge to be taken up by citizens, network and other businesses, public authorities, civic organisations and the world of knowledge and science. Collaboration with neighbouring countries is crucial in this regard – after all, the electricity market does not stop at the border. This also presents an opportunity for the Dutch sustainable and innovative economy of the 21st century. The transition should be effectively connected to the entire energy system. This requires public authorities and network managers to integrate new sources of renewable electricity, and the use thereof, correctly and in a timely manner. Furthermore, clear rules must be established for the electricity market. Citizens can actively participate in new projects. Space and nature are used economically. The costs of the transition will be kept as low as possible by using every opportunity for cost savings.

The reliability of the electricity system must be guaranteed at all times, as a large part of all electricity will be generated with renewable means by 2030. An approach that offers scope for modification, flexibility and acceleration would be suitable here.

C5.2 Target and ambitions for 2030

The target for the electricity sector is primarily the reduction of carbon emissions by at least 20.2 Mt by 2030, which is part of the general 49% reduction target set out by the government for the Netherlands. The government proposal to ban the use of coal to generate electricity does not form part of the contribution of the Sector Platform for Electricity, but does count toward the target of 20.2 Mt. In addition, the electricity sector will have to supply carbon-free electricity to the other sectors due to electrification there. All of this requires a significant growth in the share of electricity from renewable sources.

In specific terms, the key objective will be to scale up the production of electricity from renewable sources to 84 TWh. The measures and steps that are required to achieve this have been detailed in specific commitments to renewables on land and offshore wind. As regards a reliable electricity system, there will increasingly be a need for a flexible supply, which will be realised through the market. In addition, when considering security of supply, it is vital that sufficient controllable capacity be provided, which will have to be carbon-free to an increasing extent. The envisaged transition toward higher production from renewable sources requires a close relationship with the sustainability of the sectors. To this end, a development agenda for systems integration has been included in the Climate Agreement, which will be outlined further in D1. Specific examples include the proposals for hydrogen (see C5.7) and power to heat (see C3.5.2). As part of the quality control mechanism, the parties have agreed that a decision will be made in 2021 on any scaling up of renewable electricity in relation to additional electricity demand. The individual carbon emissions reduction plans of the industry are also expected to be ready by that time.

In addition, the parties aim to achieve an increase of European ambitions to 55% reduction of greenhouse gases by 2030. In the event that the targets of the other sectors are achieved through further electrification, the supply of carbon-free electricity production should match this additional demand from the sectors (through direct electrification or via conversion to other forms of energy). In that case, the current level of ambition will have to be raised, provided that the correct framework conditions can be met at the time. In order to be prepared to meet this additional demand, the necessary preparations should be made, for example through the reservation of the required space. The 55% package (see table) provides insight into the corresponding ambitions.

	49% basic package	55%
Offshore wind	49 TWh	120 TWh
Renewable on land (>15 kW)	35 TWh	
Other renewable options (incl. carbon-free controllable capacity) ⁸²	TBD	
Total	84 TWh	

Table: Ambitions for production of electricity from renewable sources by 2030

C5.3 Prospects on the road to 2050

We do not know precisely what the sustainable energy system of the future will look like, nor is it possible to make a precise prediction. Moreover, our aim is not a plan that is tied down in perpetuity. After all, new innovations and breakthroughs in the years to come will undoubtedly provide new insights, result in different costs and bring about marketable applications. Nevertheless, we will be doing everything now that is sensible in the long run (no regrets approach). We might not have a crystal ball, but we can still make the following predictions:

The sustainable energy system of the future will be more complex than the system we have today. It will be a system filled with sustainable electrons and sustainable molecules. There are two potential ways forward for us.

The large-scale roll-out of offshore wind in the decades to come will lead to a major green energy source becoming available that will chiefly be able to supply the sustainable centres of industry in the Netherlands with energy. Kicking off the development of this "Green North Sea Powerhouse" requires a systematic and planned approach beyond 2030, comparable to the Delta Works. On the road to 2050, growth up to 60 GW of established capacity may be achieved, depending on the national and international demand for electricity. This requires effective communication with all stakeholders, including coordination with other North Sea countries, with a view to establishing a reliable and affordable energy system and a combined objective of a sustainable economy, safeguarding and, where possible, reinforcing the ecological value of the North Sea. In addition, the future will feature options such as the expansion of interconnection, conversion to hydrogen or other energy carriers, greater flexibility on the demand side, smart grids, storage and artificial islands in the long term, with a view to cost-effective integration of more offshore wind energy.

On land, the situation will be virtually mirrored, with citizens (such as "prosumers"), districts, public authorities, public institutions, network and other operators, businesses and civic organisations collaborating on an extensive web of local and regional, small and larger

⁸² This includes the expected growth of small-scale solar PV to 7 TWh by 2030. *The system platform has estimated that, by 2030, the carbon-free controllable capacity should be able to supply 15 – 40 TWh. Renewable options could be a part of this. The model assumptions used in this estimate are outlined in Section C5.6.

renewable sources of electricity, effectively integrated into the network, public space and systems of renewable heating. This decentralised world will require a great deal in terms of willingness to cooperate, trust, bespoke solutions, adaptation and flexibility.

Our key focus will be on variety and flexibility, with options for sustainability improvements through innovation and demonstration projects, for example. We will incentivise market parties to reduce costs and to launch innovations on to the market. Securing cost savings will also require sufficient investment security. We will call on network managers to facilitate the transition effectively and will request that public authorities provide the instruments to enable this. Furthermore, we will be removing any barriers to the effective functioning of the market, resulting in flexibility becoming available from various sources.

Finally, we will aim to surround ourselves with good neighbours. This will require a willingness to invest in cooperation. After all, that will help everyone move forward, as they are undertaking the same transition to a carbon-free electricity system as an integrated part of a sustainable energy system. It is a challenge best faced together. Together, we will see it through.

C5.4 Offshore wind energy

We see tremendous potential in offshore wind energy in relation to realising the climate targets for 2030 and 2050. For that reason, we want to actively pursue further roll-out in the decades to come. Particularly in combination with the electrification of industry, and especially in the coastal zone, offshore wind energy has the potential to be the most significant green power source for Dutch society and for the economy in the future.

With regard to the period up to 2030, at the very least the existing Offshore Wind Energy Roadmap for 2030 will be realised. More offshore wind farms can be realised ahead of 2030, under conditions such as adequate space for wildlife and fisheries as well as effective administrative agreements on spatial planning. This may become relevant if a higher level of ambition should come into sight, in the event of more electrification or if the government should pursue the target of 55% carbon emissions reduction by 2030. Further scaling up of offshore wind energy will also take place beyond 2030.

This will not come about on its own. Mutual commitment and predictability are the keys to a successful offshore wind energy approach. In addition, investors must have security in the fact that there will be a sufficient national and international distribution market. In the event of insufficient market incentives, despite an expected fall in costs, there will still be an operating shortfall, resulting in business cases running the risk of being unsuccessful. In that case, a form of investment security (subsidy or other measures) may still be needed.

The North Sea is currently used for a variety of purposes and there are various interested parties. Within this Climate Agreement, the parties have set out meaningful ambitions for offshore wind energy. The parties to the Climate Agreement assume that these ambitions will be fleshed out in more detail in 2019 within the process of the 2030 North Sea Strategy. The importance of the timely success of this 2030 North Sea Strategy is significant and a prerequisite to the realisation of the broader ambitions for offshore wind energy.

The parties to the Climate Agreement assume that the stakeholders in relation to the North Sea, including in the field of nature conservation, shipping, fisheries, sand extraction, military activities, mining, recreation and the wind energy sector, will in 2019 commit to, and contribute to the creation of, an Agreement for the North Sea, chaired by an independent presidency. The 2030 North Sea Strategy provides for a Strategic Agenda in 2019 and a National Structural Vision for the North Sea by 2020/2021 (which will be organised under the National Water Plan).

Agreements on framework conditions

There are a number of framework conditions for the successful roll-out of offshore wind energy after 2030 in relation to achieving the 49% target, potential acceleration options, the 55% scenario and further growth of offshore wind energy. The parties have agreed that new wind farms will be constructed if:

- a. in relation to expansion of the offshore grid, in addition to the 2030 Roadmap, specific connection sites on the coast are sought with sufficient demand for electricity or other energy carriers after conversion, to ensure that expansions of the national high-voltage grid are avoided as much as possible. This is also important because modifications to the national high-voltage grid are accompanied by lengthy lead times;
- b. a profitable business case can also be achieved in the mid to long term;
- c. efficient use is made of the space available for wind farms, including for other types of use (passage and shared use);
- d. the 2030 North Sea Strategy has been completed for the further expansion of offshore wind energy on top of the 2030 Roadmap;
- e. there is sufficient room for ecological space, even in the case of additional offshore wind energy, compared to the 2030 Roadmap, and the interests of fisheries have been taken into account in relation to the location of the offshore wind turbines. To this end, future frameworks will be established within the National Structural Vision. The National Structural Vision will be based on the following principles that have been mutually agreed upon:
 1. a comprehensive consideration of all social interests, within the framework conditions of the safe and responsible use of the North Sea and the capacity of the healthy ecosystem;
 2. equilibrium between nature, fisheries and wind energy:
 - further growth of offshore wind energy to ensure a sustainable energy system;
 - achieving a Good Environmental Status (GES);
 - a commercially and ecologically sustainable fishing industry that is future proof.

Based on the independent advisory report on a 2030 North Sea Strategy (Consultative Body on the Physical Environment, OFL), the parties will reach an agreement on the North Sea by mid-2019 in which the government and other partners will make agreements on the main points regarding the equilibrium cited above, how it is to be achieved, the timetable and the availability of adequate and timely instruments and resources that will be required in order to ensure the necessary innovation, transition and mitigation for sustainable use of the North Sea.⁸³ In the context of the Climate Agreement, the parties have already expressed that greater knowledge of the North Sea and the impact of the various activities of the North Sea is required, including for the designation of new areas for offshore wind energy. Within the 2030 North Sea Strategy, a knowledge agenda will be set up with the relevant parties, after which the facts will be established in a constructive dialogue through joint fact finding. At present, sufficient funds are available for this knowledge agenda through the European Maritime and Fisheries Fund (EMFF), the Fisheries Innovation Fund, the Offshore Wind Ecological Programme (WOZEP), the Basic GES and the ecological innovation programme line of the Offshore Wind Energy Top Consortium for Knowledge and Innovation (TKI WOZ). Based on the independent advisory report on a 2030 North Sea Strategy (Consultative Body on the Physical Environment, OFL), the parties will reach an agreement on the North Sea by mid-2019 in which the government and other partners will make agreements on the main points regarding the equilibrium cited above, how it is to be achieved, the timetable and the availability of adequate and timely instruments and resources that will be required in order to ensure the necessary innovation, transition and mitigation for sustainable use of the North Sea.⁸⁴

⁸³ Following the analysis, the parties will review what progress is being made in the parallel North Sea track.

⁸⁴ Following the analysis, the parties will review what progress is being made in the parallel North Sea track.

Agreements

In respect of the realisation of 49 TWh (approximately 11.5 GW) of offshore wind energy and any further growth ahead of 2030, the parties have agreed the following:

- a. They shall all commit themselves to the development of the North Sea Strategy and contribute to the creation of the National Structural Vision for additional offshore wind energy.
- b. Ahead of 2030, the national government will take a sufficient number of site decisions in a timely fashion, conduct preliminary studies, issue permits and a sufficient number of tenders and commission TenneT to construct the offshore grid (as long as wind farms are implemented for electricity), and will additionally, if possible, put out the tenders to market for the roll-out of at least 49 TWh (approximately 11.5 GW) in accordance with the 2030 Roadmap and in accordance with the survey of the landfall of the offshore grid.
- c. The energy generated in the form of electricity⁸⁵ or possibly as another energy carrier after conversion will be transported to the mainland and TenneT will realise the grid connections according to the development framework for Offshore Wind Energy (Electricity Act), the foregoing in accordance with the roll-out schedule of the current 2030 Roadmap. Completion will be coordinated with the wind farm developers.
- d. The costs of the offshore grid, as well as the grids on land, will be paid from network tariffs. The national government will set out the way in which the cost distribution of the offshore grid will take shape, taking into account both the applicable European law in this field and the impact on the distribution of the burden on connected parties.
- e. The sector will make every effort to realise offshore wind energy at the lowest possible costs.
- f. The sector will aim to reduce production costs to 5 ct/KWh or less by 2024 and to 3 – 4 ct/KWh by 2030, provided that sufficient volume is available and stable roll-out is possible. Adequate security on the long-term demand development and flexibility of demand is also crucial, or security on the revenue, as long other forms of security are still insufficient.
- g. In order to increase the certainty of realisation, at the start of 2019, the parties will review the profitability of the business case for offshore wind energy prior to each tendering process. This review will, among other things, involve the development of demand and the integration into the energy system (such as connection to storage or demand). The national government will use this information for the decision-making on the tendering system. The results of the review will be made available to all parties interested in responding to the tendering process.
- h. There will be a further review of the business case for the generation of renewable electricity, regarding offshore wind energy in particular. In addition, effective and early insight into the assessment of funding parties is crucial; this also applies to the way in which risks (e.g. no support from the SDE+ beyond 2025) are weighed and possibly priced, and the possible impact thereof on funding options. It is also important to establish whether there are increasing financing charges and whether, if possible, those can be mitigated, for example through the use of funding instruments, such as guarantees, national or European co-funding or other options. Invest-NL will be requested to carry out a review of this matter and to gain more insight into the risks and funding options, to identify promising opportunities and to report these issues by the end of 2019.⁸⁶
- i. The national government and the wind energy sector will conduct a five-year review of whether systemic changes are required to achieve a successful business case for offshore wind energy and, if so, which. To this end, a joint study will be launched in 2019, with a

⁸⁵ In the future, any conversion to other energy carriers will take place offshore and this energy will be brought ashore through appropriate means.

⁸⁶ Once the results of this review are published, consideration will take place of whether similar insights would be required in relation to potential financing risks for Renewable Energy on Land (HOL) and small-scale solar-PV.

decision taken by 2023 regarding whether and, if so, which changes are necessary. This may relate either to the range of instruments or to solutions on the market itself.

- j. The parties will continue to provide support to innovations regarding innovation and demonstration projects aimed at:
- cost reduction and optimisation (safe and affordable scaling);
 - integration into the energy system (including storage and conversion);
 - integration into the environment (multi-purpose use of space, including wildlife and fisheries).

C5.5 Production from renewable sources on land

In addition to offshore wind energy, opportunities will also be seized on land regarding increased production of electricity from renewable sources. A richly varied, mainly local, renewable electricity system is being planned for 2050, primarily through wind energy on land and solar PV toward 2030. With regard to the target, a distinction is made between the small-scale production of solar-PV, primarily at household level, and the more large-scale production on land and on rooftops, as is currently stimulated through the SDE+ scheme. The ambition to achieve more large-scale (>15 kW)⁸⁷ electricity production on land amounts to at least 35 TWh of production by 2030. A technology-neutral assignment is used in this context. The objective is to enable local and regional authorities – and their social partners – to draw up an effective plan that will be supported by society. To achieve this, they have chosen the instrument of the Regional Energy Strategies (RES), in which there is maximum focus on social acceptance of the energy transition within society and on the way in which it can be realised within the region. The associated additional wind or solar capacity is not predetermined. It is up to the region to determine in what way the objectives can best be realised. Without prejudice to the task of achieving at least 35 TWh, plans relating to small-scale solar-PV and other renewable energy on land can be involved in the RES.

The analysis conducted by the PBL for the Climate Agreement has shown that the expected production of solar-PV (>15 kW) and wind energy on land in the baseline trajectory will already amount to approximately 17 TWh⁸⁸ by 2030. Even without the Climate Agreement, that production is expected to increase as a result of the efforts that will be made to meet the agreements for 2020 and 2023 under the Energy Agreement.

The remaining target is regarded as feasible in spatial planning terms. Should the target be raised, renewed consultation will take place on the issue.

In addition to increased large-scale electricity production on land, small-scale production of solar energy is also crucial to meeting the climate target. The generation of solar energy by households also contributes to increased involvement of citizens and the acceptance of the energy transition.

Public authorities will chiefly leave initiatives with regard to sustainable electricity production to the market. The water boards have identified a relationship between the energy targets of water boards and their water management responsibilities. Further commitments will be made on these issues with the involvement of the parties. The market, in this case, is a collective term for all manner of initiators, from project developers to energy cooperatives. On that

⁸⁷ Regarding projects that are eligible for the SDE+ scheme.

⁸⁸ The proposed policy in the National Energy Outlook for 2017 without the SDE+ scheme estimates the established capacity by 2030 at 3.7 GW of wind energy on land and 14.3 GW of solar-PV. Assuming a number of full-power hours of 3237 hours and 854 hours respectively, estimated electricity production at 11.98 TWh for wind energy on land and 12.21 TWh for solar-PV. This amounts to 24.19 TWh for wind energy on land and solar-PV put together. Subtracting an estimated production of 7 TWh of small-scale solar-PV results in an estimated production of large-scale renewable energy on land in the baseline trajectory of approximately 17 TWh.

basis, the key starting point should be to make it more attractive to initiators to set up projects. If it is insufficiently clear whether the projects can earn back the amount invested or if the return will be too low in any form, there will be very little interest in setting up a project. Taking that into account, the following measures were formulated.

Agreements

The parties have agreed to the following in respect of the production of renewable electricity on land:

- a. The RES will guide the decision-making process by municipalities and provinces on the manner in which the targets for renewable electricity generation on land by 2030, in addition to the commitments of the Energy Agreement, can best be realised. This concerns the spatial planning aspects that form the basis for the quality control in the environmental policy at provincial and municipal level. Within a robust operational structure, the focus will be on the process and results at regional and national level, alongside social partners such as parties, civic organisations and network managers. The following agreements have been made:
 - The national government and other RES parties will endeavour to resolve the obstacles in relevant laws and regulations as quickly as possible.⁸⁹ The national RES programme will identify the spatial planning barriers in relation to the relevant laws and regulations.⁹⁰ If laws and regulations should pose an obstacle to the process at project level, this will be resolved using tailored solutions insofar as possible. If this should not be possible, a concerted effort will be made to find an alternative solution. Rules and policies exceeding the statutory minimum will be reconsidered by the relevant authority if, as a result of these rules and policies, the objective of the RES cannot be achieved.
 - In respect of the schedule, the local and regional authorities will ensure that the spatial planning measures for renewable energy on land will have been completed in most of the regions by mid-2021. The common objective is that, by 1 January 2025 at the latest, all requested and required permits will have been issued and, in specific cases, tendering procedures for the awarding of projects will have been completed, with a view to the timely realisation of the target. In order to ensure a sufficient volume and to compensate the failure of projects, more flexibility will be sought and scheduled in the Regional Energy Strategies and in environmental plans.
 - The implementation of existing agreements, including those in the Energy Agreement, will continue, thus preventing a standstill in practice. This also applies to locations where planning flexibility already exists. This is independent of the RES and the associated adaptation of the environmental policy. Projects may be developed within current environmental policy.
 - With regard to cost reduction, it is essential that there should be an ongoing, stable and predictable pipeline of projects for solar and wind energy on land. In order to realise the ambitions, the underlying principle is that, by 2025, the projects that add up to at least 35 TWh will have already requested an SDE+ subsidy.
 - In the first quarter of 2019, the local and regional authorities will set out clearly what is in the pipeline in terms of projects (in terms of expected annual amounts of GW), including plan development for (1) projects that are still expected for the coming year and (2) projects for which there may be room within the RES in the future.
 - Each year, the parties to the Climate Agreement will draw up a forecast of the required roll-out trajectory in TWh, based on the objectives of the Climate Agreement and the current forecast for the development of the market. As part of this monitoring, the parties will agree that, to support the cost reduction trajectory, an indicative roll-out

⁸⁹ As set out in Annex x in the Energy Act 1.0.

⁹⁰ Section D7 contains more details on the RES and Section *D5* looks at ways to create support for the measures of the Climate Agreement and the energy transition, and the role of citizen participation in this regard, in greater depth.

trajectory will be used in which 50% of the projects to be realised will have planning permits by 1 January 2023, 70% will have planning permits by 1 January 2024 and 100% will have planning permits by 1 January 2025. Obstacles that make it more difficult to achieve the target will be discussed between parties and appropriate action will be taken at that time.

- b. The regions stand to benefit from clarity and uniformity when it comes to knowledge, support and data. In order to facilitate the regions as much as possible, in a way in which the National RES Programme can still operate in a cost-effective manner, knowledge fragmentation should be avoided. In order to achieve this, the process will take place as much as possible through a single platform, to which the regions can turn for any support and knowledge issues they may have. This platform will be the Energy Transition Centre of Expertise (*Expertisecentrum Energietransitie*). This means that the regions will be able to obtain independent, factual knowledge, calculation rules, assumptions and clarity regarding laws and regulations in the field of both heating and renewable generation from the Energy Transition Centre of Expertise without having to consult separate institutes. The way in which knowledge and expertise centres will be brought together for the benefit of the energy transition in the regions will be set out further in the first quarter of 2019. Public authorities will set out the contours of this centre. This will involve a consideration of whether and in what ways different parties will contribute to it.
- c. Participation and acceptance are crucial to the spatial integration of the energy transition and to its feasibility. Participation ensures and promotes the idea that everyone has a part to play in this process. For the Electricity Sector Platform, participation relates to the spatial integration and operation of energy projects (<15 kW non-building-based wind and solar). Participation and acceptance are prerequisites for the realisation of the target, but may be at odds with the envisaged cost reductions. The passage on the RES goes into depth regarding the exact interpretation of participation that is applied:
- *Process participation*: public authorities are primarily responsible for communication on the necessity and usefulness of the energy transition. Within the context of the Green Deal on Participation of the Community in Sustainable Energy Projects (process participation during the development of projects) and the national RES programme (process participation during the RES), participation guidelines will be drawn up. This will provide developers, public authorities and financiers with the tools for a participatory approach. These guidelines can be used to explicitly embed the envisaged method for participation into sectoral codes of conduct and spatial frameworks, such as environmental strategies, environmental plans and project decisions.
 - *Environmental participation*:
 - The initiator must complete a process in order to arrive at a desirable and feasible form of participation from the range of participation methods available, consisting of process participation, financial participation, financial obligations, ownership participation, a local development fund or a combination of the above. The competent authority will verify that initiators and the community enter into a dialogue on these issues. All potential participation instruments will be identified for the competent authorities for the participation guidelines, which will be drawn up in the context of the Green Deal on Participation of the Environment in Sustainable Energy projects.
 - Commitments with the community will be recorded in an environmental agreement. On this basis, a project plan will be drawn up, which will set out how participation should be structured within a project in optimal terms.
 - In order to ensure the success of projects for the construction and operation of renewable energy sources on land within the energy transition, the parties will be working together as equals on development, construction and operation in regions with opportunities and ambitions in respect of renewable energy generation. This translates to a balanced division of ownership in a region that strives to achieve 50% ownership of the production in the local community (citizens and businesses).

Investment in a solar and/or wind project is a task for entrepreneurs. It also requires co-investment and involves a certain amount of risk. The goal with regard to ownership ratio is a general goal for 2030. At a local level, there will be room for deviation, for local project-related reasons. The special position of the water boards will also be taken into account in this regard, as they are both a local developer and a regional authority with a sustainability target for their own business processes.

- *Local development fund:* A local development fund is one of the possibilities in the range of options for participation. If a local development fund is established, the initiator or initiators will provide it with a reasonable amount of funds for the project, as determined by the NWEA (The Netherlands Wind Energy Association) code of conduct, which is used as a guideline. The NWEA code of conduct is currently being reviewed under the Green Deal for Participation. These findings will later be adopted. In relation to solar projects, this requires further review. Such a review has already begun and will be completed in 2019. Decisions on the application of the local development fund will be taken by the local community.
 - The interest group for sustainable energy producers and consumers in the Netherlands ODE Decentraal, the Nature and Environmental Federations (NMFs), Holland Solar, the Netherlands Wind Energy Association (NWEA), the climate and energy umbrella organisation Klimaat en Energie Koepel (KEK) and any others will identify best practices for types of participation that allow people with a lower income to participate in the energy transition. These best practices will be incorporated into the RES and applied in project development.
- d. The RES may result in regional differences, in respect of spatial planning decisions regarding sites and preconditions for energy generation. The associated costs may therefore also be different, which in this case relate to infrastructure costs and the costs of generation itself. In the first quarter of 2019, the parties to the Climate Agreement will develop a cost assessment framework, which can be applied within the RES and which should support the regional decision-making process with regard to decisions between costs and spatial framework conditions. This assessment framework will include a cost distribution method, in which any additional region-dependent costs for infrastructure are passed on to the other regions as little as possible. Secondly, the cost assessment framework aims for the collective sum of the Regional Energy Strategies to fit within the constraints of the funds available (from the SDE+ scheme) and aims to ensure that projects remain feasible.
- e. In the context of participation by the local environment, a great deal of value is placed on local initiatives. There are two areas that present major obstacles to their participation, the first of which is a lack of knowledge. Local initiators will be encouraged to make use of the knowledge and expertise available at the Centre of Expertise to be set up, as formulated under b. In addition, pre-financing costs are a significant obstacle. The Ministry of Economic Affairs and Climate Policy has made a contribution in this regard. By July 2019 at the latest, InvestNL, ODE Decentraal, the IPO and the VNG will have examined whether provinces and municipalities may be able to ensure that autonomous energy cooperatives can rely on a scheme⁹¹ that would provide funding for the studies and corresponding project support required for a successful permit application. This will also involve examining how this can be organised most efficiently, with new and existing regional/provincial funds also being taken into consideration. The Development Fund, under which the scheme will fall, has been set up and made ready for operation with the assistance of NIA (InvestNL), the National Green Fund and REScoopNL. This issue expressly does not concern the funding of the required capital for the project. Upon financial close of the project, these funds will be returned, thus resulting in the creation of

⁹¹ A number of parties have indicated that the level playing should not be jeopardised with regard to this issue.

a revolving fund. In addition, it will be reviewed whether fees associated with the project can only be charged upon financial close of the project, or if the project is abandoned.

- f. It will be agreed that the SDE+ scheme shall remain available for new investments in renewable electricity options up to 2025. In order to achieve the planned production within the agreed framework of the SDE+ scheme, the conditions under g must be met in order to bring the required funds in line with the available funds.
- g. The costs of renewable electricity have fallen significantly in recent years, including as a result of technological development. The parties will jointly commit to realising further cost price reduction in the years to come, with the objective of ensuring that, by 2025, renewable electricity is able to compete with the market value of the electricity produced. The parties will aim to achieve the cost reduction trajectory given below.⁹² These cost prices are the point of departure for the SDE+ scheme, in which a distinction is made according to the project size for solar-PV and wind speeds for wind energy on land.

Euro/MWh	2020	2021	2022	2023	2024	2025
Wind energy on land	59	55	52	50	49	47
Solar-PV	83	78	73	68	63	58

The costs will be monitored on an annual basis for the purpose of opening up the SDE+ scheme. The costs in the table assume that part of the cost reduction will be realised by lowering grid connection costs, given that network managers will be able to efficiently expand in the direction of the production sites, resulting in the connections being able to be realised at lower social costs.

In order to achieve this cost reduction, the parties have agreed the following:

- The national government will make efforts to remove any technical and statutory barriers.
- Where possible, from the perspective of land ownership and use with regard to the primary function of the land, tendering will be the preferred approach to large-scale projects.
- Tendering of renewable energy on land is currently being trialled in a pilot programme that is already underway and can be expanded, in consultation with market parties. The national government and other public authorities will be able to put prepared sites on the market, aimed at an optimal price-quality ratio within the project. The aim may not be a higher price for the land.
- The goal is to make a substantial contribution to the 35 TWh and to operate as much as possible within the framework that the current SDE+ scheme sets out. This can take place both on government-owned land and on privately held land on a voluntary basis. The national government will tackle this issue within the framework of the Sustainability of Social Real Estate Programme.
- The national government will examine whether it would be desirable and necessary to modify the core responsibilities of the relevant agencies managing government property with regard to the use of government-owned land and roofs. The most cost-effective amount of preparation in this regard will be specified in more detail based on the Pilot Programme for Renewable Energy on Land Owned by the National Government and the Directorate-General for Public Works and Water Management, which is currently underway. This should result in a greater supply of land and therefore to a decreasing market-based land fee. The calculations of the cost reduction trajectory are based on a price of 1 euro/MWh.
- Local and regional authorities will in general issue permits for a period of at least 25 years if possible.

⁹² This is subject to external developments in market interest rates and commodity prices.

- Local and regional authorities will make efforts to provide planning security to initiators as soon as possible in accordance with the roll-out trajectory under a.
 - The national government and the local and regional authorities will endeavour to only make use of renewable energy on land produced on Dutch territory by 2030. They will expect other public service providers and the business community to follow this example.
 - In 2019, market parties will – within the framework of the Competitive Trading Act – draw up an action plan in order to achieve cost reductions for the components that they can directly impact themselves. This plan will in any case examine the financial focus on innovation and opportunities to lower or limit profile and imbalance costs.
- h. Another crucial success factor is the certainty that the electricity generated can actually be delivered to the grid. The planning of the network managers and the construction of solar farms and wind farms should be coordinated with one another. In order to organise this process better, the following steps are required:
1. The network managers and market parties should aim to achieve a timely and cost-effective way of integrating and connecting renewable energy production on land, in social terms as well. To this end, the network managers, market parties and the national government will develop a proposal to reform the assessment framework and monitoring mechanism for network expansion, setting out clear criteria regarding under what conditions the network managers may extend the network in the direction of the production sites, resulting in connections being able to be realised at lower social costs and creating more insight into the costs and lead times. In this way, the network managers will be contributing to the cost reduction target for renewable energy on land. Agreements will be made for an action plan on this issue to be developed by 2020.
 2. The network managers will take part in the RES, such that, within the process to assess sites for the generation of electricity, the opportunities provided by the infranet, both in respect of suitable sites for generation and in terms of costs, can be taken into account. The expertise of the market parties can be used for this.
 3. A "site check" will be carried out by the network managers as part of the RES. Developers will contact the relevant network managers before they apply for a permit and/or SDE+ subsidy. Network managers will make time and resources available to share information on the network, lead times and costs with the developer. In addition, they will identify the consequences and set out a timetable for the realisation of the required infrastructure. Developers will take this information into account in their application for a permit and SDE+ subsidy and the network managers will subsequently act in accordance with this timetable. This will strengthen the business case from an overall cost perspective, including social costs for energy infrastructure.
 4. In order to avoid social costs, the cost distribution issue of the infrastructure for solar farms must be studied further and must be optimised. This will involve a review of the existing segmentation ban for wind energy on land and multiple suppliers on one connection. The results of this review should become available during the course of 2019.
 5. The national government, following consultation with the network managers and market parties, will put forward a proposal to deal with other legal bottlenecks with regard to infrastructure. This will in any case involve a review of the opportunities for non-redundant connections, control options in terms of transport restrictions and the prevention of inefficient transport through the use of flexibility from consumers and producers. These points will be fleshed out in more detail for the Energy Act 1.0.
 6. The national government, alongside the network managers and market parties, will put forward a proposal for the amendment of the legal framework for the periods and lead times to realise a connection. Network managers and market parties will make efforts to work with an "ideal week" that is mutually agreed upon in advance, taking

into account the supply chain obligations of third parties that affect the construction period (such as permit authorities).

C5.6 Electricity system and infrastructure

The existing electricity system and all relevant actors face a series of new challenges as a result of the transition to a sustainable electricity system. In essence, these challenges focus on three elements:

1. The production of electricity generated from renewable sources has a largely varied pattern. Simply put, solar and wind are variable, weather-dependent sources. In order to coordinate supply and demand under all circumstances, a greater demand will be placed on the flexibility of the system. Flexibility will have to come from all possible forms of buffering, in terms of both time and scope: storage, demand side response, hybrid electrification, controllable production and flexibility from abroad through interconnection. If the supply is more dependent on weather, this will lead to a greater need for short and long-term flexibility.
2. The transition will change the demand for electricity in terms of volume and profile. With regard to the industry, the built environment and mobility, electrification provides a possible pathway to sustainability. The scope and pace of electrification have a significant impact on the operation of the electricity system. The application of hybrid solutions, including various forms of buffering, can significantly contribute to the flexibility required.
3. It must be possible to feed electricity generated from renewable sources into and draw it from the network. Consequently, network managers face the challenge of facilitating new sources and additional electrification, including by offering adequate network capacities, at the lowest possible cost. Public authorities are faced with the task of ensuring effective spatial integration. Infrastructures for the transport, conversion and storage of electricity, natural gas, biogas, hydrogen, carbon and heating will also have to be coordinated with one another.

Given these challenges, security of supply will have to remain at the same high level it is currently at for the duration of the transition. Addressing the challenge for the electricity system in the most cost-effective way requires a comprehensive approach. A review must be carried out on the way in which sustainable electrons and molecules can be used efficiently, the way in which networks will be able to function in a robust, smart, adequate and efficient manner in the future, the extent to which interconnection can contribute, the way in which demand can be aligned with supply more cleverly (demand-side response), methods for the optimal use of energy storage and conversion capacity and the way in which hybridisation of energy demand can support such aspects. The current market model provides a good basis for efforts to achieve the system target in a cost-effective way until 2030 and is in line with European laws and regulations. Continuous monitoring of issues, such as long-term security of supply, will have to be part of the transition.

Infrastructure plays a key role in the transition, entails a lengthy realisation period and lifespan and for that reason entails lengthy depreciation periods. For that reason, investments in networks require a perspective that goes beyond 2030, with timely investment decisions fitting in with long-term goals. Widely supported interpretations on future scenarios and the expected energy system can contribute, for example, to reducing risks in relation to the investment decisions of market parties and network managers, and to the prevention of delays in the energy transition.

The transition will have a major impact on markets, in the sense that new markets will emerge, which will need to mature, and existing markets will undergo changes. The sector platforms have asked the government to carefully consider the choices it will need to make with regard to the organisation of new and existing markets. In addition, this will have to involve careful consideration of the relationship with future infrastructure for carbon dioxide,

hydrogen and heating. As the transition progresses, there will be increased interaction between the different markets, including those for electricity and gas. The integration of systems involves an interplay between electrons and molecules. This means the issue of organisation is not simply confined to the sectors themselves, but truly cuts across them all. D1 contains a further outline of the development agenda for systems integration.

In order to incorporate large-scale integration of renewable electricity production from wind and solar, the system must become much more flexible. The following points are key in that regard:

- As of 2030, controllable production will increasingly have to be carried out by carbon-free sources. The pace at which this will occur, and the extent to which the market is able to resolve this issue itself, is uncertain and dependent on a variety of factors. The forms of and opportunities for international and mutual support will also change, given that neighbouring countries are themselves undergoing an energy transition. Interconnection may provide flexibility, but the extent to which it can contribute is uncertain. For that reason, monitoring of market developments, the developments in neighbouring countries and monitoring of the development of security of supply by TenneT will become even more important. The international context is highly relevant. Use will be made of input from, among other sources, pentilateral analyses, ENTSO-e analyses and information on foreign energy and industrial policy. Further coordination with neighbouring countries regarding policies and mutual support is required in the field of security of supply. Partly because of the lengthy realisation periods for infrastructure, production and conversion plants and the continued development of relevant technologies, the monitoring mechanism itself must have a long-term horizon.
- The increasing significance of flexibility and the scale of the electricity system challenge require careful consideration in the innovation agenda to allow the target to be achieved and to keep system costs as low as possible. The development of new flexibility options and the reduction in cost for existing options are a part of that. Methods for large-scale flexibility options, preferably of a carbon-free nature, to ensure flexibility in the long term (including in relation to weather and seasonal patterns and extreme weather conditions) must already be developed now, given the lengthy lead times, to ensure they can be implemented in time.
- Policy measures that encourage electrification must also fully accommodate and/or retain flexibility.
- Flexibility may result from interconnection, demand-side response (including hybridisation), storage and controllable production. Technology neutrality is the point of departure in this regard. A distinction is made between the need for short-term flexibility (<48 hours) and long-term flexibility (>48 hours). The analysis and survey of options show that the developments in the energy system, which are partly provided for under this Climate Agreement (chiefly as regards electrification in industry, transport, the built environment and agriculture), provide sufficient potential options for absorbing the short-term flexibility demand. Effective facilitation of market parties in the field of data supply is crucial in that regard. Monitoring should provide insight into whether these options will actually develop according to plan and whether it is possible to use them flexibly in technical and commercial terms. Providing long-term flexibility will require a combination of the various sources of flexibility. In certain scenarios, based on a number of assumptions,⁹³ an estimated 15 to 17 GW of controllable capacity (long-term demand-side

⁹³ Some of these assumptions relate to: an electricity demand of 125 TWh; 84 TWh gross production from wind and solar power (or a demand of 150 TWh and 110 TWh in wind and solar power respectively in another scenario); some TWh curtailment; import/export at 0 on balance across the entire year; a carbon emissions cap, applied in these model calculations, for the electricity sector of 12 Mt, of which 6 Mt is reserved for electricity production from blast furnace gases (4 TWh); 18 TWh from gas-fired power stations within the remaining emissions capacity; and 5 TWh production from cogeneration production in other sectors. The optimal level of controllable production, in addition to weather-dependent production, has not been

response, for example from hybrid systems, interconnection, large-scale storage and controllable production) will be required for an average weather year. An extreme weather year will require a greater number of GW. Furthermore, in these model assumptions, the required carbon-free controllable production was estimated at 17 TWh by 2030, and at 27 TWh for non-carbon-free production. Monitoring will focus a) on the established and planned capacity (carbon-free) for controllable production capacity and the expected availability and deployment of this capacity in relation to unforeseen future market conditions, b) the development of demand-side response, c) buffering and d) the developments abroad. As a result of the further growth of electrification and the ever-dwindling emissions capacity, the need for carbon-free controllable production will rise even further. It will be possible to feed the electricity system with carbon-free controllable production in a number of ways: with electricity from carbon-free hydrogen or from other renewable sources, such as biomass and green gas, from nuclear power or from fossil sources for which carbon dioxide emissions are captured. The various technological solutions entail different realisation periods, costs, social support and other traits, making them either more or less realistic for the period leading up to 2030. Biomass may be used for various applications and Chapter D2 will focus on biomass in greater depth.

- Energy infrastructure is a significant determining factor for the energy transition. The energy infrastructure (electricity, gas, green gas and other energy carriers) will have to be developed further to ensure that sufficient capacity is available in time. Prompt and comprehensive spatial planning, in which infrastructure is included from the outset, is more important than ever. Optimisation and greater use of infrastructure requires new ways of collaborating with market parties. To a significant extent, this is already possible within the existing legal framework, but further optimisation of rules and regulations is necessary. Furthermore, key areas of attention include the planning and implementing of proactive network investments, where the optimal balance will be sought between the lowest social costs and risks of overinvestment. Incentive regulation, the cost distribution issue of infrastructure and a level playing field for connections to energy infrastructures will also have to be reviewed in that context.

Agreements

- a. In 2020, the national government will, in part based on the input from this Climate Agreement, and in consultation with stakeholders, issue a comprehensive approach that tackles the principal choices that are relevant at the system level. This approach will also focus on issues such as carbon-free controllable capacity.
- b. The national government and Netbeheer Nederland, in consultation with the regulator and market parties (supply and demand side), in a separate process, associated with the preparations for the Energy Act 1.0 (submission to the House of Representatives envisaged for late 2019), will review the issue surrounding the broader desire for anticipatory investments in the network infrastructure and the prompt completion of the network connections for the energy transition, primarily through the expected input from large-scale sustainable (local and regional production), electrification of the demand side (industry) and the growth of electric transport. This review will serve to create flexibility and incentives for network managers where necessary and to facilitate anticipatory investments in network infrastructure that will support the energy transition and aid the achievement of the targets in time. The applicable laws and regulations will also be correspondingly amended, as will the supervisory role of the ACM. Better use of infrastructure through innovative solutions and opportunities to work with new concepts will also be explored, with a view to the ability to respond to the necessity of transport capacity quicker and more flexibly, whilst simultaneously avoiding inefficient investments.

determined and could turn out to be either higher or lower. In practice, there is no emissions cap for the electricity sector.

- c. In 2019, the national government, alongside stakeholders, will develop and establish the way in which monitoring of market developments, security of supply and developments in the neighbouring countries will take place, including with regard to what will be monitored, by whom and at what intervals. This monitoring will provide a coherent picture of the development of security of supply and the relevant corresponding aspects, such as progress in the field of sustainability and the development of the flexibility of the system. To prepare for any risks to security of supply, the national government will develop a framework by mid-2020 that can be used when the monitoring mechanism shows that the developments on the market may not be sufficient to continue to guarantee the security of supply.
- d. In 2019, GasUnie and Tennet will jointly take the initiative, alongside regional network managers, to draft a comprehensive infrastructure survey for 2030 – 2050, in which insights from the energy sector, demand development in the industry sector and findings from the Regional Energy Strategies (RES) will be included. This will involve consultation of relevant stakeholders, including market parties. This infrastructure survey for 2030 – 2050 will serve as the guideline for issues such as the investment plans of the network managers and investments by market parties. The survey will be completed in 2021.
- e. The division of responsibilities, data security, data quality and access to data (orderly and efficient) must be embedded in law, with permission for use being regulated effectively and unambiguously.
- f. The integration of a high percentage of weather-dependent renewable electricity at lower costs to society will be possible if the energy system is organised in a way that is as flexible as possible. The national government and market parties will, by 2019, examine the amendment of laws and regulations with a view to removing obstacles to strengthening the market for flexibility options. Examples that will be taking into consideration include the impact of network tariffs on incidental peak decrease in electricity, tax treatment of storage and the provision of a legal basis for the principle of "strengthen the grid unless" for network management.
- g. Network managers and market parties (and, if necessary, the national government) will develop a congestion management system with the use of local flexibility (flexible consumers, storage systems and production facilities) based on market principles.
- h. An open European or national standard is required for the flexibility of devices, such as solar panels, charging stations and heat pumps, if a functioning and market-based strategy for flexibility is to be developed. Market parties, led by the Association of Mechanical and Electrical Engineering (FME) and in consultation with the national government and network managers, will examine how this can be organised.
- i. Based on the Integrated Knowledge and Innovation Agenda (IKIA), the multi-year mission-driven innovation programmes (MMIPs) will focus on issues such as the development of flexibility options that balance out supply and demand (on all relevant time scales). Synergy will be sought with the development agenda for systems integration and the hydrogen implementation agenda.

C5.7 Hydrogen

Stringent climate requirements, regarding 49% less greenhouse gases by 2030 and approximately 100% by 2050, require radical changes to the energy system and the industry and raw materials system. Thanks to its extensive processing industry, geographical advantages and gas expertise and infrastructure, the Netherlands will be able to build a distinctive clean-tech industry and knowledge position, providing lasting value to the Dutch economy, by approaching this transition in a proactive manner. These two considerations form the basis for a programmatic and phased development of a hydrogen system, which will carry out a number of essential functions in a carbon-free energy and raw materials management system.

Hydrogen in a carbon-free energy and raw materials management system

In the mid (2030) to long (2050) term, hydrogen can and must be able to carry out a number of critical functions within the energy and raw materials management system. The principal areas of focus will be:

1. a carbon-free feedstock for the process industry. Hydrogen is already widely used (approximately 100 PJ converted to energy value) and the need for hydrogen will continue to grow as a result of new sustainable chemical processes. In time, this feedstock will have to be carbon-free hydrogen. There is no alternative;
2. carbon-free energy carriers for high temperature heat for the process industry. There are few alternatives for temperatures above approximately 600 degrees;
3. controllable carbon-free capacity, energy storage for prolonged periods and energy transport over longer distances. These will be necessary in an energy supply in which the share of non-controllable weather-dependent sustainable energy is increasing significantly and where the sources (offshore wind energy) are situated at a considerable distance from the user. Those needs will chiefly begin to increase around 2030;
4. mobility, especially with regard to passenger transport for greater distances and road transport as a focus ahead of 2025. Heavy road transport over long distances, shipping and rail are solid options for the longer term (toward 2030). In addition to battery electric transport, we will be committing significantly to hydrogen as part of the policy that aims to achieve zero-emissions mobility. The transition from grey to green hydrogen is crucial in that regard;
5. built environment, possibly for buildings and districts that cannot easily be made more sustainable in other ways for various reasons.

The extent to and rate at which a demand for hydrogen will come about for these functions will depend on a number of issues, including the availability and cost effectiveness of alternative measures to meet the requirements of the functions desired. Even simply in regard to the first three functions referred to, hydrogen – purely as H₂ and/or bound to so-called carriers – is a robust solution within the final target of a carbon-free energy and raw materials management system. The Netherlands occupies a good starting position to prepare for a role for hydrogen through its extensive processing industry, which already uses approximately 100 PJ in hydrogen, its significant potential for offshore wind energy on the North Sea and its gas infrastructure and knowledge. Hydrogen will provide the Netherlands with an opportunity to integrate large volumes of sustainable energy into the system in a cost-effective way and to build new circular processes and value chains in the Dutch economy. Within all industrial clusters, market parties are preparing for a growing role played by hydrogen, including through studies, the development of business cases and proposed investments. The plans for green hydrogen collectively add up to a total aim to achieve electrolysis capacity of over 800 MW and 15 kilotonnes from biogenic fuels by 2025. In addition, there is a significant focus on hydrogen as a climate-neutral energy carrier on an international scale. It is expected that, in time, an extensive international hydrogen market will emerge, where the Netherlands can play a significant role.

The necessity of the development of hydrogen is also demonstrated by the development of demand. The potential demand for hydrogen was identified in the context of the Climate Agreement process. This showed that, by 2030, on the coast alone, there will be a large potential demand for hydrogen for industrial applications (approximately 125 to 213 PJ). The industrial cluster Chemelot in Limburg has a potential demand for hydrogen of approximately 25 to 40 PJ. In addition, additional demand may emerge on the coast for hydrogen for electricity production. The actual demand in 2030 will partly depend on the development of incentives for industry to become more sustainable and on incentives for sustainable and carbon-free electricity production.

Sources of hydrogen

The objective is to focus on green hydrogen as much as possible, primarily based on electrolysis using sustainable electricity, but also based on biogenic feedstocks, provided they have been produced sustainably. An optimal contribution to the development of a broader hydrogen system through the use of blue hydrogen – produced from natural gas with capture of carbon dioxide emissions – must be ensured, without impeding the growth of green hydrogen. Based on international plans and developments, it seems likely that a global hydrogen market will emerge that includes both blue and green hydrogen. Differentiation by carbon footprints will always be possible through certification.

Hydrogen programme

A substantial hydrogen programme is to be initiated under this Climate Agreement. The programme will chiefly focus on unlocking the supply of green hydrogen, the development of the necessary infrastructure and collaboration with various sectoral programmes, as well as the facilitation of ongoing initiatives and projects. This programme will also allow the synergy between infrastructure and the use of hydrogen to be advanced.

It is crucial that this programme focus on incremental scaling of the production of green hydrogen using sustainable electricity in the short term. This is due to the following:

- The necessary large-scale production of green hydrogen requires a rapid price reduction of electrolyzers and the price of renewable electricity. In respect of electrolyzers, a reduction of 65% on the capex of electrolyzers must (and, according to the expectations of relevant market parties, can) be realised through upscaling in the lead-up to 2030, from approximately €100 million per 100 MW at present to €35 million per 100 MW, and to 3 – 4 GW of established electrolysis capacity as a result of scaling.⁹⁴ In conjunction with the expectations regarding the costs of renewable electricity generation, green hydrogen may become competitive in time.
- A sufficient volume of renewable electricity is required in order to accommodate the demand for green hydrogen. In this regard, attention should be paid to ensure some link to the growth of electrolysis capacity and the growth of offshore wind energy. Consideration should also be given to the way in which the capacity, use and location of electrolysis plants could contribute to the integration of renewable electricity into the energy system. The impact on infrastructure should be included in the comprehensive infrastructure survey for 2030 – 2050 that GasUnie and TenneT will carry out in 2020.
- Given the Netherlands' excellent starting position regarding the production and use of hydrogen, the Netherlands will be able to take a leading position in this field if our country is able to take the lead in developments.

This programme aims to have realised 3 – 4 GW of established capacity of electrolyzers by 2030, with development being in alignment with the additional growth of the share of renewable electricity.

In addition, the programme will focus on the development of an optimal hydrogen infrastructure. In the period leading up to 2025, it is expected that, within the various industrial clusters and energy clusters, a need for a regional infrastructure for hydrogen will emerge. In relation to an established capacity of 3 – 4 GW, a need will also arise for the storage of hydrogen and the connection of various clusters, which can largely be achieved using existing natural gas infrastructure, which may require modification. On that basis, preparations will be made in the coming years regarding the realisation of a national basic infrastructure for hydrogen (transport and storage).

The programme does not focus on the development of demand for hydrogen directly – that responsibility is more closely related to the various sectoral programmes. However, there will

⁹⁴ At present, the capex cover roughly 30 – 35% of the costs of electrolysis.

be close cooperation with those sectoral programmes to review the way in which the expected demand will develop and what is required from the hydrogen programme to develop that demand further.

Until 2030, the programme will distinguish between the following phases and objectives:

- 2019 – 2021: preparatory programme for the roll-out of hydrogen, using a considerable number of ongoing initiatives and projects as a point of departure, to be concluded with an evaluation to benefit the further specification and objectives of the following phases. At the end of 2021, a decision will be made on the final structure of the follow-up phase and on the extent of the scaling up beyond 2030;
- 2022 – 2025: based on the results of the first phase, particularly if the cost reduction of electrolysis and the commitment of the relevant parties provide a sufficient basis, scaling up to 500 MW of established electrolysis capacity will take place if possible, in conjunction with the development of the demand for hydrogen and regional infrastructure and the connection of the various clusters. In 2025, a decision will be taken on the final structure of the follow-up phase;
- 2026 – 2030: scaling up to 3 – 4 GW of established electrolysis capacity, connection to storage sites and expansion of infrastructure, on the condition of additional growth of renewable electricity, among other things.

The preparatory programme for the 2019 to 2021 period will in any case include the following components:

- in consultation with the various innovation and sectoral programmes, a review of the way in which the instruments under the Climate Agreement aimed at emissions reduction, in the industrial sector in particular, make an optimal contribution to the roll-out and use of hydrogen;
- research, innovation, development and demonstration facilities (magnitude of 20 – 30 MW) for various hydrogen chains, with a view to differentiation according to requested qualities ("specs") for the various applications;
- joint monitoring of the development of the business case for electrolysis and research into the periods in which the instruments can contribute to the scaling and cost reduction of electrolysis capacity;
- review of the development of demand for hydrogen and the effects thereof on the schedule and decisions regarding the development and realisation of the additional sustainable generation capacity required. This review will be a determining factor for the decision-making on additional offshore wind energy in 2021. (See C5.10);
- determination of the necessary transport and storage infrastructure and the necessary funding;
- development of an EU or other hydrogen certification system, to allow various qualities to be differentiated on the market;
- provision of clarity on hydrogen as an energy carrier, within the context of the vision to be formulated in 2020 on the market organisation issues in relation to the energy transition;
- review of the way in which statutory and regulatory flexibility can be created for experiments to allow regional and national network managers to gain experience in the field of transport and distribution of hydrogen and to allow them to make the required investments, for example through the Order in Council on temporary responsibilities;
- collaboration between network managers and market parties to launch hydrogen pilot projects, with the purpose of jointly exploring a workable supply chain.

The government will contribute an additional amount of approximately €30 – 40 million per year for demonstration facilities and pilot projects from the Climate Budget funds for industry and electricity, where possible via existing schemes and funding options. Synergy with an emphasis on electrochemical conversion will also be sought within innovation programmes. Inclusion in the SDE++ scheme will become relevant once hydrogen has become able to compete with other options in the scheme. The parties will undertake to share all required

information and insights in this regard with the national government. In part based on this information, cost price development of hydrogen will be reviewed each year as part of the design process for the SDE++ scheme.

A programme of this nature should consist of a national component in terms of the realisation of the necessary framework conditions, but also of regional sub-programmes with a tailored approach per industry cluster and the surrounding catchment area. In addition, the government will commit to international cooperation for the development of hydrogen and accordingly to providing access to funds via various EU programmes.

A programme phased in this way would have to involve collaboration between key parties (public authorities, market parties, knowledge institutions, network operating businesses and civic organisations) to ensure that the development of a hydrogen system can take shape in a coordinated form.

C5.8 Instruments

A successful transition to a sustainable electricity system requires an effective and coherent package of instruments and measures.

ETS objective

The ETS is the cornerstone of European climate policy. The revision of the ETS Directive was recently completed and the revised directive will come into force in 2021. In addition, 2019 will see the start of the market stability reserve, with which part of the surplus of emissions allowances on the market will be transferred to the reserve. Based on the current revision of the ETS Directive, the ETS will result in 43% in carbon emissions reduction by 2030, compared to 2005. This contribution from the ETS is a key element in the EU's commitment under the Paris Agreement in order to reduce the emissions by at least 40% by 2030, compared to 1990. Greater emissions reduction within the ETS, however, is required to keep the rise in global temperatures below 2.0 degrees Celsius, in line with the Paris Agreement, let alone the aim of 1.5 degrees Celsius.

Agreements

The following agreements have been made:

- a. The parties to the Climate Agreement will take the lead in advocating 55% in carbon emissions reduction by 2030 in an EU context, compared to 2005.levels.
- b. In an EU context, the parties to the Climate Agreement will commit to strengthening the ETS by making the ETS cap more stringent and bringing it in line with 55% in carbon emissions reduction by 2030, or by advocating a European minimum carbon price in an EU context.

Both the national government and other parties previously referred to will pursue the agreements above by making efforts to gain support for the commitments described above among stakeholders that are relevant to them, including Member States and European industry associations.

Minimum carbon price

As of 2020, the government will also be introducing a minimum carbon price for the production of electricity, which will be embedded in law.

This is meant to guarantee the public interest of security of supply. Citizens and businesses should be able to rely on a stable and reliable supply of a growing percentage of sustainably generated electricity. For that reason, the decision on the contours of the price trajectory is based on the insights that the experts, including the Netherlands Environmental Assessment Agency, have shared with the Sector Platform on the effects

of a national minimum price on sustainability and security of supply. They have indicated that a minimum price increasing incrementally by a margin below the price trajectory of the EU-ETS is essential to safeguarding security of supply, but that this concurrently provides a significant sustainability incentive due to the security it offers the market.

The government will introduce the national minimum price for carbon dioxide along the following price trajectory:

	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030
Price trajectory (*)	12.3	13.5	14.9	16.4	18	19.8	21.8	24	26.4	29	31.9
ETS price (**)	20.5	21	21.5	24.6	27.7	30.8	33.4	36.3	39.3	42.7	46.3

(*) Euros per tonne of CO₂

(**) Estimate of the Netherlands Environmental Assessment Agency (PBL) (Source: Corjan Brink, *Projectie ETS-prijs volgens uitgangspunten concept wetsvoorstel minimum CO₂-prijs elektriciteitsproductie* [Projection of the ETS price according to basic principles of the draft legislative proposal for a minimum carbon price in electricity production], PBL 2018)

The parties have also agreed the following:

- a. In any agreement on a pentilateral variant, the price trajectory of the pentilateral minimum price for carbon dioxide will be the determining factor. The national government and as many parties as possible are making efforts in this regard by trying to establish a pentilateral⁹⁵ minimum price for carbon dioxide. This will provide a substantial stimulus to sustainability, in addition to the ETS, and additionally will allow the effects on security of supply to be avoided. For that reason, the government will put forward a more ambitious price trajectory for a pentilateral variant.
- b. Monitoring in relation to security of supply takes place annually. TenneT will identify the risks to security of supply each year for the subsequent six years, based on objective indicators, which include new developments in the ETS price.
- c. The price trajectory will be adjusted downward if the monitoring shows that there are risks to security of supply, in one or more years.
- d. Upward adjustments of the price trajectory must be announced at least five years in advance, on the basis of which security of supply must be guaranteed based on the objective indicators (TenneT) referred to previously.
- e. In 2023, the price trajectory for the period beyond 2030 will be set out, in conjunction with any insights that will be available at the time on the prospects of renewable energy production after the SDE+ scheme has been halted.

SDE+

At present, the SDE+ scheme is the most important instrument available for the stimulation of the production of renewable energy. This subsidy instrument contains a number of features that allow the scheme to perform effectively according to international standards. These features include technology neutrality, mutual competition and multi-year security for

⁹⁵ This will involve at least the following countries: France, Germany and Belgium.

investors. In accordance with the Coalition Agreement, the SDE+ scheme will be expanded to ensure that, in addition to renewable energy, other CO₂ reduction technologies will also become eligible for subsidies.

Agreements

The parties have agreed the following:

- a. The SDE+ will be opened up to new commitments for renewable electricity options up to the end of 2025, as a result of the target for large-scale electricity production. As such, the SDE+ scheme will remain a key instrument to the realisation of the ambitions agreed upon for 2030 for these options. The point of departure is that a sufficient number of projects, aimed at the target agreed upon for 2030, should be prepared in a timely manner to ensure they are still eligible for support through the SDE+ scheme.
- b. With regard to offshore wind energy and solar-PV, a specific cost-reduction trajectory with corresponding requirements will be agreed upon, which will constitute the basis for the basic amounts in the SDE+ scheme (see the agreements on Renewable electricity on land).
- c. The parties will aim to achieve subsidy-free offshore wind farms. Up to 2025, the SDE+ scheme will be available as a backstop, should this be required for the success of the tendering procedure for offshore wind energy for the implementation of the follow-up roadmap.

Alternative SDE+

With a view to the continued growth of renewable electricity required beyond 2030, it is vital that the extent be ascertained to which investment security for renewable electricity projects can also be guaranteed without financial support from the government.

Agreements

In preparation of new investments from 2026, the parties have agreed the following:

- a. In 2021, a survey will be launched into potential alternative instruments in order to be able to guarantee investment security for the period beyond 2025 in a cost-effective manner, with a view to realising the ambitions agreed upon for 2030 and thereafter. This will involve an analysis of various instruments – not being the financial instruments of the national government – including a form of suppliers' obligation and the further stimulation of the demand for renewable electricity.
- b. At the start of 2023, in consultation with the relevant parties, a final decision will be made on an alternative range of instruments. The point of departure endorsed by all parties is that investment security should also be guaranteed beyond 2025.
- c. The following criteria will apply in respect of a choice in favour of a specific instrument:
The instrument:
 - should lead to the lowest possible social costs;
 - should provide security with regard to the realisation of the ambitions for renewable electricity;
 - should guarantee investment security, which in concrete terms means that it should ensure that the bulk of the projects is able to be developed profitably; should lead to minimal market disruption, including in relation to the European market;
 - should support security of supply and the flexibility of the system;
 - should be feasible in practice.
- d. If an alternative range of instruments becomes necessary, preparations for the introduction thereof should already be started in 2023, with a view to timely entry into force by 2026.
- e. Any alternative range of instruments will in principle be aimed at the realisation of the ambitions beyond 2030. If necessary, with a view to realising the commitments ahead of 2030, these instruments could also play a role sooner.

Successor to the netting scheme

The coalition agreement sets out that the netting scheme for renewable electricity will be replaced by a new scheme, for which a long-term budgetary commitment of €240 million a year has been made available. It has also been agreed that a separate scheme will be created for energy cooperatives, which will enable local residents to participate in sustainable energy projects in their community more easily. In addition, the way in which energy cooperatives' projects with a residential connection can be included in the successor to the netting scheme will be examined.

Agreements

- a. The current netting scheme will be continued until 2022. From 1 January 2023, it will be converted into a new tax arrangement, which will involve the incremental decrease and phasing out of the tax incentive, given that it is expected that the costs of solar power will fall and that increasingly less stimulus will be needed for small-scale solar power. According to current insights, no further stimulus will be required for solar panels for consumers beyond 2030. As such, stimulation of solar power will be phased out leading up to 2030. The key characteristics of the new scheme are as follows:
 - As of 2023, the fiscal phasing out of netting will ensure a smooth transition for citizens and businesses that have already invested in solar panels. In addition to all existing investors in small-scale solar power, the new scheme is also available to all new investors.
 - For households that already have solar panels or will be investing in solar panels during this legislative period, the gradual phasing out of netting will result in an average payback period of approximately seven years, based on current insights. For investments in solar panels that are made following this legislative period, the payback period may be slightly over seven years, according to current expectations. The evaluation of the netting scheme of 2016 showed, among other things, that consumers would be willing to invest in solar panels if the payback period were between approximately five and nine years.
 - The conversion of netting will require that small-scale consumers no longer have "old-fashioned electricity meters" (Ferraris meter), given that information is needed on the amount of electricity produced that is to be fed back in. For that reason, as of 1 January 2023, all small-scale consumers will be obliged to have a meter with at least two separate counting mechanisms for supply and feeding back into the system. The national government, in consultation with the network managers, will prepare legislation on this issue, which will also include enforcement.
 - Small-scale users continuing to pay no energy tax, VAT or surcharge for sustainable energy on any renewable electricity that they, as citizens and businesses, have generated themselves for immediate consumption or storage behind the connection.
- b. A separate scheme will still be required for energy cooperatives, given that they will not be able to use the phased out netting scheme, as is currently the case. The most appropriate instrument for this separate scheme will be examined in consultation with the sector. In addition, a situation where the postal code cluster scheme (*Postcoderoosregeling*) becomes a dodging option for small-scale consumers using the netting scheme should be avoided. The aim is to amend the existing scheme or start a new scheme for energy cooperatives as of 1 January 2021.

Innovation instruments

Solar and wind will be supplying very large volumes of renewable energy for the energy transition in the years and decades to come, but this will not take place automatically. Ambitious further cost reduction, upscaling and increasing the pace of roll-out, spatial integration and integration into the energy system are critical conditions to success. Costs do

not only relate to energy generation costs, but equally relate to the costs of making energy available for final consumption with carbon-free electricity as its foundation. In order to meet these requirements, innovative solutions are required to make significant leaps forward and to remove any obstacles. This requires an effective balance between attention for and funding of low, medium and high Technology Readiness Level (TRL) activities.

Agreements

The parties have agreed the following:

- a. The innovation funds from the SDE+ scheme and the Renewable Energy Scheme (HER), on the condition of future savings on the SDE+ scheme, will be extended through 2023, with a declining budget as we approach 2025.
- b. The Energy Innovation Demonstration Scheme (DEI) will be expanded as much as possible from a scheme specifically for energy savings and renewable energy production to a scheme that supports all carbon emissions reduction options, in line with the scope of the Integrated Knowledge and Innovation Agenda (IKIA) that will be established under the Climate Agreement. In addition, the DEI will also stimulate innovations that contribute to the flexibility of the energy system (including hydrogen) and innovations aimed at achieving better spatial integration. As indicated in the commitments on hydrogen, an additional €30 – 40 million per year will be made available.
- c. The innovation funds in the DEI will be extended through 2030. Whereas only one demonstration project for a new technology receives stimulus at present, the stimulation of multiple demonstration projects within the DEI will be permitted. Pilot projects will be permitted as well.
- d. The schemes within the Energy Top Sector will be recalibrated based on the priorities set out in the IKIA and the Multi-year Mission-driven Innovation Programmes (MMIPs) developed as part of the agenda. A new aspect compared to current schemes is that a coherent package of R&D projects will be made possible, allowing parties to receive a subsidy for a comprehensive package of innovative solutions.
- e. As part of the MMIPs, and particularly for the low TRLs, the new track of the National Research Agenda (NWA) will be used, with the option to put out targeted calls in the priority areas. The Ministry of Economic Affairs and Climate Policy will work alongside the Ministry of Education, Culture and Science to focus on this and to attempt to make budget available to this end where possible.
- f. The innovation programmes of the TKIs will be strengthened by bringing them in line with or integrating them into the MMIPs.
- g. There will remain flexibility for new instruments or modifications of current instruments if all or parts of the MMIPs can be facilitated better as a result.
- h. The following amounts will additionally be available from the national government for the facilitation of innovation for the themes listed, with the majority to be used for pilots and demonstration projects.

	2020 – 2030
Storage and conversion	€10 – 15 million
Hydrogen	€30 – 40 million ⁹⁶
Spatial integration	€10 – 20 million

The total amount is final. Depending on the specific applications of parties, a decision can be made to alter the allocation ratio. In addition, a periodic evaluation will take place to establish whether recalibration of the themes referred to is required with a view to the 2030 and 2050 targets. This will in any case involve a review of the possibility of using part of the funds for an additional commitment to cost reduction, in consideration of decreasing resources from the HER for renewable electricity.

⁹⁶ This is the total amount for industry and electricity.

C5.9 Spatial integration

The upscaling of electricity generated from renewable sources on land will lead to a major spatial planning challenge, particularly after 2030, both above ground and underground. The ambitions that have been set out are feasible, provided a number of framework conditions are met. The selection of sites for sustainable generation must also take into account the availability, construction lead time and costs of network capacity. Wherever there is capacity on the grid (substations), projects will be able to be completed faster. With regard to good development sites with limited network capacity, expansion thereof will be examined. The spatial management aspects of the necessary infrastructure (including substations) fall under the spatial planning remit.

In the RES, the following four spatial planning principles will be included in the regional decision:

- efficient and multiple usage of the space (where possible);
- closest possible alignment of supply and demand of renewable electricity;
- combination of tasks and targets; trade-offs and rezoning if necessary;
- close alignment with area-specific spatial quality.

All parties to the Climate Agreement recognise that the realisation of this challenge in respect of renewable electricity entails a significant spatial requirement. Integration will require careful spatial planning considerations, with the primacy lying with the local and regional authorities (provinces and municipalities). Pursuant to the Dik-Faber motion,⁹⁷ the government, in consultation with the local and regional authorities, the agricultural sector, the solar energy sector, network managers and the nature and environmental federations, will identify which guarantees the current assessment frameworks provide for careful spatial integration and whether more is needed to stimulate solar energy generation on rooftops.

Agreements

The parties have agreed the following:

- a. When determining the location for the integration of renewable electricity, including in the RES, the provincial environmental strategy (POVI) and – by extension thereof – a municipal zoning plan/environmental plan (GOVI), the impact on the natural environment and landscape will be comprehensively included and weighed. Local nature conservation and environmental organisations, market parties and network managers will be involved fully and early on in the considerations on location choices and multi usage of space, to mitigate and avoid any adverse effects on ecology and the landscape.
- b. The decisions in favour of integration of renewable electricity must strike a balance with other functions and values, such as the natural environment, landscape, housing and/or recreation. Within the context of the RES and the municipal, provincial and national environmental policy (including the NOVI in the short term), a clear overview will be drafted of what the impact will be of the relevant considerations, such as maintaining existing functions and values, including with regard to ecology and the landscape.
- c. Smart multi-purpose use of space will be stimulated for each project by adding value to nature and the landscape, including, where possible, through the creation of additional natural elements (e.g. using crops, nature trails, green zones, insect parks or water courses). In this process, the competent authority for the natural environment may make use of the criteria of the "Checklist for Ecological Interests in Relation to Wind Energy on Land" – to be expanded to the "Checklist for Ecological Interests in Sustainable Energy Projects on Land" later this year.
- d. With regard to both renewable electricity on land and offshore wind energy, the parties will commit themselves to a process aimed at resolving ecological bottlenecks. This will in any case involve a review of:

⁹⁷ Parliamentary Papers House of Representatives 2018 – 2019, 32813, No. 204

- the way in which the Birds and Habitats Directives can be applied in such a way as to do justice to the legal protection of vulnerable species and can simultaneously provide more flexibility for renewable electricity;
 - the way in which initiators are able to take additional mitigating measures to prevent or compensate for any adverse impact on species and the natural environment;
 - additional broader measures aimed at improving the conservation status of these species, taking into account their biotopes, and at reducing the negative effects on the natural environment (such as biodiversity).
- e. The national government will make €10 to 20 million available each year for pilots, demonstrations and experiments to achieve effective spatial integration and multiple land use.

C5.10 Higher ambitions for 2030

In this Climate Agreement, the parties have decided to take the lead in the EU in advocating a 55% carbon emissions reduction by 2030, compared to 1990 levels. If the government should decide to adopt a higher target, then it is vital that the necessary steps have been prepared to allow for timely upscaling of activities. In addition, decisions can be made on the potential scaling up of renewable energy, including as a result of higher electricity demand.

An increase in the level of ambition is expected to be realised as a result of a very considerable share of electrification, including conversion to other energy carriers, in the industry, in mobility, in the built environment and in agriculture. In addition, hybridisation of demand and buffering offers advantages in respect of flexibility. Furthermore, in relation to lower emissions capacity, the development of storage, carbon-free controllable production and demand-side response must be accelerated, and this also applies to the necessary infrastructure modifications.

Agreements

In preparation of a possible increase in the level of ambition for renewable energy, the parties have agreed the following:

- a. New offshore areas will be designated by 2021 as part of the process to achieving a new National Structural Vision for the North Sea.
- b. The offshore areas will be designated in broad terms, allowing the designation process of the sites to take into account the results of the ecological assessment.
- c. In 2019, Tennet, in consultation with the national government and market parties, will identify whether and how the permit process for the offshore grids and/or networks on land can be initiated earlier or can be shortened in order to facilitate the ambitions in respect of offshore wind energy. This will involve the identification of both opportunities and risks.
- d. The RES will consider the spatial impact of any increase to 55% by 2030 on renewable energy on land.
- e. The parties have agreed that a decision regarding any scaling up of renewable electricity in relation to an additional electricity demand in 2021 will be taken as part of the quality control mechanism. At that time, there may be better insight into the extent of electrification in other sectors. The results of this decision-making process will be incorporated into the spatial planning for renewable energy generation. To this end, the PBL will be commissioned to identify what contribution the various renewable electricity options are expected to be able to make to the realisation of the 49% of CO₂ reduction on Dutch territory in light of this scaling up, as well as the cost effectiveness and the impact in a European context, based on the KEV 2020. This should take into account (1) the latest insights in respect of the expected demand for electricity and (2) the fact that a certain amount of controllable capacity will be required to guarantee the security of supply.

If a decision is made in the coming years regarding an increase of the production of renewable electricity, as a result of more electrification taking place in other sectors or because the government has decided to increase the national target to 55% carbon emissions reduction by 2030, the following framework conditions will apply:

- a. Decisions on additional offshore wind energy and renewable energy on land will be required by 2021 to ensure timely realisation by 2030.
- b. Scaling up the offshore grid will require expansion in steps of 2 GW, leaving room for phased issuance of sites.
- c. The transportation of the electricity produced by offshore wind turbines onto land will be carried out as cost-effectively as possible. If a decision is made in favour of electrical connection, then TenneT will realise the network connections, to which the following conditions will apply:
 - Up to 2030, TenneT will be able to realise up to 1x2 GW network connections in addition to the 2030 Roadmap (with another network connection of 2 GW every year from 2030), provided that:
 - (1) there are clear decisions on wind farm zones, connection sites and the connection concept to be used at least eight years before the envisaged realisation;
 - (2) there is clarity on sufficient demand for the specific connection site on the coast and extensions of the national high-voltage grid can be avoided as much as possible;
 - (3) TenneT is able to enter into commitments prior to obtaining the final permits and prior to the successful tendering procedure of the wind farms.
 - Extension up to 3x2 GW in the period leading up to 2030 (1x2 GW in 2029 and 2x2 GW in 2030) can only be achieved if there is administrative consensus that the extension of the current 2030 roadmap should not lead to delays in ongoing projects. The parties accept that expansion of the current 2030 Roadmap will make it more difficult to realise the offshore connections on time and to successfully continue the cost reduction trajectory of offshore wind energy in general.
- d. The parties are prepared to discuss potentially raising the ambitions for renewable energy on land, on the condition that the opportunities for offshore wind energy and small-scale solar power are reviewed first. Efforts of local and regional authorities that result in more than 7 TWh in small-scale solar power (such as local incentive schemes) will count toward this target.

D Cross-sector cohesion

D Cross-sector cohesion

D1 Systems integration

The energy system is changing. As a result of a growing percentage of electricity generated from renewable sources, which is necessary because of the growing demand due to electrification in the industry, mobility and built environment sectors, supply will increasingly start to follow a weather-dependent and seasonal pattern. This trend will be reinforced through the Climate Agreement. About 70% of electricity production is expected to be weather-dependent by 2030. Moving toward 2050, the energy system will become almost entirely sustainable. Until 2050, there will be times when the supply is able to provide for over 100% of the demand and there will also be times when demand will have to be covered almost entirely by other sources than weather-dependent renewable energy, due to adverse weather conditions.

As a result, the need for flexibility, hybrid electrification and storage will increase. For this reason, the Climate Agreement contains commitments on the way in which that need for flexibility can be provided within the electricity system, in the form of storage, conversion, interconnection with other countries, controllable capacity and demand-side management.

In addition, the Climate Agreement will focus on advancing solutions outside of the electricity system. The conversion of electricity to sustainable molecules (and vice versa) offers new opportunities to link a surplus supply from one energy carrier to the temporary or permanent scarcity of the other, or for input back into the electricity system at a later time. Furthermore, the connection to heating networks yields opportunities for meaningful use of a temporary surplus production of renewable energy.

The system change is of a different nature in the built environment. In the built environment, the demand for renewable energy (heating and electricity) will be undergoing major changes as a result of several issues, including the phasing out of natural gas and the growth of solar-pv and electric transport. This will have a major impact on the energy infrastructure, which will vary significantly in local and regional terms. This system change will entail other issues, including flexibility issues, than regarding the central electricity system. At the same time, there will be similarities as well.

In the energy system of the future, components that are currently still largely separate domains – electricity, gas and heating – will increasingly become integrated. This integration of systems will enable efficient use of infrastructure and generation capacity. Systems integration and innovative developments also provide opportunities to make the energy system at local and regional level more resilient to disruptions at a centralised level. The sustainable energy system of the future will have to be both reliable and affordable to citizens and businesses.

The precise outlines of the system change from A to B are still in flux. Nevertheless, this change is without a doubt already taking place, and is set to continue in the years to come, with major changes expected after 2030. We should prepare ourselves as best we can in the run-up to 2030.

System change/integration is not a systematic process. Rather, its significant complexity – at various levels and scales – and uncertainty require the establishment of a learning process. Such a process is not about finding a blueprint of the future, but centres on the issue of how existing, developed systems can gradually develop a relationship with emerging systems and how the various levels and scales interact with each other within each system.

Strategic planning (for energy carriers and necessary infrastructure)

The Climate Agreement contains agreements on joint projects that are to begin in 2019 and are closely linked from a systems perspective. These pathways have been summarised in the timeline below.

In the development and implementation phase, the Climate Agreement will act as a hub to ensure coordination and alignment between completion dates and decisions over time. This necessarily involves keeping abreast with the factual developments and should take into account new information that may give rise to adjustment of future expectations.

Systems integration requires coherent strategic planning with regard to energy carriers and the required new and existing infrastructure. A strategic vision for the future will not be static, but rather will be adaptive and should be adjusted if new developments necessitate and allow such action. The RES sets out the infrastructure requirements for electricity, gases, liquids and heating (also see C3.5).

In 2019, Gasunie and TenneT, working alongside regional network managers, will launch a comprehensive infrastructure survey for 2030 – 2050 (completion envisaged for 2021), which will form the basis for commitments on the prioritisation of investments in infrastructure between network managers and public authorities. The survey will take into account insights from the energy sector, demand development in the industry and the findings of the RES (also see C3.5).

The "structural vision" instrument has been scrapped as a result of the introduction of the Environment and Planning Act, and is being replaced by the "programme" core instrument, which will serve to implement the policies of an environmental strategy. From early 2019, the national government will lead the drafting of such a "programme" aimed at the spatial planning of and reserving space for the main energy system on a national scale. This programme will effectively succeed the Electricity Power Supply Structure Plan (SEVIII) and potentially parts of other structural visions.

The national government will involve the local and regional authorities, network managers and other relevant parties regarding this programme. Due to the strong dependencies between different forms of energy (electricity, H₂, natural gas, renewable gases, carbon dioxide, heating) and the increasing need for storage and conversion, including on a national scale, it is clear that more spatial planning issues will be included than merely spatial reservations for the transmission of electricity. The exact scope, and how it can best be given shape, will be developed further at the start of 2019. A key concern in this regard is ensuring coherence with the North Sea programme, the Soil and Subsurface programme and other relevant programmes.

Planning and regulation decisions

Systems integration provides new opportunities for the efficient use of infrastructures and to coordinate supply and demand of energy. With its decisions in respect of planning and regulation, the national government determines the playing field and the rules for network managers and private sector parties. The national government is able to accelerate the energy transition by anticipating system change. This is never without costs or risks, which must be considered within the context of the public interest.

In 2020, the national government, in part based on the input of the platform parties and stakeholders, will establish a broad strategy on the organisation of the market & energy transition, including a policy agenda for 2030. This strategy will focus on the organisation,

regulation and funding of new infrastructure for heating, hydrogen and carbon dioxide in particular, from a systematic perspective, taking into account the implications on gas and electricity networks and the spatial impact, based on scenarios for 2030 and 2050.

Meanwhile, the national government will produce a strategy on the organisation of the market for CCS and funding of CO₂ infrastructure by mid-2020; the relevant legal frameworks must be amended by 2022 (see C5.6). In addition, a National strategy on the organisation of the market for collective heating grids is being set out in 2019; the relevant legal frameworks must be amended by 2021.

Timeline

<i>2019 – 2020</i>	Regional Energy Strategies
<i>Start of 2019</i>	2050 Infrastructure Outlook, Gasunie/Tennet
<i>Mid-2019</i>	National strategy on the organisation of the market for collective heating grids. The relevant legal frameworks must be amended by 2021 at the latest.
<i>2019</i>	Gasunie and TenneT, alongside regional network managers, will initiate a comprehensive infrastructure survey for 2030 – 2050. Completion is envisaged for 2021.
<i>2019</i>	The national government will launch a programme (under the national environmental planning strategy), aimed at the spatial planning of and reserving space for the main energy system on a national scale.
<i>2020</i>	National strategy on the organisation of the market for CCS and funding of CO ₂ infrastructure. The relevant legal frameworks must be amended by 2022 at the latest.
<i>2020</i>	Broad National Strategy on the Organisation of the Market & Energy Transition, including a policy agenda for 2030, which will focus on the organisation, regulation and funding of new infrastructure for heating, hydrogen and carbon dioxide in particular, from a systems perspective, taking into account the implications for gas and electricity networks and based on scenarios for 2030 and 2050.
<i>(From) 2020</i>	Expanded monitor for security of supply
<i>End of 2021</i>	Transition visions for heat

Knowledge development

There is a great need for knowledge development on the issue of systems integration. The Multi-year Mission-driven Innovation Programme “A robust energy system supported by society”, which is part of the Climate Agreement IKIA (see D3), is a response to that need.

In the first place, this knowledge development focuses on joint and adequate decision-making, substantiated by high-quality knowledge and information. The MMIP will also focus on research and development for the efficient design and management of cost-effective, integrated, interacting energy infrastructure and the role of digitisation in that infrastructure. Finally, there are challenges related to hybridisation of large-scale industrial and other energy issues and modifications to the transmission and energy transport infrastructure, such as any necessary reinforcement of the grid, the flexibility of the gas network and heat transport. All these changes will have an impact on the environment. For that reason, this MMIP will also develop knowledge and innovations that ensure efficient, ecologically sound spatial integration, do not disrupt the landscape and enjoy maximum support in society.

D2 Biomass

The government is convinced that the use of biomass at present and heading toward 2030 and 2050 is crucial for the sustainability of our economy and the realisation of the climate target.

Biomass is used as an energy source in all climate sectors. In agriculture, biomass is vital to soil fertility and the carbon stock in the soil. In time, biomass will also increasingly begin to serve as a material and feedstock. Optimal and efficient use of the available volume of biomass is crucial in order to maximise climate gains and to increase the economic value of biomass. Up to now, discussions in the sector platforms mainly related to the use of biomass to replace fossil fuels with a view to reducing carbon dioxide emissions. The underlying principle is that only sustainable biomass truly contributes to making the economy more sustainable and that, at a global level, sustainable biomass will in time become scarce.

Sustainable biomass

At present, there are statutory sustainability criteria for specific biomass streams and applications that are stimulated through the range of government instruments. As of 2009, the European sustainability framework of the Renewable Energy Directive (RED) applies to biofuels that are used for transport. The amended Directive (RED2) has also imposed this framework on other large-scale energy applications of biomass in order to be counted as renewable energy. In addition to the applicable statutory sustainability criteria for biomass, a great many parties voluntarily make use of private sector certification programmes to demonstrate the sustainability of biomass. At present, agreements on the sustainability criteria for biomass have been made with the electricity sector at a national level. Accordingly, the government also wishes to develop the framework for sustainable biomass with other climate sectors. The sustainability criteria, as yet to be developed, will in principle be intended to apply to all biomass and all uses (stimulated or otherwise), insofar as existing legal frameworks do not yet provide for this.

The process for the creation of a comprehensive sustainability framework consists of the following elements:

- a. a technical analysis commissioned by the national government. The envisaged result is a proposal for sustainability criteria for all applications of biomass:
 - sustainability criteria per biomass stream to be used. These criteria must be enforceable;
 - an analysis by the Netherlands Environmental Assessment Agency (PBL) of the maximum availability per biomass stream to be used, taking into account the various interpretations of the fair share principle;
 - an analysis by the PBL of the options for use per biomass stream to be used, based on the most optimal and efficient use (cascading);
- b. an analysis of the actual climate gains and corresponding costs. In this regard, the government intends to include those climate gains in its actions;
- c. an opinion of the special SER committee on support for and the feasibility of the sustainability framework, based on consultation of stakeholders, which will examine relevant decisions and choices in the field of allocation (fair share), desired prioritisation of applications and cascading;
- d. decision-making by the government and translation of the impact on the five sectors;
- e. with regard to the implementation of the sustainability criteria, a review of the way in which implementation can be achieved and through what manner of phasing, for each biomass stream. As regards streams that require legal commitment, it should be reviewed whether and how this can be achieved, including given the binding nature of the European sustainability criteria in RED2.

Availability of sustainable biomass

The market for biomass is global and supply and demand are matched as a result of market forces. Since biomass is considered for many applications and the supply cannot grow without limit, it is expected that a biomass scarcity will develop at a global level in time. There is currently still untapped potential for biomass, including in the form of roadside grass, cuttings and sewage sludge and waste flows from the food industry.

Parties that wish to use biomass are actively working toward the expansion of the domestic and foreign supply of sustainable biomass, through initiatives that contribute to:

- a. making existing biomass streams more sustainable;
- b. creating value out of untapped biomass potential;
- c. increasing the production of sustainable biomass;
- d. development of new types of biomass production.

In 2019, a roadmap will be developed across all the various sectors, together with the relevant parties, aimed at doubling the domestic supply of sustainable biomass. The regional effects of the Climate Agreement may play a role in this regard. Knowledge development and innovation for the development of new forms of biomass production and the processing of biomass as a feedstock or fuel will also be part of this roadmap.

In addition to this, the parties to the Climate Agreement will pledge to actively advance the sustainability of imported biomass in the countries of origin. To this end, joining public-private initiatives, as well as the recent European commitments on biomass for energy applications beyond 2020 (RED2) where these are not required, and entering into a dialogue with the countries of origin or with parties producing biomass may be prudent. The government will also call on all parties who wish to make use of biomass to actively support the expansion of the supply of sustainable biomass, from an enlightened perspective of self-interest. This is also specifically reflected in the parties' commitment to the development of new forms of biomass production and the processing of biomass as a feedstock or fuel through the knowledge and innovation agendas.

Use of sustainable biomass

The objective of the parties is to work toward the best possible high-grade application of sustainable biomass. The Netherlands Environmental Assessment Agency (PBL) expects there to be a number of obstacles in the supply beyond 2030. For that reason, moving toward 2050, prioritisation of the use of sustainable biomass in the Netherlands is to be desired.

In the period leading up to 2030, biomass can serve as a transition fuel for various applications, which is reflected in the proposals for additional use of sustainable biomass in the sectors. In the long term, the parties aim to use sustainable biomass for high-grade applications in those commercial sectors where there are few alternatives, for example as a feedstock in the industry and as a fuel for heavy vehicles and in shipping and aviation. As we head toward 2030, this must already be taken into account in the extent to which applications are stimulated or discouraged. This is also specifically reflected in parties' commitment to the development and upscaling of biomass-free alternatives for all applications, including through the knowledge and innovation agendas. In addition, the Mobility Platform, as part of the Climate Agreement, will make commitments aimed at increasing the production and supply of sustainable advanced gaseous and liquid biofuels, chiefly those that will be required for heavy goods road transport, aviation and shipping in the future and for which insufficient alternative sources of energy will be available even after 2030.

The commitment of the parties in all the platforms and cross-platform cooperation is also required in order to develop a cascaded use of biomass and for the development of favourable business cases. In this context, the following agreements have been made:

- a. Parties to the Industry Platform will make agreements in 2019 to actively contribute to the actions that are to be developed under the Implementation Programme for the Circular Economy with regard to the production and use of biomass for materials and chemicals that contribute to the national climate target.
- b. The Industry Platform and the Electricity Platform will jointly develop a roadmap in 2019 regarding the way in which parties will work toward the exclusive use of cascaded, sustainable biomass in the mid to long term.
- c. The Industry Platform will make commitments regarding the development of a roadmap/programme for the maximum achievable reuse of carbon dioxide (CCU) from biomass.

The use of biomass in small-scale plants has a negative impact on air quality. As the application of biomass for energy production purposes should lead to a deterioration in air quality, the government wishes to make the air quality emissions standards for small production plants stricter as of 2022, where possible (particularly with regard to nitrous oxide and nitrogen). In addition, as part of the evaluation of the ISDE in 2019, the government will conduct a critical review of the desirability of further stimuli for small-scale combustion of biomass (wood chip boiler and plants <0.5 MW).

Precautions

Although the PBL only expects obstacles to emerge in the availability of sustainable biomass after 2030, it is prudent to take into account uncertainties in supply and demand forecasts. Set against this background, the following agreements have been made:

- a. Once the government has established the integrated sustainability framework, the PBL will assess the impact of the framework on the use of sustainable biomass in the period up to 2030. Based on the results of this assessment, a decision will be made on any additional steps that may be required to realise the 49% target.
- b. The PBL will be asked to provide insight into the development of the supply and demand of sustainable biomass on an annual basis and to identify any problems regarding the availability of sustainable biomass in a timely fashion.
- c. The government will have the options for flexibility in the context of electricity production, such as demand-side response, storage of energy, conventional standby power and carbon-free controllable power, including – if other alternatives are not available to a sufficiently cost-effective degree – biomass (which must be cascaded as much as possible, developed as independently as possible, aimed at the public interest. In this way, the government aims to arrive at an assessment framework that clarifies which decisions should be taken and when.
- d. Based on the heating plans that will become available in 2021, the Built Environment Platform will review whether and how to increasingly steer toward efficient use of biomass for heating purposes by only using biomass where no sustainable alternatives are available or in cases where those alternatives are much more expensive.
- e. In relation to the uncertainties in the supply and demand forecasts for sustainable biomass, additional guarantees are required for the period during which the comprehensive sustainability framework has not yet been implemented. During that period, the government will commit itself to a restrained approach to issuing new subsidy decisions for the stimulation of the use of sustainable biomass, as soon as parties expect problems regarding the availability of sustainable biomass ahead of 2030, based on the annual monitoring mechanism.

D3 Integrated knowledge and innovation agenda

The civic tasks and targets of the Climate Agreement set high requirements to the innovative capacity of the economy and of society in all sectors. Innovation has been identified as a cross-sector theme within the Climate Agreement. An innovation task force has been established to draw up a comprehensive knowledge and innovation agenda (IKIA) that transects all sectors and the entire innovation chain on behalf of the Climate Change Conference, as part of the Climate Agreement and in line with the commitments of the sector platforms. The agenda will articulate the required knowledge and innovation for the societal task of the Climate Agreement. It will enable knowledge institutions, ministries and businesses to translate the innovation challenges into their programmes.

The five sector platforms of the Climate Agreement have come to widely supported agreements on specific objectives and possible solutions to address the challenge facing society. The task force has translated these into missions for 2050 and interim targets for 2030. The knowledge and innovation required for this will be the main priority of this IKIA. A link will also be established with international developments (EU/IEA). This makes this IKIA perfectly suited to the recent development within innovation policy for the prioritisation of challenges facing society, under the banner of mission-driven innovation policy⁹⁸ and Horizon Europe.⁹⁹

A goal-oriented and future-proof knowledge and innovation agenda for the social task of the Climate Agreement is characterised by an effective balance between consideration of the short term (development, demonstration and roll-out) and focus on the mid to long term (research and development). This allows both the interim and the final targets for 2030 to be achieved, while simultaneously laying the foundation for the realisation of the missions for 2050.

The knowledge and innovation tasks to help realise a mission usually require long-term commitment to a programmatic approach and, in this agenda, take shape in the form of so-called Multi-year Mission-driven Innovation Programmes (MMIPs). In addition to socially driven research and innovation in the context of the Climate Agreement, curiosity and supply-driven research and innovation remain key to the challenges and tasks facing society. If any issues and topics should emerge that are relevant to a given MMIP, they will be able to be included in the programme.

Agreements:

- a. The IKIA to the Climate Agreement will articulate the knowledge and innovations tasks resulting from the sectoral and other social missions for the target of 95% carbon emissions reduction by 2050 and the 49% carbon emissions reduction interim target for 2030. The IKIA is the mission-driven knowledge and innovation agenda for climate and energy and is decisive for the required commitment to knowledge and innovation.
- b. The IKIA will translate the missions of the Climate Agreement into concrete mission-driven innovation programmes (MMIPs). The MMIPs cover the entire knowledge and innovation chain and specify what knowledge and innovation is required for the various parts of the innovation chain, according to current insights, in relation to research, development, pilots/demonstration and implementation. The objective of the MMIPs is to strengthen the relationship of the goal of the research with the social tasks, on the one hand, and to foster a connection with implementation, on the other.
- c. The following matrix shows the missions and the corresponding MMIPs that are required to realise the targets of the sector platforms. The relevant parties involved have expressed

⁹⁸ In the recent letter to Parliament entitled "Towards a mission-oriented innovation policy with impact" of the Minister of Economic Affairs and Climate Policy, the Climate Agreement is expressly mentioned as an exemplary process for the modernisation of innovation policy.

⁹⁹ http://europa.eu/rapid/press-release_IP-18-4041_nl.htm

the intention to carry out those MMIPs, including the corresponding policies for the creation of markets for these innovations, in accordance with the package of measures included in the Climate Agreement.

- d. In the first quarter of 2019, the innovation task force will present the IKIA in which the MMIPs, shown in the matrix below, have been fleshed out. This will involve a consultation of external parties.
- e. In accordance with the government's commitment as expressed in the Letter to Parliament "Towards a mission-oriented innovation policy with impact", the IKIA will become the principal agenda for climate and energy. The IKIA comprises, among other things, the agendas of the Energy Top Sector and those of any other relevant top sectors that are able to contribute to the climate and energy targets.
- f. There will be a recalibration of the IKIA every five years as part of the calibration review, which is in line with the Climate Plan and takes place with the same frequency. Each year, the key points of the progress of the Climate Agreement will be reported, which will include the progress of the IKIA programmes. As part of the elaboration of the mission-driven innovation policy, the government will review how this cycle and the current programming cycles for top sector policy align with one another.
- g. The implementation of the IKIA and the MMIPs will build on existing implementation structures for research and innovation, which will be modified where necessary to optimise the innovation process. This will involve systematically working toward a method that aligns with the principles of mission-driven innovation policy. For example, the way in which the comprehensive nature of the agenda can be guaranteed will be taken into consideration, fitting within the broader developments surrounding the innovations of the top sector policy. The national government will produce a proposal to this end by July 2019.
- h. In 2019, the current range of instruments for energy innovation will be optimised to ensure optimal facilitation of the MMIPs. There will be room for new instruments or modifications to the current instruments if the MMIPs would entirely or in parts be facilitated better in this way. Also see the specific agreements on changes to the range of instruments for innovation in relation to Electricity under C5.8.
- i. With regard to the issue of climate and energy, the IKIA will determine the use of the public funds of the Netherlands Organisation for Scientific Research (NWO) and TO2 institutions for the top sectors, as well as the use of the PPP allowance, the SME innovation stimulus (MIT) and the ministerial innovation budgets for climate and energy, including the budgets for the energy innovation demonstration scheme (DEI) and the renewable energy scheme (HER). The national government will make additional funds available from the Climate Budget, chiefly aimed at facilitating pilots and demonstrations. In addition, the funds for the National Research Agenda will be available; consortia will be able to submit proposals in competition. The national government is committed to embedding the method described above in the various programmes, including the new knowledge and innovation contract aimed at the mission-driven innovation and top sector policy and the TO2 spending plans. Preparations for this will begin with the preparation of the programming for 2020 – 2023 in 2019.
- j. The use of public funds for the IKIA will be coordinated with the willingness of private parties to match public funds with private contributions.

Knowledge and innovation agenda matrix

The following matrix includes multiple MMIPs and sub-programmes that are linked to other sectors and the missions and MMIPs of those sectors. Examples include electrochemical conversion (including for hydrogen), geothermal energy, social support, biomass, social innovation and digitisation. The development of the governance of the IKIA and the MMIPs will require special consideration of the way in which these crossovers can be dealt with. For example, it is conceivable that a number of cross-sector innovation programmes may be set up on such crossover issues, such as for electrochemical conversion (including for hydrogen) and geothermal energy.

IKIA Klimaatakkoord

Missies	A Een volledig CO ₂ -vrij elektriciteitsstelsel in 2050	B Een CO ₂ -vrije gebouwde omgeving in 2050
Met als tussendoel(en)	In 2030: <ul style="list-style-type: none"> • wordt er op land jaarlijks minimaal 35 TWh elektriciteit opgewekt met windenergie en zonne-energie > 15 kW; • wordt er minimaal 49 TWh elektriciteit opgewekt met wind op zee. 	In 2030: <ul style="list-style-type: none"> • gaan 200.000 bestaande woningen/jaar van aardgas af; • zijn 1,5 mln woningen en 15% van de u-bouw en maatschappelijk vastgoed, aardgasvrij • wordt minimaal 20% van het lokale energiegebruik (incl. EV) binnen de gebouwde omgeving duurzaam opgewekt.
MMIP's Meerjarige Missiegedreven InnovatieProgramma's en deelprogramma's	1 Hernieuwbare elektriciteit op zee <ul style="list-style-type: none"> • Kostenreductie en optimalisatie • Integratie offshore energie in het energiesysteem • Inpassing in de omgeving (ecologie en medegebruik) 	3 Versnelling energierenovaties in de gebouwde omgeving <ul style="list-style-type: none"> • Enthousiasme van gebouweigenaren en gebruikers voor energierenovatie (MVI) • Robotisering, digitalisering en integratie installatietechniek in bouwelementen • Energieconcepten (incl. optimalisatie in de keten)
	2 Hernieuwbare elektriciteits-opwekking op land en in de gebouwde omgeving <ul style="list-style-type: none"> • Verlaging van opwekkosten • Nieuwe toepassingen, optimaal geïntegreerd • Versnelling met maatschappelijk enthousiasme • Integrale duurzaamheid • Integratie in het energiesysteem 	4 Duurzame warmte (en koude) in de gebouwde omgeving (inclusief glastuinbouw) <ul style="list-style-type: none"> • Stille, compacte, slimme, kostenefficiënte warmtepompen • Afgifte-, ventilatie- en tapwatersystemen • Slimme compacte warmte-batterij • Slimme laag/midden temperatuur warmtenetten • Grootchalige thermische opslag • Geothermie
	13 Een robuust en maatschappelijk gedragen energiesysteem <ul style="list-style-type: none"> • Samen fact-based beslissen en vormgeven, inclusief verdienmodellen • Ruimtelijke inpassing • Inrichting infrastructuur, flexibiliteit, marktmechanismen en digitalisering • Power-to-Molecules • Grootchalige energieopslag, energie transport en hybridisering energievraag 	5 Het nieuwe energiesysteem in de gebouwde omgeving in evenwicht <ul style="list-style-type: none"> • Lokale systeemoptimalisatie • Regelalgoritmen voor besparing, energieoptimalisatie en sectorkoppeling • Data-architectuur en handelssystemen • Flexibiliteit en elektriciteitsopslag

IKIA Klimaatakkoord

C In 2050 zijn grondstoffen, producten en processen in de industrie netto klimaatneutraal en voor tenminste 80% circulair	D Emissieloze mobiliteit voor mensen en goederen in 2050	E In 2050 is het systeem van landbouw en natuur netto klimaatneutraal
In 2030: <ul style="list-style-type: none"> • worden 50% minder primaire grondstoffen verbruikt; • zijn de broeikasgasemissies van productieprocessen en afvalsector verminderd tot circa 36 Mton CO₂ equivalent; • is verduurzaming van het industriële warmtesysteem tot 300 C bereikt; • zijn elektrificatie en CO/CO₂ hergebruik geëffectueerd; • wordt CCS kosteneffectief ingezet; • is duurzame waterstofproductie op weg naar implementatie; • worden biograndstoffen gezien als standaard. 	In 2030: <ul style="list-style-type: none"> • zijn er 1,9 miljoen elektrische vervoersmiddelen; • is 1/3 van het energieverbruik in de mobiliteit hernieuwbaar; • maken we 8 miljard minder zakelijke (auto)kilometers; • hebben minimaal de 32 grootste gemeenten zero-emissiezones voor stadslogistiek. 	In 2030: <ul style="list-style-type: none"> • is een extra reductie bereikt van minimaal 1 Mton CO₂eq. methaan, 1 Mton CO₂eq. reductie energieverbruik glastuinbouw en 1,5 Mton CO₂eq. reductie door slimmer landgebruik.
6 Sluiting van industriële kringlopen <ul style="list-style-type: none"> • Circulaire grondstoffen en producten • Biobased grondstoffen en producten • Ontwerp en inbedding van nieuwe circulaire ketens • Toepassing CCS en maatschappelijke acceptatie 	9 Innovatieve aandrijving en gebruik van duurzame energiedragers voor mobiliteit <ul style="list-style-type: none"> • Zero Emissie aandrijftechnologie en voertuigen • Energiedistributie voor elektrische voertuigen • Distributie van waterstof en andere energiedragers voor brandstofcelvoertuigen • Innovatieve hernieuwbare brandstoffen • Zuinige voertuigen 	11 Klimaatneutrale productie food en non-food <ul style="list-style-type: none"> • Reductie methaanemissies door pens- en darmfermentatie • Reductie emissies uit stal en mestopslag • Koolstofvastlegging en vermindering emissies landbouwbodems en bemesting • Vermindering emissies veenweidegebieden
7 CO₂-vrij industrieel warmtesysteem <ul style="list-style-type: none"> • Warmtehergebruik, -opwaarding en opslag • Diepe en ultradiepe geothermie voor industrie • Toepassing klimaatneutrale brandstoffen • Systemconcepten voor warmte en koude • Maximalisering van proces-efficiency 	10 Doelmatige vervoersbewegingen voor mensen en goederen <ul style="list-style-type: none"> • Weten wat mensen beweegt • CO₂-reductie door nieuwe mobiliteitsconcepten voor personenvervoer • CO₂-reductie door innovaties in logistiek • Transitie-ondersteunende kennis en tools 	12 Land en water optimaal ingericht op CO₂ vastlegging en gebruik <ul style="list-style-type: none"> • Zeewiervereiding, -teelt en na-oogst • Verdubbelde fotosynthese • Eiwit voor humane consumptie • Klimaatbehoudende natuur • Klimaatvriendelijke keuze bij aanschaf producten • Gezonde voedselkeuze • Gebruiksreductie naar nulmissie
13 Een robuust en maatschappelijk gedragen energiesysteem <ul style="list-style-type: none"> • Samen fact-based beslissen en vormgeven, inclusief verdienmodellen • Ruimtelijke inpassing • Inrichting infrastructuur, flexibiliteit, marktmechanismen en digitalisering • Power-to-molecules • Grootchalige energieopslag, energie transport en hybridisering energievraag 		

Explanatory text per MMIP

MMIP 1. Offshore renewable electricity. MMIP will focus on enabling the required increase in scale for renewable electricity generated offshore. The emphasis will be on offshore wind energy, but the programme is also aimed at the development of offshore solar energy as a solution with tremendous potential for the long term. To ensure a successful implementation of large-scale offshore wind energy, the innovation challenges lie in resolving barriers in relation to high costs, the roll-out pace, offshore use of space, safety (such as shipping), ecology and integration of large volumes of electricity into the energy system. In relation to issues on integration into the energy system, close cooperation is envisaged with the MMIP 13 – *A robust energy system supported by society*. This will primarily relate to solutions that have a direct bearing on offshore wind farms, such as storage and conversion of offshore wind energy, for example into hydrogen. With regard to offshore photovoltaic systems, the challenge lies in demonstrating the technical, ecological and commercial feasibility and the development and testing of concepts for floating installations. Combinations with offshore wind energy and other functions play a key role in that regard.

MMIP 2. Renewable electricity generation on land and in the built environment. This is a joint programme of the Electricity and Built Environment sectors. In a carbon-free energy system, wind and solar energy will cover a significant portion of the rapidly increasing demand for electricity in all sectors, with generation taking place in the built environment and in rural areas, but also in the infrastructure and on inland waters. MMIP 2 relates to innovations that will enable the strong growth of this type of energy generation, taking into account technical, economic, social and environmental factors. The MMIP also contributes to Mission B, through local generation in the built environment. Innovations will be aimed at lowering the costs of generation further, making new applications available, optimal integration into their environment (multiple use of space) and integration into the energy system. The latter will take place in close collaboration with MMIP 13 – *A robust energy system supported by society*. The knowledge questions explicitly relate to the way in which implementation can be accelerated whilst preserving social enthusiasm and the way in which circularity and comprehensive sustainability can be realised.

MMIP 3. Acceleration of energy renovations in the built environment. This programme will see the development of innovations, which will lead to new energy concepts for the construction and installation contracting industry, with a significantly lower cost price than the concepts that are currently on the market. This will be a necessity in order to realise 200,000 energy renovations in the built environment each year as of 2025, which will lead to natural gas being phased out in a cost-effective manner by 2050. The results should contribute to the mitigation of nuisance to residents and, where possible, improve comfort and ease of use. These innovations will also facilitate the industrialisation (potential automation) of the production, renovation, construction and installation processes, use of sustainable materials and radical changes in the value chain in order to realise the desired acceleration of the energy transition in the built environment. This will require collaboration between, among others, parties that can translate the needs of users into product specifications, the construction and installation contracting sector, the supply industry and experts that can contribute to shaping broad user acceptance. This MMIP will contribute to the rapid growth of the implementation capacity required to realise the "renovation of the Netherlands" by 2050.

MMIP 4. Sustainable heating and cooling in the built environment (including in the greenhouse horticulture sector). This MMIP focuses on technical and socio-economic innovation for the rapid growth of sustainable heating systems. The objective is to improve existing types of devices and systems (available <5 years) and the development of new concepts (available >5 years) and corresponding services and user enthusiasm aimed at the realisation of multiple main concepts for heating and cooling in renovation. In order for consumers to switch away from gas central heating in time, it is crucial for the supply to be

aligned with users, in relation to scope, comfort (noise, thermal), integration capacity and affordability (housing costs). The innovations will primarily be focused on applicability in existing inhabited situations, a lower overall cost price at systems level and acceleration toward natural gas-free solutions. Providing access to new sustainable heating and cooling sources (such as aquathermal, geothermal and thermal solar energy) and thermal storage is required to meet the sharply growing demand for sustainable heat.

MMIP 5. The new energy system in the balanced built environment. Connections between heating systems, such as heat pumps with individual generation of clean energy, storage in district batteries and/or electric vehicles, provide new opportunities for integrated concepts. This MMIP focuses on achieving an integrated energy system in the built environment with optimal alignment of the local clean energy demand from businesses and citizens (comfort, electricity, heating and mobility) with a supply of sustainable energy that is generated locally as much as possible. This supply will not only be available on an annual basis, but also between seasons, on an hourly or daily basis or on the basis of a quarter of an hour. The flexibility capacity that is needed by 2030 is being developed. The final consumers play a pivotal role in this system, which visibly brings sustainable energy one step closer, and will be able to choose an active steering or co-steering role based on their own needs and aimed at lower costs (at the level of both individuals and society).

MMIP 6. Creating circular industrial chains. This programme focuses on sustainable renewal of complete value chains with new production processes, reuse of materials and feedstocks, components or products and the creation of new materials and products that facilitate circularity. It will contribute to the accelerated development and implementation of innovations for at least 80% circular and sustainable value chains by 2050. By 2030, 50% fewer primary feedstocks will be used. The focus will be on closing the carbon chain. In cases where carbonaceous feedstocks are required, materials such as biomass may be used. The programme consists of four parts:

In *Circular feedstocks and products*, knowledge and innovations will be developed for the conversion of carbon dioxide and carbon monoxide from process and combustion gases into feedstocks and products (CCU) (plus any Direct Air Capture, DAC). In addition, processes will be developed for pre-processing and chemical recycling of waste and plastic and for the closure of the non-ferrous metal chain through characterisation, separation and recycling. In *biomass-based feedstocks and products*, tracks will be identified for high-quality distinctive use. The objective will be to enable supplementation with 20% non-fossil carbon for the closure of cycles in cases where this cannot be achieved through other means. In parallel, research will be carried out into the design of optimally sustainable circular value chains with a minimal carbon footprint, cascading and new business models. To guarantee the success and the pace of the shift, the focus will be on social acceptance, behaviour and economic embedding. In order to be able to achieve the carbon dioxide emissions reduction target in the short term, a fourth programme component is dedicated to the *application of CCS*. In this fourth component, all activities are aimed at accelerated and cost-effective use of CCS in existing plants, for example in the production of blue hydrogen. Key issues include process integration and optimisation of the capture process, transport, storage, smart monitoring and social and systems issues.

MMIP 7. A 100% carbon-free industrial heating system. This programme is focused on the design, organisation and re-organisation of climate-neutral energy and heating systems for industrial clusters and businesses and optimum process efficiency. By 2050, the heating supply for all temperature levels will be entirely carbon-free. The demand for heating will be drastically reduced through the application of efficient process and will be met by sustainable sources (electricity, geothermal energy, biomass and sustainable gases). By 2030, power to heat solutions and the use of sustainable heating sources will have achieved at least 5.3 Mt in carbon dioxide emissions reduction and energy savings of 93 PJ. This transition is nothing less than a revolution. Current practices must be transformed into a system with maximum

application of circular heating – with upgrading of waste heat, instead of emission into the environment. Until 2030, innovation will focus on the accelerated completion of technology for temperatures up to roughly 300°C, such as heat pumps, through standardisation, modularisation and development of a project-based approach to design and implementation. At the same time, technology will be developed that will ensure a shift in the highest temperature segment after 2030. In addition, knowledge will be gained for optimal heat usage in the system through the elimination of non-technological barriers.

MMIP 8. Maximum electrification and radically redesigned processes. This programme is aimed at the development of knowledge and cost-effective innovations for fully climate-neutral production processes for 2050, which are optimally electrified and fully integrated into the sustainable energy system. Where possible, industrial processes will be powered by electricity and will make use of climate-neutral circular feedstocks, and will occupy an important role in the supply of climate-neutral secondary feedstocks, energy carriers, finished products, flexibility and energy storage. By 2030, the industry will be able to fully use up the variable capacity of renewable electricity.

Key challenges include cost reduction of and scaling up electric hydrogen production and the development of climate-neutral fuels and molecules (in collaboration with MMIP 13). The development of electrical devices and electrically powered processes will increase the number of possibilities for electrification. The combination with digitisation will additionally provide opportunities for local and regional production processes by 2050, which will require new knowledge on safety and process control. In parallel, research will be conducted into the social and system implications of industrial electrification, with an explicit emphasis on radical process innovation and disruptive innovations that will have to make a difference beyond 2030.

MMIP 9. Innovative propulsion and use of sustainable energy carriers for mobility.

The transition toward electrically powered vehicles, which draw energy from batteries or fuel cells, is key to the greening of the mobility sector. The government aims to ensure that all new passenger cars will be zero emissions by 2030. Electric transport requires integration of the energy system and the mobility system via smart grids and contributes to network balancing and transport and buffering of sustainably generated energy. This requires effective integration of the mobility and energy systems, which come together in the built environment. Whereas electric power sources in passenger cars have already appeared on the market, further innovation with regard to new battery technology (cell technology, systems and production), propulsion systems, smart charging infrastructure and the development of fuel cell electric applications will be necessary before this will become possible for heavy-duty applications (heavy goods, the maritime sector and aviation). This means that vehicles and vessels with combustion engines will still constitute a substantial segment of the mobility system in the decades to come. By focusing on the development (in collaboration with MMIP 8), sufficient availability and application of renewable fuels with low direct and indirect carbon dioxide emissions, such as biofuels and synthetic fuels and on the development of more efficient combustion engines for new and high-grade blends of (100% by 2050 at the latest) renewable fuels, this segment of mobility can also be made more sustainable.

MMIP 10. Efficient transport movements for people and goods. A major breakthrough in making mobility more sustainable will come about as a result of the smart reorganisation of the system (Mobility as a Service, MaaS). New concepts in which people's mobility needs are optimised through flexible transfer between various means of transport (walking, bikes, bike shares, public transport, cars, car shares, taxis, water buses, rental concepts) enable quick, safe, comfortable, sustainable and affordable travel. Developments in IT and big data also offer opportunities for the provision of tailored mobility services. Innovations, such as self-driving cars, will be added in the future.

A great deal is also set to change in goods transport. Due to the roll-out of successful platforms for the exchange/aggregation of load, the use of zero-emissions urban distribution and the development of a physical internet for goods, it has become possible for loading degrees to be optimised and for the modal shift to rail and waterways to be facilitated. In addition, alternative transport options, such as pipeline transport (including reuse of existing infrastructure) and “exotic concepts” such as the hyperloop, are emerging, resulting in increased speed and sustainability in transport. Concepts that obviate mobility will also be part of the range of options available in the future.

MMIP 11. Climate-neutral production of food and non-food. MMIP 11 focuses on the realisation of the reduction of greenhouse gas emissions (carbon dioxide, methane and nitrous oxide) from the production of food and non-food. This reduction will be achieved in relation to and in balance with vegetable production, soil and land use, on the one hand, and animal production systems on the other. The soil forms the basis for agricultural production, with varied impact on the climate. On the one hand, it is a source of emissions due to the combustion of peat in peat meadow areas and nitrous oxide production in conjunction with fertilisation, but on the other hand, it can also be used to capture carbon (also see MMIP 12). In this MMIP, knowledge and innovation will contribute to the reduction of emissions and to the increase of carbon capture. Reduction in emissions from livestock farming can be achieved in two ways. Firstly, by ensuring that animals emit less methane through rumen and intestinal fermentation; secondly, by ensuring that emissions from manure in sheds and storage are reduced. A healthy commercial model must be developed for both the vegetable and animal production system, in order for the contribution to the climate target to be put into practice.

MMIP 12. Optimal carbon capture and utilisation on land and water. The demand for food and animal feed is set to remain constant, but the demand for biomass as a feedstock for materials, biofuels and to capture carbon in the natural environment will increase. This will contribute to emissions reduction in both agricultural and other sectors. For that reason, MMIP 12 deals with increasing biomass production in green zones, as well as in blue zones, which have so far remained virtually untapped. To this end, seaweed plays a major role, the efficiency of photosynthesis must be doubled and the natural environment will capture more carbon. This increased carbon capture is accompanied by protein production, resulting in the development of new products for human consumption. A key aspect in this regard is that both producers’ behaviour and consumer behaviour have a crucial impact. For producers, the mission not only entails reduction of energy consumption to zero emissions, but also significant generation by 2050, which will involve the wide-scale use of small-scale post-harvest treatments and generation technologies. With regard to consumer behaviour, the innovation challenge is achieving a 50% reduction of the footprint through purchase choices, for both food and non-food.

MMIP 13. A robust energy system supported by society. This MMIP focuses on the development of knowledge and the realisation of innovations for an efficient transition to a robust energy system supported by society at a local, regional and national scale, as well as in Northwestern Europe. This knowledge development primarily focuses on joint and adequate decision-making, substantiated by high-quality knowledge and information. Economic aspects play a role as well, such as earnings models that ensure the lowest social costs and the appropriate incentives for energy producers and users, while also providing opportunities for new services and products. This MMIP will also focus particularly on research and development for efficient design and management of cost-effective, integrated and interacting energy infrastructure and the role of digitisation. Creation of sufficient flexibility options that balance out the supply and demand of energy (on all relevant time scales), for example through demand-side management, interconnection and conversion and storage of energy, is important in this regard. Specific consideration will be given to power-to-molecules, physical storage methods and thermal storage. Finally, there are challenges related to hybridisation of large-scale industrial and other energy issues and modifications to the transmission and

energy transport infrastructure, such as necessary reinforcement of the grid, making the gas network flexible and heat transport. All these changes will have an impact on the environment. For that reason, this MMIP will also develop knowledge and innovations that ensure efficient, ecologically sound spatial integration that do not disrupt the landscape and enjoy maximum support in society.

D4 Labour market & training

The transition to a sustainable economy, of which the energy transition is one component, has an impact on the labour market. In order to implement the Climate Agreement, many tens of thousands of additional employees are needed in the manufacturing industry, at network managers and energy businesses, in the installation contracting and maintenance industry, in the chemical industry and in construction businesses. By contrast, people in the traditional industries will lose or are in danger of losing their jobs. In addition, the nature of a lot of existing jobs will also change, resulting in other skills and, consequently, future-oriented development being required. Furthermore, technological innovation will be required, given that sustainable energy is far more labour-intensive than fossil-based generation using current technologies, resulting in a potential loss of prosperity. In order to increase the affordability, speed and support for the objectives of the Climate Agreement, it is crucial that the economic and inclusive employment opportunities of this process be seized, that any obstacles to the demand for workers be responded to and that any corresponding social risks be absorbed appropriately. New and existing jobs should be of an adequate standard. All of the above is not unique to the energy transition, but also applies to other major transitions, such as the emergence of a circular economy, digitisation and automation. A key distinctive aspect is that the government is a major driver of this transition. Finally, not only is consideration of changes to professions and employment required, but there must equally be consideration of people's attitudes and behaviour. Protecting the planet does not only affect the existing and future workforce in the sectors referred to above, but all people and all professions.

Strong, innovative and effective partnerships

The magnitude of the interconnected challenges in the field of the energy and climate transition¹⁰⁰ requires a concerted, long-term and cross-sector commitment with regard to the developments on and the consequences to the labour market. All parties to the Climate Agreement must deliver a contribution and work together in strong, innovative and effective partnerships. This must even be achieved with sectors outside of the climate platforms, given that these equally contain employees who, in the future, may work in service of the energy transition (shrinking sectors). Comprehensive, widely supported and proactive labour market policies from all partners will be required, building on existing partnerships, collective labour agreement commitments and other agreements in regions and sectors. If working on and investing in the energy transition can be made more attractive through a targeted, joint policy, then this will create a range of opportunities for the Netherlands. First of all, it will create opportunities with regard to a more sustainable and more inclusive future, but also regarding future-oriented, clean and secure jobs, the benefits of which will be available to more people. At present, many people do not have those opportunities with regard to the labour market or expect the energy transition to increase their financial burden. Strong and effective cooperation will not only bring about a sufficient amount of well-qualified workers, but will also help make the transition an inclusive process.

What is required first of all is to attract more people, with attractive work, good working conditions and development and career prospects. The government and relevant government agencies, including the Employee Insurance Agency (UWV), will ensure that the necessary framework conditions are in place to ensure that employed persons and job seekers, including those at a disadvantage from the labour market, will be able to take control of their lives and work. This will apply in particular to workers whose responsibilities/jobs have changed. Secondly, it is vital that the current and future workforce and businesses keep developing far more than is presently the case, through tailored, responsive learning and through intensive collaboration with the business community and the trade unions. Intensive cooperation

¹⁰⁰ The climate and energy transition in this chapter will be referred to as the "energy transition" for the sake of brevity.

between social partners, knowledge institutions and public authorities is equally crucial to increasing quality and productivity through the learning curve. All in all, a robust learning and development culture is required in businesses, accompanied by adequate security, time, flexibility and independent advice for workers to take control. Finally, targeted technological and social innovation is needed to increase productivity and to organise the work around the available workforce more efficiently.

For the long term, it is essential that all students and pupils, including those in primary education, are given the right materials and learning attitude to be able to cope effectively with major social transitions, such as the energy transition. This requires continuous evaluation and updating of the curriculum. However, it also requires a sound and comprehensive vision from schools on the way in which these transitions are taught and regarding the learning environment in which that education takes place. A basic requirement in this regard is the availability of sufficient and effective teaching staff, who are enabled to develop and are able to attend further training.

The SER advisory report entitled "Energy transition and Employment" (2018)¹⁰¹ contains the principles and seven guidelines for this type of future-oriented education and labour market policy, regarding which concrete agreements were set out in the text.

- integrated **human capital agendas** featuring coherent and widely supported labour market agendas for the medium and long term, which also address social impacts. As is the case for the healthcare sector or the Technology Pact, a plan may comprise national agreements and regional action plans;
- **translation** of national and sectoral agreements **into regional economic agendas**, with regional initiatives together leading to the achievement of national targets. In addition, crosslinking regional implementation policy with sectoral activities (such as collective labour agreements, research and development (R&D) and social plans) is crucial;
- **modular and responsive education** that is embedded in a **strong, positive** development and **learning culture** and builds on existing good initiatives, structures and collective labour and other agreements;
- **an inclusive approach** that includes agreements to make better use of the available labour potential. For example, this will relate to a greater number of hours worked and to greater workforce participation among women, but equally concerns people with an occupational disability and other groups at a distance from the labour market, who will be able to do more complex work as a result of new technology;
- aiming toward achieving **good and fair employment conditions**, working conditions and working relationships, as well as the associated social infrastructure, and participation **in new and existing secondary sectors** that are relevant to the energy transition;
- improving **information** regarding regional and sectoral **labour markets** and better **insight into the future needs of the labour market**. This information is necessary, among other things, to systematically monitor the effects of measures per climate platform and to carry out a practical impact analysis. In addition, it will be necessary for the task force to carry out or commission research into the impact of the energy transition on labour productivity within the sector;¹⁰²
- **compensating for job losses** in a fair and inclusive manner by preparing workers in good time for job loss, facilitating their development and mobility and mitigating employment-related and social consequences in an appropriate manner wherever existing facilities are insufficient. From a public interest perspective, as the legislator and as a driving party, the national government holds a unique role and responsibility. Where the transition is accompanied by job losses in the context of a "just transition", an approach is

¹⁰¹ Social Economic Council (SER) (2018) Energy transition and Employment. Opportunities for a sustainable future. Advisory report 18/03.

¹⁰² Current technologies appear to render energy production more labour-intensive, as more workers are needed to produce our electricity and heating. Technological innovation must prevent a loss of welfare by offering smarter methods of implementing the energy transition;

needed that prepares workers for such a prospect in good time, which facilitates their development and mobility and provides financial compensation if necessary. This is a responsibility of all the various partners involved.

In order to come to agreements on the labour market and training that enjoy support in society, a cross-sector task force has been set up, in which a broad swath of employers, employees and educational parties and ministries are represented.¹⁰³ The participating organisations will commit to all agreements in this chapter and to the individual and collective development and implementation thereof.

Agreements:

The parties have agreed the following:

Comprehensive labour market agendas

- a. The five sector platforms will each draft a sectoral education and labour market agenda¹⁰⁴ in the second half of 2019, supported and spurred on by the task force, accompanied by an elaboration (to be periodically updated) to an implementation agenda for the next five years and an action agenda for the coming year. Depending on the nature and scope of the tasks and the existing sectoral agreements and structures, the approach and the level of ambition may differ per sector. The sector platforms, with the help of the task force and in consultation with sectoral social partners, educational parties, public authorities and other stakeholders (insofar as they are not already represented in the platform), will determine the content of the agenda, using sufficient funds and implementation capacity. In order to do so, they will conduct an analysis of the key sectoral opportunities and obstacles in the field of the labour market and of the scope and impact of existing initiatives that can be used and/or strengthened in order to pursue them further. The role of the task force in this regard is to drive the process and provide support with regard to the content and process, and to involve and connect relevant parties.
- b. The task force will link the sectoral agendas so they form an overarching labour market agenda, which will focus on effective phasing of the process and cross-sector aspects; connection between regions and sectors; monitoring of labour market impact and integration in wider themes, such as labour market scarcity, lifelong development, digitisation and the circular economy; and alignment with existing initiatives.
- c. The labour market agenda will focus on the following points:
 - The labour market agenda will connect sectoral innovation targets and challenges (knowledge and innovation agenda) with the development of people (Human Capital Agenda), with a view to ensuring close coordination between technological and social innovation. In this regard, parties will be able to collaborate with and learn from the Human Capital Agenda of the Energy Top Sector.

¹⁰³ The organisations participating in the task force include the Dutch Trade Union Federation (FNV), the National Federation of Christian Trade Unions in the Netherlands (CNV), the Trade Union Federation for Professionals (VCP), the Confederation of Netherlands Industry and Employers (VNO-NCW), the Dutch Federation of Small and Medium-Sized Enterprises (MKB-Nederland), LTO Nederland, the Technology Pact, the Top Sectors, the Construction Agenda (De Bouwagenda), FME, Netbeheer Nederland, Employers' Association for Energy and Utilities Companies (WENB), the Netherlands Association of Senior Secondary Vocational Schools (MBO Raad), the Cooperation Organisation for Vocational Education, Training and the Labour Market (SBB), The Netherlands Association of Universities of Applied Sciences (Vereniging Hogescholen), the Association of Universities in the Netherlands (VSNU), the Ministry of Economic Affairs and Climate Policy, the Ministry of Social Affairs and Employment, the Ministry of Education, Culture and Science, the UWV, the climate umbrella organisation for youth organisations Jonge Klimaatbeweging, Koepel Energie en Klimaat, the Netherlands Environmental Assessment Agency (PBL) and SER President Mariëtte Hamer.

¹⁰⁴ The agreements in this chapter are aimed at education and labour market agendas, even where the term "labour market agenda" is used for the sake of brevity.

- The labour market agenda will distinguish between short-term steps (including in relation to better use of available labour capacity for shortages) and long-term action (e.g. the role of sustainability in education, measures in subsectors that are shrinking due to the energy transition and substantive revision of professions).
 - In order to make or keep sectors attractive and provide people with good jobs, the labour market agenda will focus on the importance of fun, educational and safe jobs under good employment conditions, working conditions and working relationships, and on a sufficient number of internships and traineeships, regardless of economic climate fluctuations. In this regard, social partners will be able to take inspiration from the agreements in the healthcare sector on the basis of the labour market agenda entitled "Getting to work for the elderly". In the healthcare sector, a national steering group actively monitors the agenda and the agenda has contributed to the creation of collective labour agreements commitments.
 - The labour market agendas also pay attention to workers who are at risk of losing their jobs. Potential instruments include regular consultations on development opportunities, careers advice, a sufficient training budget, targeted prevention of job loss and support for mobility within and between sectors. The trade unions will actively support and publicise the importance of timely training and development through the trade union advice centres and other relevant projects.
 - The labour market agenda will contain actions aimed at attracting more people to the technical sectors, both from initial education and by attracting new groups, which may include job seekers and specific groups, such as asylum permit holders. This means that an explicit link should be sought with the social domain.
 - The labour market agendas will build on existing infrastructures and initiatives where possible, in a smart and efficient manner. This will minimise administrative crowding and will place the emphasis on the achievement of concrete results and on highlighting those results.
- d. The sectoral agendas will start with the key labour market and training challenges in the sector and will closely align with existing initiatives¹⁰⁵ and with the agreements of social partners, educational parties, public authorities and other stakeholders.

- **Agriculture and land use.** Key tasks and challenges relate to the permanent development of human resources, technology and education curricula, the translation of new knowledge and skills into professional practice and timely anticipation of new labour market niches through training and professional standards. In the development of a sectoral agenda, the sector will be able to build on the innovation programmes of the Ministries (including Agriculture, Nature and Food Quality) and the Agri & Food and Horticulture & Propagation Materials Top Sectors. The GroenPact platform will initiate the dialogue with the various industries, employees, education and public authorities on the sectoral challenges in the Climate Agreement, with the support of the task force and the sectoral quality control committee. The aim is to come to agreements on shared priorities, a joint approach and sufficient ability to anticipate events. In addition, there are also employment opportunities outside of the sector, such as in relation to absorbing the energy transition in cities through use of green resources.

- **Electricity.** Within the electricity sector, network managers and parties involved in offshore wind energy in particular are faced with a shortage of employees. Employers

¹⁰⁵ The top sectors constitute a vital existing structure, in which regard it is also vital to keep actively involving employees and employee parties. With regard to the energy transition, the Human Capital Agendas of the Top Sectors for Energy, Chemicals, High-Tech Systems and Materials, Agri & Food, Horticulture & Propagation Materials and Logistics are particularly important. The HCAs of these top sectors will be enhanced by adding new lines of action, which are specifically aimed at helping departing employees from sectors and subsectors that are shrinking as a result of the transition train and educate themselves toward professions that drive the transition growth.

and employees in this new sector/subsector will agree to develop a joint agenda, aimed at seizing employment and other opportunities and establishing good terms of employment and a health and safety catalogue that is appropriate for the work. They will also set up a platform for structured consultations between social partners (possibly supplemented by other stakeholders) on terms of employment, labour relations and working conditions. Job loss will play a key role in coal-fired and possibly gas-fired power stations. Active support and training for new careers will be required. Where possible, this will preferably take place for sustainable jobs in sectors where employment is emerging, to reduce any shortages. There are opportunities for technicians and engineers in the construction of a sustainable energy infrastructure based on electrification and, in the future, hydrogen and green gas. With CAREER, the Energy Top Sector has been able to realise a nationwide platform in which public and private sector parties and social partners collaborate on labour market and training issues in relation to offshore wind energy.

- **Industry.** The sector has signalled a major shortage of well-trained staff, particularly in the installation contracting and maintenance sectors and in the manufacturing industry. The oil and gas extraction and supply industries will be impacted by job losses, and this also applies to refineries. Active support and training for work in new sectors will be required, both for the sake of the people concerned and to reduce any shortages in those sectors. Additionally, special attention will be required for people with a lack of skills or with outdated skills. Another key area of focus is the funding from sectoral training and development funds, which can be used to create or fund cross-sector training programmes in collaboration, with the goal of increasing training opportunities and facilitating the labour market transition from surplus to shortage sectors. In addition to a greater influx (including from outside the sector), the Sector Platform wishes to focus on the permanent development of people, businesses and innovation. In the development of a sectoral agenda, the sector can build on the 2018 – 2022 implementation agenda for smart industry and the Chemicals and High-Tech Systems and Materials Top Sectors. A proactive labour market policy with sufficient training facilities should be developed in the regions. The regions in which the five industrial clusters are located require particular attention, especially with regard to the embedding of labour market regions in the Regional Energy Strategies.
- **Built environment.** Parties such as network managers, installation contractors and construction businesses are all competing with various other sectors for staff. In addition to influx (including from outside the sector) and maintaining their workforce at a sufficient level, the sectoral parties will work on the smart allocation of human resources and on the permanent development of people, businesses and innovation. The Built Environment Platform, in consultation with the Construction Agenda, has drawn up a letter of intent entitled "People make the transition" on the labour market and training in a neighbourhood approach. This letter of intent is broadly supported at a national level and will be implemented in the regional public-private partnerships, among others. In addition, a specific cooperation agreement on the "Climate technology curriculum for senior secondary vocational education" was signed. The programme entitled "*De Uitdaging*" (The Challenge) will work on resolving shortages through innovation, learning on the job and involving the education chain in the sustainability challenge for the built environment. The success of the commitments of the Built Environment Platform will also require relevant parties to forge partnerships with one another at a regional and local level in the field of human capital. Effective organisation of such partnerships will ensure a variety of employment opportunities for "green jobs".

- **Mobility.** Key challenges include the shift from fossil fuels to electrically powered vehicles and ensuring a sufficient number of charging facilities for electric vehicles. A greater number of electric vehicles will have an impact on the type of maintenance required and will lead to a greater emphasis on the IT skills of workers in car workshops and other related businesses. In the technical curricula of senior secondary vocational, higher professional and university programmes, there is an increased focus on electric transport, but finding sufficient qualified staff remains a challenge. Digital skills are set to become increasingly important in goods transport, leading to a growing need for qualified, self-reliant professionals. In the development of a sectoral agenda, the sector can partly align with the human capital agenda of the Logistics Top Sector, which draws attention to the necessity of a flexible and innovative knowledge base, knowledge dissemination in the sector and social innovation.
- e. The revised Technology Pact cites the climate challenge as one of the social challenges that must be tackled. To that end, support for regional initiatives that touch on the energy transition will be expanded. Technology Pact regions will moreover be encouraged to develop or expand initiatives that contribute to reducing labour market obstacles. Both these lines will be explicitly included in the brief of the Ministries of Economic Affairs and Climate Policy, Social Affairs and Employment and Education, Culture and Science to the House of Technology (*Huis van de Technologie*), to be set up for the implementation of the Technology Pact. As a result, frontrunners, good examples and parties that would like to contribute will have an open line of communication with national parties that are able to support them in the continued development of their initiatives.
 - f. The government will clearly set out what it can contribute in its commissioning role (including tenders) to provide long-term security. That security is required to allow sectors, educational parties and local and regional authorities to make long-term investments in learning and innovation. In addition to enabling others to invest, the government itself also has a vital role in ensuring that the climate transition takes place fairly and inclusively.
 - g. The SER will appoint a new committee in which labour market pathways resulting from the various transitions (energy transition, circular economy, digitisation) will be coordinated, in which plans will be drawn up in consultation with the regions and sectors, progress will be monitored and experiences and knowledge will be exchanged. Alongside the government, the committee will be able to manage all aspects of the labour market policy and will allow regional developments to be taken into account. In this regard, lessons can be drawn from the labour market agenda for elderly care.

Translation into implementation and regional¹⁰⁶ socio-economic agendas

- a. The SER will use its mobilising role¹⁰⁷ in the field of lifelong development in order to establish a decisive and coordinated link between good initiatives and existing and new structures with regard to the energy transition in regions and sectors. This means a link between existing initiatives such as the Top Sectors, the Technology Pact, the GroenPact platform, the Industry Coalition (*Industriecoalitie*), the Construction Agenda, the various educational agreements and the programme "*De Uitdaging*". In particular, the SER will continue to focus on effectively embedding human capital in the regional energy strategies: a well-formulated section on the labour market in the regional energy strategies could form the basis for solid labour market planning. The SER will stimulate, support, connect and periodically report to the task force, and in doing so will establish

¹⁰⁶ The basic principle is to achieve maximum alignment with the labour market regions. A labour market region is a defined area within which services are provided by the UWV and municipalities to job seekers and employers. As of 1 January 2013, there are 35 labour market regions.

¹⁰⁷ <https://www.rijksoverheid.nl/documenten/kamerstukken/2018/09/27/kamerbrief-leven-lang-ontwikkelen>.

links with the broader context of lifelong development. The SER will make use of the existing close cooperation with the Technology Pact, which came about as a result of its mobilising role for lifelong development, and in doing so will try to establish an effective link with employees and employee initiatives.

- b. In the implementation of labour market agendas, the sector platforms will select a learning approach through regional public-private partnerships of businesses, trade unions, public authorities, public and private education and knowledge institutions (preferably senior secondary vocational, higher professional and university education) and industry trainers. If necessary, experience will initially be gained through local experiments with field labs and learning communities, as envisaged with the letter of intent "People make the transition" and the programme "*De Uitdaging*". The task force will enter into a dialogue with sectors on what is required to ensure that learning capacity will not only emerge through local collaboration (project), but also between projects, resulting in the sustainability approach being able to run increasingly better and more efficiently (programme). The task force will be able to support sectoral parties in shaping a learning approach and removing/addressing any barriers identified. The Centre for Innovative Craftsmanship (senior secondary vocational education), the Centres of Expertise (higher professional education) and the 4TU federation of universities of technology have offered their commitment, where possible in collaboration. That commitment is also aimed at the link with innovation agendas and the development of the region, or at the Regional Investment Funds (RIFs).
- c. Technical industry associations will, in consultation with the trade unions, encourage that their members make available a sufficient number of internships and traineeships within public-private partnerships to ensure fruitful cross-fertilisation between learning and working – even in less economically prosperous times. Together, they will identify opportunities to issue vouchers for development, guidance and careers guidance through the research and development (R&D) funds. In addition, the associations will reach agreements with their members on their training capacity with the intention of concluding agreements on job/career guarantees in order to increase recruitment levels. The training businesses/industry schools hold a key role in that regard. Public authorities will assess whether the award criteria for tenders provide enough flexibility for training by contractors. The SBB is specifically committed to sufficient internships and traineeships in senior secondary vocational education and their acknowledgement.
- d. The letter of intent "People make the transition" on the labour market and training in the neighbourhood approach was signed in order meet the joint challenges in respect of the labour market and training of the Sector Platforms for the Built Environment (including homes and buildings, energy infrastructure, subterranean infrastructure), Mobility (including charging facilities for electric vehicles) and Electricity (including cabling) with regard to sustainability improvements to districts. The letter is aimed at linking the development of skills, technology and work processes within a learning district approach, based on close cooperation between businesses, workers, the government and the broader education system. In this regard, groups of employers will discuss the smart organisation of work and the available workforce in close consultation with these parties. The national declaration of intent will be embedded in the neighbourhood approach of the Climate Agreement by way of regional public-private partnerships. It is yet to be determined how suppliers will be included in the neighbourhood approach. Where necessary, the task force will support this approach and will spread learning experiences to other sectors. As a specific elaboration for secondary vocational education, the cooperation agreement on the senior secondary vocational education curriculum for Climate Technology will be concluded, with the aim of providing such a curriculum for funded and non-funded education that focuses on professions in the energy transition, in

circularity and in climate adaptation; sufficient recruitment; career guarantees and training within businesses; and guarantees to the continuity of the renovation and construction flow.

- e. The parties have agreed to prepare Regional Deals on the principal transition challenges and tasks. To support the regional tasks, the government has made the Regional Budget funds available, which will be used to support the Regional Deals that tackle multiple challenges in the region. Opening for the second tranche of Regional Deals closed in September 2018. Many proposals that emerged in the second tranche were aimed at the multiple targets for carbon dioxide emissions reduction and strengthening the regional economy and labour market. With regard to the third tranche, the parties will jointly develop additional proposals for the Regional Deals that support the Climate Agreement.
- f. In line with the broad-based National Programme Groningen, the Province of Groningen will be developing a regional labour market approach to the energy transition, in collaboration with the SER Noord-Nederland (supported by SER Nederland). Within the Province of Groningen, as well as in Drenthe, jobs in fossil energy supply will disappear, but other sectors will grow significantly. The proposed approach consists of coordinated collaboration between provincial and municipal authorities, social partners, education sector partners and other stakeholders. The objective is to seize and face the opportunities and challenges of the energy transition together and provide workers with adequate support if they are affected. This energy transition will ultimately lead to an industry transition in a broad sense.

Good terms of employment, working conditions and working relationships

- a. For current employees, this means that:
 - employers and employees regularly review the career prospects of employees, based on avoiding loss of employment;
 - employers and employees invest in sustainable employability to avoid job loss. Employees are given the opportunity ahead of time to prepare for other roles that will be created or for another approach to their job;
 - if loss of employment does occur, employers and employees or employee representatives will organise transitions from work to work, whether or not through retraining or further training;
 - for those parties in respect of whom the foregoing has failed, the key priority is to absorb the social and financial impact in an appropriate manner. This applies specifically to workers in the broad coal chain, who will lose their job (or run the risk thereof) as a result of decreasing employment in coal-fired power stations;
 - the government has a broad responsibility in the field of income security and creating the appropriate framework conditions for sustainable employability;
 - where appropriate, the parties will develop the foregoing in social plans, etc.
- b. The social partners will enter into a dialogue in order to achieve good working conditions, terms of employment and working relations in new sectors and subsectors where there is not yet any regulated consultation and social infrastructure. They will identify safety or health risks in the new jobs and will take measures aimed at a safe and healthy workplace. The social partners will also discuss how employment relationships in new sectors and subsectors can be given shape in a lasting, durable form, to which end they will move toward setting up collective labour agreements and research & development funds (R&D). Employers and employees involved in offshore wind energy will agree to develop a joint agenda, aimed at seizing employment and other opportunities and establishing good terms of employment and a health and safety catalogue appropriate for the work. They will also set up a platform for structured consultations between social partners (possibly supplemented by other stakeholders) on terms of employment, labour relations and working conditions.

- c. The Social Affairs and Employment Inspectorate will carry out risk-based oversight. The Inspectorate will hold periodic consultations with local and regional social partners at an administrative and programme level, including on working in new sectors and subsectors and what actions must be taken. The social partners will provide the Inspectorate with specific cases. Various inspection programmes include themes and risks that are related to the Climate Agreement, such as sustainability improvements to homes, process safety and exposure to hazardous substances. The Social Affairs and Employment Inspectorate's starting point is that working conditions and terms of employment must be in good order – this also applies to new sectors and subsectors. The Inspectorate will investigate signals flagged by social partners and other parties on safety violations and circumvention of working conditions, but will also carry out preventive supervision to ensure that the work complies with the conditions and terms in force. A study commissioned by the Ministry of Social Affairs and Employment is currently ongoing regarding the specific new workplace risks associated with the energy transition.

An inclusive approach to maximising potential

- a. Social partners in the Labour Foundation (STAR) will make agreements with the government on the necessary framework conditions for workers to develop and for job seekers to qualify for a sustainable job. The agreements will relate to strengthening the learning culture and stimulating individual learning accounts, as well as to the allocation of the funds involved. In addition, social partners in the Labour Foundation, partly based on the findings of the SER in the context of its mobilising role for lifelong development, will consider how a regional or other support structure can be advanced¹⁰⁸ and how existing regional and sectoral initiatives to promote a learning culture can be enhanced. In part based on these findings, they will table any necessary changes to the regulations in order to stimulate this movement.
- b. The social partners will make agreements on the broad deployment of staff in professions with shortages, resulting in more people being able to participate in a sustainable manner. The social partners will identify what else is needed to involve new groups (such as people with an occupational impairment). In addition, the umbrella organisations ABU, CEDRIS, NRTO and OVAL have together formed the "Cooperation for work" (*Samenwerken voor werk*) alliance. The purpose of this alliance is to get as many people as possible who are currently on the sidelines back to work through public-private partnerships. The parties have a large nationwide and regional network of service providers in the field of training, guidance and employment services. They will be using this knowledge to provide additional specialists for the energy transition.

Responsive education – tailored and embedded in a strong learning culture

- a. In senior secondary vocational and higher professional education, collaboration with the Energy Top Sector led to the creation of the *De Uitdaging* platform.
- Participants in this platform will coordinate with the Netherlands Association of Senior Secondary Vocational Schools and SBB on how the parties can mutually reinforce and complement one another in the field of cooperation within RIFs and CIVs,¹⁰⁹ on new learning tools and in providing digital access to those tools in a learning platform, as well as regarding experiments with energy innovation projects and learning from one another, experiments with a more flexible use of qualification dossiers and a shared climate and energy agenda for senior secondary education and prevocational secondary education, which will emerge from, among others, the commitments under the Climate Agreement made in the sector platforms.

¹⁰⁸ For example, this could pertain to an ID card for workers, containing a "professional passport" in which skills/competences and activities can be included in addition to diplomas and certificates.

¹⁰⁹ Regional Investment Fund (RIF) and Centre for Innovative Craftsmanship (CIV)

- The Centres of Expertise in the senior secondary vocational education component of *De Uitdaging* focus on identifying effective approaches, knowledge exchange in public-private networks and scaling up successful pilots and experiments. To do so, they make use of four key lines of action: gaining insight (including through interaction with the task force and the sector platforms) into solutions that can help resolve regional issues; smart collaboration in order to help successfully implement the operation; closer coordination of strategies and investments and removal of obstacles; joint establishment of social and other systems for the development of human capital; and solutions with a focus on increasing recruitment, the speed of training and updating the content with regard to the climate and energy.
- b. In those areas where the labour market effects of the energy transition occur (such as in relation to sustainability improvements to buildings in districts, but also in car workshops where mechanics are more often faced with electric transport), the social partners and public and private education system partners will conduct a targeted review of the need for, shape and content of new education for workers and potential new recruits (students, people from outside the sector and job seekers) in the energy transition. They will organise the education in such a way to ensure the creation of attractive and efficient learning pathways, with recognition of previously gained learning and work experience, preferably cumulative toward a diploma. This education range may relate to new programmes or modular courses, but equally to innovation in existing courses. The SBB, for example, was commissioned by the Ministry of Education, Culture and Science to include more aspects of the circular economy in the course requirements and curricula in senior secondary vocational education, also taking into account labour market issues resulting from the energy transition. Contributions will be made to the development of new training modules from research and development funds (R&D funds). The housing association sector will invest in its own training courses in order to advance sustainability expertise in its role as an employer.
 - c. The government will continue to stimulate tailored solutions in senior secondary vocational education for adults, including through the introduction of senior secondary vocational education certificates for components of degree programmes. These certificates will be intended for employees who already have a firm knowledge base in the form of a senior secondary vocational education diploma and for whom achieving a component of a qualification, in the form of a senior secondary vocational education certificate, is useful for further development. These must be robust components of the qualification, established by sectoral social partners in the SBB and aimed at strengthening labour market prospects. To that end, the SBB will carry out pilot projects. Based on a positive evaluation (end of 2019), the Ministry will scale up the introduction of senior secondary vocational education certificates further. In addition, from 2019, the government will make an annual amount of €5 million available for a four-year period for the stimulation of the development of suitable tailored training programmes in senior secondary vocational education for adults.
 - d. As of 2016, the Ministry of Education, Culture and Science has been carrying out experiments in higher professional education aimed at advancing tailored solutions in education for adults. These experiments relate to part-time and dual higher professional education programmes, cf. the learning outcomes experiment and the demand funding experiment. The learning outcomes experiment focuses on tailored programme pathways, aligned with what the adult students would bring with them in terms of relevant knowledge and skills and in line with the possibilities and needs to learn in the work situations. In the demand funding experiment, students could take part in degree programmes in technology, IT and healthcare on a modular basis at public and private universities of applied sciences. Students may be eligible for vouchers of €1,250 per module of 30 credits (6 months). An interim evaluation of both higher professional education experiments will be published at the end of 2018/start of 2019, after which a

decision will be made on how to move forward. In addition, the higher education sector itself has a number of initiatives that closely align. For example, there is a work experience traineeship, specifically for workers with an unfinished higher professional education programme, which is aimed at tempting them to achieve a higher professional education qualification (www.werkenENlerenMETenergie.nl). With regard to higher professional and university education, the acceleration agenda for educational innovation using IT (created by the Netherlands Association of Universities of Applied Sciences, VSNU and SURF) serves to accelerate digitisation, as well as flexibility, in higher education.

- e. The SBB will map out the current vocational training infrastructure for technical senior secondary vocational education. On that basis, the education sector parties and social partners will make agreements on what is necessary to supplement and connect the existing infrastructure. There are a number of good examples (Duurzaamheidsfabriek, tech hubs, RIF collaborations), but these are in some cases fragmented. Employers' parties in the task force will encourage their members to contribute to tech hubs and other physical testing and development environments, by making employees available for knowledge transfer and by making equipment available. This will lead to the emergence of a structure to facilitate the embedding of technological innovation in the entire education chain. This also applies to innovation that is required to ensure the smooth process of the energy transition. For example, by fitting these hubs with heat pumps and making technicians available to pass on their knowledge, this could go toward benefiting a large number of schools, which would require far less commitment from businesses than if they were to approach all these schools separately. Private training schools will get people back to work through recognition of APL pathways, tailored training pathways and guidance. In collaboration with municipalities, the UWV, reintegration agencies, employers and employment agencies, they will emphasise the talents and abilities of these people. This also applies in respect of employment opportunities as a result of the energy transition.
- f. The VSNU, alongside the Netherlands Association of Senior Secondary Vocational Schools and the Netherlands Association of Universities of Applied Sciences and in consultation with private training providers, will review the ways in which they can join forces in the field of research (agenda, development and knowledge exchange) and education (identifying developments in professional practice, adjustment of curriculum, suitable learning arrangements, ongoing learning pathways) in the context of the energy transition. Effective collaboration between research universities, universities of applied sciences and senior secondary vocational education institutes can ensure that students in vocational education can learn to work with the latest academic insights effectively. This also applies to issues within the energy transition, such as the use of new and existing technology in such a way that fewer people are required for sustainability improvements to a district. The parties will develop a common strategy and will encourage their members to use developed knowledge and translate new education in a consistent manner, and to implement it in the regions, in collaboration with sectors and training businesses in the regions. Collaboration between businesses and the education sector is crucial in this regard, in terms of both content (curricula, programmes and skills) and implementation (tech hubs, hybrid teachers, public-private partnerships). This fits within a broader movement of interdisciplinary research approaches, such as the National Research Agenda, resulting in consideration of the application and social impact of innovations.
- g. The parties have agreed to strengthen regional initiatives in vocational education in relation to the transition. The new Regional Investment Fund (2019 – 2022) offers partnerships between the education sector, businesses and public authorities with opportunities to apply for a subsidy to ensure better alignment between vocational education and the labour market. The new RIF will encourage initiatives to submit promising applications to the Fund for the benefit of the transition targets of the Climate

Agreement. Potential applicants focusing on the energy transition may receive support from the House of Technology, which has currently not yet been founded. In addition, they can collaborate with and learn from the partners in *De Uitdaging*.

- h. Employers' organisations will make efforts to supply a sufficient number of hybrid teachers in technology and other teaching posts in order to mitigate the shortages in teaching staff. Hybrid teachers work in business part time and as teachers part time, switching between both jobs. Naturally, quality is a top priority in this regard. The organisations will identify what is required to simplify the teaching qualification structure and/or shorten the road to obtaining a teaching qualification. This will involve careful consideration of employment structures for hybrid teachers in order to provide that flexibility. Based on their findings, they will put forward targeted proposals to stakeholders, such as the Ministry of Education, Culture and Science. Teacher training programmes will need to be able to offer tailored training in order to make the partial or full transition by professionals into education more attractive and appropriate. This is in line with the conclusions of the recent opinion of the Education Council in "*Broadening the scope for teachers*". Information will be made available by the teachers' platform (*Lerarenloket*) about how to get started as a technology teacher. Based on the experiences with existing subsidies for recruits from outside the sector, effective interpretation of what such a subsidy should look like in the future will be examined.¹¹⁰
- i. The trade unions will make efforts to encourage employees to make use of the training opportunities, starting with capitalising on the training days provided for under their collective labour agreement. By offering a range of career advice services, the trade unions will help employees and job seekers make the right choices.
- j. The government will develop an expenditure scheme for a public learning and development budget aimed at stimulating self-reliance. This scheme is expected to be completed in 2020. In drawing it up, consideration will be given to the way in which training for promising professions can be stimulated.
- k. The government will stimulate the creation of learning accounts (in whatever form: vouchers, drawing rights, development accounts), also by clearly setting out the fiscal treatment of these learning accounts in its collaboration with social partners. A study will be launched into this matter as well. Furthermore, the Labour Foundation, working alongside the SER and in consultation with the Ministry of Social Affairs and Employment, will hold expert meetings aimed at cataloguing experiences with existing private sector development budgets.
- l. The government will explore the feasibility of a personal digital summary of training opportunities and, in time, the relevant corresponding financial support available. In this regard, the task force will recommend the introduction of an individual competency passport, which will allow people to keep track of their competences both for individual development purposes and for potential or current employers.
- m. The social partners will contribute to fostering a positive image of their sector among pupils and students, in which regard they will seek alignment with existing programmes such as Strong Vocational Education and Strong Technology Education. Teachers will be able to use the Beta Mentality Test to enthuse their pupils about a professional or academic career in technology. In addition, real social issues can be involved and used as learning projects in local public-private partnerships or school environments.

¹¹⁰ Lateral entry subsidy scheme 2017.

- n. From a long-term perspective, it is vital that new generations be familiarised with social issues such as sustainability and the climate from an early stage. The curriculum in primary education is currently being updated in the curriculum revision trajectory, entitled *Curriculum.nu*. In order to adequately prepare pupils, focus on the specific theme and corresponding technology is required, but must also be accompanied by broader education and a good learning attitude, which will help them deal with major transitions as citizens later on in life. Within *Curriculum.nu*, teachers and school leaders are reflecting on new core targets for primary and secondary education within the context of nine key subject areas, including Humans & Nature, Humans & Society and Citizenship. This trajectory is based on a continuous learning pathway. This curriculum revision has identified the major and cross-subject issues for which we should be preparing the next generation. One of those issues is climate change and sustainability. Tech hubs will in time be able to assist the primary education sector regarding the expeditious development of the education objectives in this field, based on an effective continuous learning pathway toward secondary and further education. As a result of the Strong Technology Education programme, there are opportunities in the prevocational secondary education sector to make quick investments in effective integration of sustainability and the energy transition in education. In addition, *Curriculum.nu* offers flexibility for consideration of "broad" skills, to ensure that pupils are given the right attitude to learning. This is embedded in the Humans & Society and Citizenship subject areas. It is vital that children can learn in the way that best suits them.
- o. With regard to senior secondary vocational education, the SBB, commissioned by the Ministry of Education, Culture and Science, will identify what role the circular economy and sustainability have in qualification dossiers. The SBB will draw up an action plan aimed at reinforcing a circular mindset and practices in senior secondary vocational education. The SBB will develop a proposal on how the education and business sectors can include this in qualification dossiers. The SBB will report on the matter to the Minister of Education, Culture and Science, who will include the results in the annual progress report for the Technology Pact.

Improving regional and sectoral labour market information

- a. The task force will come to agreements with the relevant research and other organisations¹¹¹ on the structure of an information base aimed at ensuring optimal control and monitoring of the national, sectoral and regional implementation of the Climate Agreement in the field of the labour market and training.¹¹² The task force will identify the specific information requirements necessary for the sector platforms and in the regions, and will consult with the organisations referred to on how to meet those needs. This will involve building on the existing range of instruments where possible.

¹¹¹ In order to ensure the organisation and consequent implementation of a shared information provision system, a sounding board group was set up in which the key research and other organisations (PBL, CPB, ROA, UWV, SBB, TNO), the secretariat of the task force and government-appointed members of the SER Henri de Groot and Bas ter Weel are represented. Statistics Netherlands (CBS) will be added to those parties.

¹¹² Various types of information may be relevant: 1) insight into current surpluses and shortages on the labour market and their relationship, in relation to which use can be made of the highly detailed data of the UWV and Statistics Netherlands and of qualitative insights into changing needs for skills as a result of the Climate Agreement; 2) insight into where investments for the Climate Agreement may increase the discrepancy between supply and demand on the labour market in the next five years (the subject of an initial estimate of labour market impact by the Netherlands Environmental Assessment Agency and the Research Centre for Education and the Labour Market (ROA)); 3) insights into potential structural changes in employment (division of employment across sectors and types of employees) as a result of the Climate Agreement in the long term and possible consequences of policies that are aimed at reducing the pressure on the labour market. Each of these types of information requires a different type of analysis, making it important to clarify in advance what the particular need or requirement is.

- b. The task force will join an existing initiative within the framework of the National Technology Pact: *ArbeidsmarktInZicht* (Labour Market Insight). This is an initiative of six regions in the south-east of the Netherlands and the provinces of Brabant and Limburg, united in the Brainport Network. The objective is to provide access to up-to-date, transparent labour market information that will encourage dialogue and cooperation within and between regions.
- c. The information base to be constructed will consist at the very least of periodic national, sectoral and regional data on the labour market situation at that time, on the one hand, and labour market forecasts for the next five years, on the other.
- d. The task force will identify the labour market and training information that is required in order to effectively implement the Climate Agreement in regions, sectors and sector platforms. If a substantial and reasonable information requirement on behalf of implementing parties does not or no longer matches the availability of data, the task force will endeavour to accommodate the changing needs.

Absorbing loss of employment

- a. The Bill concerning the ban on coal in electricity production may lead to harmful consequences for employment and the legal status of employees. The government recognises that the coal chain is a case that deserves special attention, but it is not automatically clear in advance what the nature and scope of these consequences will be. A key element is that there is a group that, despite all efforts, runs the risk of falling by the wayside. There are legitimate concerns in this regard and a range of instruments is required to suitably mitigate social risks. In the SER opinion on Energy Transition and Employment, the SER proposed that the government should consult with social partners on the way in which the national government executes its social responsibility and, in this context, has called for the establishment of a "Coal Fund", for employees who have lost their job or are at risk of losing their job in relation to the closure of coal-fired power stations and in the coal chain. This would require tailored solutions, such as with regard to retraining, support toward new jobs, temporary supplementation in the case of dependence on benefits or, if an employee has accepted a job with lower pay, assistance regarding the impact on pension accrual and tailored arrangements for elderly workers in situations where there are few opportunities for work. This is outlined in greater detail in the SER opinion (p. 60 – 61), in relation to which the SER stated that the approach to unemployment as a result of the energy transition centred on two key issues: inclusive labour market policy and a special role for the national government to ensure a "fair transition". The social partners are engaged in talks on this issue with the Ministry of Social Affairs and Employment. The "Westhaven agreement" (see below) will serve as a litmus test.
- b. The government is aware of the short-term employment impact of the closure of the Hemweg power plant as of 1 January 2020 on the relevant employees and the corresponding chain. Accordingly, the Ministry of Social Affairs and Employment is working with the UWV (Employee Insurance Agency), the trade unions and employers' organisations on the creation of the so-called "Westhaven agreement". This agreement will consider what measures will be required to mitigate the risks of unemployment as a result of the closure of the Hemweg power plant. More specifically, it has been agreed that the UWV and FNV will jointly set up a unit that will work on developing a service package. Employers, including primarily the affected businesses in the region, will be closely involved in the development.
- c. The government realises that the employment impact of the energy transition is broader than the potential impact of the Bill concerning the ban on coal for the production of

electricity. For that reason, the government is seizing the initiative to set up an employment impact provision, which will be aimed at providing from-work-to-work supervision and retraining people who will lose their jobs in the fossil sectors. To this end, the government has in principle allocated €22 million until 2030. In the coming months, the provision will be developed in a tripartite partnership between the Ministry of Social Affairs and Employment, the trade unions (the FNV, in the case of the Westhaven agreement) and employer's organisations. The experiences in the coal chain (and in particular the lessons that are being learned through the development of the Westhaven agreement) and the foregoing SER advisory report will be used in the approach in other sectors facing the consequences of the energy transition.

- d. The shrinkage or even closure of businesses oriented toward fossil energy will usually require a regional/sectoral approach, with due consideration of the role of the government. For that reason, loss of employment in these businesses is due to both the sectoral labour market agendas and regional implementation. Particularly with regard to large numbers of workers, coordination is required between sectoral and regional efforts, and lessons are to be drawn for specific cases of large-scale loss of employment in the recent past.
- e. The parties have agreed that the comprehensive human capital agenda (see point a) will include steps that are aimed at assisting employees from sectors and subsectors that are shrinking due to the energy transition in retraining toward professions that are experiencing growth or shortages.
- f. In addition to the apprenticeship offensive, the SBB will review how the career guidance pathway can be used to retrain workers and job seekers to professions in the energy transition.

Conditions to kick off and ensure coherence of the package of agreements

- a. The task force will recommend the creation of a permanent structure within the governance of the Climate Agreement, aimed at kicking off and coordinating the package of measures in the field of the labour market and training. Given that the key players with regard to the labour market and training are required for that coordination, the task group will develop its efforts in that direction. Considering the broad composition of the task force, an effective form of management will be sought, where possible in alignment with the initiatives in the context of the mobilising role of the SER on lifelong development. The permanent structure:
 - should stimulate and facilitate quality control committees to ensure the creation of sectoral labour market agendas;
 - should connect sectoral education and labour market issues within an overarching agenda, with consideration of cross-sector aspects;
 - should track progress by collecting knowledge and actively liaising with parties such as the implementing parties of the platforms;
 - should draw lessons from experience, formulate proposals for improvements and share knowledge and recommendations with sectoral and regional players in the energy transition;
 - should initiate activities aimed at removing any barriers identified and should address them in the appropriate forum;
 - should contribute to achieving adequate scope for experimentation;
 - should stimulate coordinated links within and between regions and sectors;
 - should ensure coordination with trajectories outside the energy transition;
 - should identify a leading group of initiatives in the energy transition.

- b. The task force will recommend that sectoral quality control committees (stimulated and supported by the permanent structure outlined above) ensure the creation of sectoral education and labour market agendas. The sectoral quality control committees:
- will set up a consultation body for each sector, in which the relevant parties will draw up sectoral education and labour market agendas through action-oriented commitments;
 - will identify and articulate sectoral education and labour market issues as a result of the energy transition and the agreements of the Climate Agreement as input for these agendas.
- c. The SER will use its mobilising role for lifelong development to foster stimulating, facilitating and collaborative capacity in close cooperation with existing driving forces in the field, such as the Technology Pact, the Top Sectors and the GroenPact platform. The members of the task force will also contribute to this organising capacity, by actively making use of human resources and connections with individual initiatives where this will create added value. Part of this mobilising role should involve positive and activating communication about the energy transition and the opportunities it brings with regard to the labour market and training. By providing a stage for frontrunners, the SER is able to inspire the middle group in the innovation system.

D5 Creating support in society

The measures in the Climate Agreement affect where and how we live and work. Many measures in the Climate Agreement will affect businesses and citizens. For that reason, their needs and concerns must be visibly taken into account in the decisions that are made during the transition. This must take place at every level, whether in national, political decisions, in choices at regional and local level or in relation to decisions that affect people's homes, businesses and community.

Support and acceptance can be realised if decisions are made transparently and the benefits and burdens are shared fairly. A fair distribution of benefits and burdens should be interpreted in a broad sense – not merely in financial terms, but in terms of spatial planning and social aspects. In relation to renewable energy on land, for example, this means that businesses and citizens are given the opportunity to contribute to where projects are realised and, if possible, are able to share in the gains. In relation to the transition in districts, it is vital that businesses and citizens have a say in the choice of alternative heating sources and regarding the measures to make buildings more energy efficient. After all, many people will only want to participate if they can have a say.

This chapter will set out the ingredients for an approach aimed at maximising and maintaining support for Dutch climate policy, through measures that make the relevant policies feasible and affordable for all and by committing to civic participation.

Balanced burden-sharing

All of the sectors have focused on cost-effective measures to ensure that the transition should remain affordable for society. However, the transition must also be affordable at an individual level. For that reason, the government will be taking measures affecting motor vehicle tax and in respect of the energy bill that will limit the impact on the incomes of households and spare lower income households. In addition, financing schemes will be set up to ensure that everyone is able to participate in the transition. The burden-sharing between businesses and households will see a shift take place from households to businesses. An outline of the full package of measures aimed at feasibility, affordability and fair burden-sharing is included in the government's letter accompanying the Climate Agreement.

Citizen monitor

In addition to measures that make the transition financially and otherwise feasible and affordable and aim to share the burden fairly, more is needed to strengthen support for the transition. Broad and active involvement from citizens is essential to ensuring the success of the major challenges of this Climate Agreement. However, at this point in time, there is still inadequate insight into citizens' needs, concerns and expectations. For that reason, the Netherlands Institute for Social Research (SCP) will shed light on the knowledge, attitudes, motives, expectations and behaviour of citizens with regard to the sustainability transition.

The Netherlands Institute for Social Research has been running the Sustainable Society programme since 2018, with which it aims to provide a socio-cultural perspective on the transitions that should lead to a sustainable society. The research programme focuses on the relationship between citizens (individually or collectively) and the government in the context of these transitions, on processes of inclusion and exclusion of individual or groups of Dutch citizens during and as a result of these transitions and on the impact of these transitions on quality of life.

In the context of this programme, the SCP will be cataloguing citizens' perspectives on a more sustainable society. By periodically mapping out citizens' perspectives, substantiated statements can be made regarding developments over the years. In 2019, an exploratory study will be carried out into citizens' perspectives on the energy transition. This study will

aim to clarify methodological issues, to achieve initial demarcations of the substantive focus, but also to map out an initial state of affairs. The SCP aims to invite a number of parties from the Climate Agreement to be members of the sounding board group for this exploratory study. Furthermore, on the basis of this study, decisions will be made on what is feasible and on the regularity and continuity with which the sustainability of Dutch society will be studied from the citizens' perspective.

The objective is to track the sustainability transition from citizens' perspectives and to ascribe the SCP with a permanent role in the quality control cycle to safeguard the progress of the Climate Agreement. The development of support and civic participation during the progress of the Climate Agreement can be tracked based on the periodic reports of the SCP. The insights of the SCP on citizens' perspectives on a more sustainable society may help to improve the quality of the implementation of the Climate Agreement, and allow the implementation to be adjusted where necessary.

Comprehensive public participation approach

Broad-based involvement and active participation of citizens not only requires a clear understanding of citizens' needs, concerns and expectations, but also requires the translation of the objectives of the Climate Agreement into specific perspectives for action for citizens. To that end, the national government will be developing a comprehensive public participation approach, which will serve to create greater awareness among citizens of their individual role in the transition, and to encourage them to change their behaviour. This comprehensive public participation approach consists of two elements, a public campaign and a networking approach.

The public campaign will approach citizens via targeted communication at times when they are most open to such messages. An umbrella theme will link all efforts that are being developed by the national government and private and public sector stakeholders in this context, and will set out why the climate is a collective challenge and what businesses, organisations and citizens are doing to achieve the targets of the Climate Agreement. Sub-campaigns will be developed and implemented within the umbrella theme, under the responsibility of the Ministries, which will highlight certain key topics of the Climate Agreement in depth.

In addition to a mass media component, the public campaign consists of an approach that continuously offers citizens perspectives for action, allowing them to make a contribution when it is convenient for them to do so. Within this network approach, the national government and stakeholders (public-private parties) will jointly develop specific and attractive opportunities to allow citizens to contribute. Citizens will be facilitated to take steps themselves when it is convenient for them to do so, using an appropriate range of options.

Civil dialogue

Many people realise the magnitude of the challenges and task ahead – and realise that making painful choices will be necessary. Large groups of citizens have already taken action themselves, but not everyone recognises the need for change or wishes to actively contribute. A large group of citizens has taken a wait-and-see approach, even in relation to the preparation of measures in their own home or community. This section of the population may not be left behind in the implementation of the Climate Agreement. If this group of people should only be confronted with the impact in the implementation phase, this would jeopardise support for the realisation of the agreement.

Set against this background, a civil dialogue was held in the spring of 2018 at the initiative of the Climate Change Conference, in which some 200 citizens took part. The National Platform for Civic Participation in Environmental Policy (NPBO), alongside the Buurkracht social initiative and the HIER climate agency, spoke with citizens about their needs and concerns

regarding climate change and climate policy and about the way in which citizens wish to be involved in the development and implementation of the Climate Agreement.

Further to these civic discussions, a survey will be carried out in 2019 aimed at gaining sharper insight into the way in which citizens who are hesitant or difficult to reach can be involved in the implementation of the Climate Agreement. This is, first and foremost, something that should take place at a local or regional level, as part of the preparation of concrete plans and projects. In addition, a dialogue at a national level, for example, held in a virtual community, could provide insight into their needs and concerns with regard to climate change and climate policy. This would build on previously conducted dialogues, such as the 2016 Energy Dialogue and the regional consultations that formed part of the preparations for the Climate Agreement.

If properly prepared, a continued dialogue of this nature could constitute a key addition to the studies of the SCP and yield valuable signals and opinions with regard to the implementation of the Climate Agreement. Moreover, this dialogue could strengthen the comprehensive public participation approach by providing a permanent communication channel to a group of citizens who are difficult to reach through other channels.

Participation in the Regional Energy Strategies

In the development of a Regional Energy Strategy, public authorities work with network managers and social stakeholders to develop choices for the generation of renewable electricity, the heat transition in the built environment and the necessary storage and energy infrastructure that are supported by the region. These choices will be translated to areas, projects and the implementation and execution of those projects.

In each region, the key points of the process to arrive at a Regional Energy Strategy are laid down in an initial administrative document (an initial memorandum or similar document), which will also lay down the objective and the way in which the RES is secured in democratic and spatial planning terms. The process should lead to an energy strategy that sets out which specific search areas are suitable for solar, wind, geothermal or hydroelectric energy, taking into account spatial quality and social support. Process participation in the development of the Regional Energy Strategies leads to qualitatively more informed choices and decisions and in this way contributes to successful implementation.

Within each region, the municipalities, water boards and the province ensure effective and timely provision of information to citizens and realise local facilities to enable citizens to more effectively contribute to formulating the strategy. It is up to the region to determine what type of facilitation is required. Depending on the regional circumstances, this may relate to access to knowledge, independent process supervision, financial support or something else. The type of facilitation chosen will be recorded in the Initial Memorandum referred to previously.

In the implementation of the Regional Energy Strategies, regional authorities are bound by the agreements laid down in this Climate Agreement on civic participation in the district-oriented approach and project participation in the generation of renewable energy.

Participation in the district-oriented approach

The municipalities have a directive role in the transition to natural gas-free districts. In a careful process, they will have to make a decision on what the best solution is per district, if homes can no longer be heated using traditional central heating boilers. Solutions may vary per district. All case studies up to now have shown that this process takes place more successfully when citizens engage more with each other and with the local public authority in that process. Familiarity with the socio-cultural profile of the district is essential to selecting a suitable form of participation – information, public involvement, consultation or co-production. Various district profiles will be developed and tested in the living labs of the Inter-

administrative Programme for Natural Gas-Free Districts (PAW), which is a joint programme of the Ministry of the Interior and Kingdom Relations, the Ministry of Economic Affairs and Climate Policy, the VNG, the IPO and the Association of Regional Water Authorities (UvW).

The natural gas-free districts programme includes a knowledge and learning programme that serves to strengthen the directive role of municipalities and to combine learning experiences of municipalities and other stakeholders. The living labs will serve as testing grounds for, among other things, participation principles. The national government will draw up guidelines in consultation with the VNG and other stakeholders, partly based on the experiences of the test beds for natural gas-free districts.

Participation in the generation of renewable energy

Participation and acceptance are critical to the spatial integration and operation of large-scale as well as smaller energy projects. Agreements were made in the Electricity Sector Platform in this regard.

Public authorities are primarily responsible for communication on the benefits and necessity of the transition. Within the context of the Green Deal on Participation of the Community in Sustainable Energy Projects (process participation during the development of projects) and the national RES programme (process participation during the RES), participation guidelines will be drawn up. This will provide developers, public authorities and financiers with the tools for a participatory approach. These guidelines can be used to explicitly embed the envisaged method for participation into sectoral codes of conduct and spatial frameworks, such as environmental strategies, environmental plans and project decisions.

The initiator of an energy project will go through a process to achieve a desirable and achievable format for participation. The competent authority will verify that market parties and the community enter into a dialogue on the matter. Commitments with the community will be recorded in an environmental agreement. On this basis, a project plan is drawn up, which sets out how participation should be structured within a project in optimal terms.

In order to ensure the success of the projects for the construction and operation of renewable energy on land in the energy transition, the community and market parties will collaborate on the development, construction and operation in areas with opportunities for and ambitions with regard to renewable energy generation. This translates to a balanced ownership division in a region that strives to achieve 50% ownership of the production in the local community (citizens and businesses). The goal with regard to ownership ratio is a general goal for 2030. At a local level, there will be room for deviation, for local project-related reasons. This will also involve taking into account the special position of the water boards, which act as both local developers and regional authorities with a sustainability target for their own processes.

In the context of participation by the local environment, a great deal of value is placed on local initiatives. There are two areas that present major obstacles to their participation, the first of which is a lack of knowledge. Local initiators will be encouraged to make use of the knowledge and expertise that will be available at the Centre of Expertise yet to be set up. In addition, pre-financing costs are a significant obstacle. The Ministry of Economic Affairs and Climate Policy has made a contribution in this regard. By July 2019 at the latest, InvestNL, ODE, the IPO and the VNG will have examined whether provinces and municipalities may be able to ensure that autonomous energy cooperatives can rely on a scheme that would allow the funding for the studies and corresponding project support required for a successful permit application. This issue expressly does not concern the funding of the required capital for the project. Upon financial close of the project, these funds will be returned, thus resulting in the creation of a revolving fund. In addition, it will be reviewed whether fees associated with the project can only be charged upon financial close of the project, or if the project is abandoned.

D6 Spatial planning

The realisation of the commitments of the Climate Agreement entails a major transition of the physical environment as currently experienced by citizens and business owners. The impact of the transition on the physical environment will be considerable: cities and landscapes will be changing as a result. A sustainable energy system requires more space than a fossil-based system. In the Netherlands – where every square metre already has one or more designated uses – this space is not automatically available. This makes a good spatial planning approach to the transition, including making spatial choices that can have a far-reaching impact, a necessary condition for achieving the climate targets. For that reason, in addition to the agreements in the sector platforms relevant to spatial planning, a number of overarching spatial planning agreements were also set out.

Embedding in environmental planning instruments

Many agreement of the Climate Agreement must be embedded using environmental planning instruments in order to be actually implemented – as of 2021, this must take place through the core instruments of the Environment and Planning Act. For a number of measures, this is carried out through an intermediate programme, such as the Regional Energy Strategies (RES); for others, this takes place directly. The parties have agreed the following in this regard:

- a. The local and regional authorities and other RES parties will ensure that the process aimed at achieving the spatial integration of renewable energy on land (including the RES) will have been completed for the majority of the regions by mid-2021. In respect of the timetable, the national government and local and regional authorities will ensure that the measures for renewable energy on land have been finalised for a large part of the regions by mid-2021. The common goal is for all necessary permits for spatial integration to have been issued with a view to the timely realisation of the target no later than 2025.
- b. In the first half of 2019, with regard to other relevant planning measures from the Climate Agreement, the public authorities will jointly forecast the dates by which measures must be secured to ensure the realisation of those measures by 2030. This will involve both the core instruments of the Environment and Planning Act (environmental strategies, environmental plans, programmes, planning permits, etc.) and the current spatial planning instruments.
- c. The Environment and Planning Act will come into force in 2021. At the start of 2019, the government, in consultation with the VNG, the IPO, the UvW and civil society parties, will begin drafting an amendment pathway for the regulations under the Environment and Planning Act that will supplement or tighten the already established regulations upon entry in force of the Act with rules for the energy transition.

Conflicting spatial planning claims and constricting regulations

The Climate Agreement includes various agreements that will require space: solar fields, the extensification of agriculture and development of the natural environment, for example, all need space. At present, however, it is unclear exactly how much space the various spatial planning claims for the various functions will require in accurate square meter dimensions. Furthermore, as a result of space-efficient implementation, such as combining several functions in one location, the total space usage of the transition can be significantly reduced. At the same time, spatial planning obstacles will emerge during the implementation of projects, partly as the result of sectoral regulations. In this regard, the parties have agreed the following:

- a. In the development of measures concerning the physical environment, the parties will make use of the design principles (combination preferred over single use; traits and identity of an area are key; avoid passing on costs) that are the result of the National Environmental Planning Strategy (NOVI) or derivative design principles.
- b. The choices between several conflicting spatial planning claims on land will for the most part be taken at local and regional level. This is also in line with the spirit of the

Environment and Planning Act, as decisions must be taken at local and regional level as much as possible. Municipalities play a key role in this regard, ascribing functions to areas in environmental plans. The Environment and Planning Act, similar to current regulations, provides provinces and the national government with instruments to support and/or realise projects, for example by making spatial reservations for main or secondary energy infrastructure or by drafting project decisions (now: area development plans) for large energy projects. In addition, the NOVI provides guiding rulings.

- c. With regard to decisions on conflicting interests in the North Sea, these will be taken by the national government (also see Chapter C5 Electricity). The national government will issue guiding rulings on the matter in the NOVI.
- d. The national government will be prepared to consider changes to the applicable law in relation to spatial planning obstacles to energy projects arising from other sectoral regulations (e.g. radar disruption, nature and safety), or to provide as much flexibility and as many bespoke solutions as possible in relation to the practical application to advance sustainable energy generation. A key concern in this regard is a balanced allocation of costs across the parties involved.

Further spatial development of measures

The Climate Agreement encompasses a large package of measures, part of which is yet to be developed in the near future, and new measures will continue to surface in the period ahead. It is currently far from possible to establish a complete overview. This will also require a multi-year approach from a spatial development perspective, in which parties are jointly able to develop and implement measures, but are also able to adjust and customise them if changing circumstances require such an approach. In this regard, the parties have agreed the following:

- a. Municipalities, provinces and water boards, in consultation with network managers and other partners, will draw up Regional Energy Strategies (RES) for electricity and heating in any case (see Chapter D7 RES). Local and regional authorities will be responsible for the timely embedding of the measures resulting from the RES in the local and regional environmental instruments and, where possible, in the existing spatial planning instruments.
- b. The "structural vision" instrument has been scrapped as a result of the introduction of the Environment and Planning Act, and is being replaced by the "programme" core instrument, which will serve to implement the policies of an environmental strategy. From early 2019, the national government will lead the drafting of such a "programme" aimed at the spatial planning of and reserving space for the main energy system on a national scale. This programme will effectively succeed the Electricity Power Supply Structure Plan (SEVIII) and potentially parts of other structural visions. The national government will involve the local and regional authorities, network managers and other relevant parties regarding this programme. Due to the strong dependencies between different forms of energy (electricity, hydrogen, natural gas, renewable gases, carbon dioxide, heating) and the increasing need for storage and conversion, including on a national scale, it is clear that more spatial planning issues will be included than merely spatial reservations for the transmission of electricity. The exact scope, and how it can best be given shape, will be developed further at the start of 2019. A key concern in this regard is ensuring coherence with the North Sea programme, the Soil and Subsurface programme and other relevant programmes. The programmes aligns with the choices that are made in the national strategy on the organisation of the market & energy transition (see Chapter D1). The desired infrastructure as it arises from the Regional Energy Strategies and the infrastructure survey of the network managers (see Chapter D1) constitutes key input for this programme. Effective coordination requires continuous interaction between the various tracks.
- c. The coordination between the regional implementation (RES) and national implementation (main energy system) will take place in the inter-administrative programme that is already being set up for the RES (the National RES Programme, also see Chapter D7).

Local and regional authorities and the national government will naturally remain responsible for the use of their own range of instruments.

D7 Regional Energy Strategy (RES)

A great many national agreements of the Climate Agreement are put into practice in the Regional Energy Strategies (RES), which are implemented in a nationwide programme covering 31 regions, an overview of which can be consulted on www.regionale-energiestrategie.nl. Within the RES, public authorities work alongside social partners, network managers (for gas, electricity and heating), the business community and, where possible, residents to develop regionally supported choices. This is done to realise the generation of renewable electricity (35 TWh), the heating transition in the built environment (from fossil to sustainable sources) and the necessary storage and energy infrastructure. These choices will then be translated into areas, projects and the implementation and execution of those projects. The focus of the RES is on the tasks and challenges of the Built Environment and Electricity implementation committees. At the request of a region, tasks relating to other implementation committees can also be included in the RES, such as measures for sustainable mobility, industry or agriculture and land use. In addition, within the region, work is already underway on other energy plans and on the objectives of the current Energy Agreement (including the 6000 MW of wind energy on land). These parallel processes will be involved in the RES, but no general standard is prescribed for interaction with these processes.

The challenges and tasks facing the regions are complex and the spatial impact of the climate and energy transition will be significant. It is precisely in the translation of the climate aims into locations and projects that the social and spatial impact and dilemmas will become tangible and visible. Drafting an energy strategy does not remove these dilemmas. The RES is explicitly intended as the point of departure for an implementation process in which cooperating parties are able to achieve further specification and the realisation of projects in the period leading up to 2030. This process includes a periodic evaluation and review of the strategy. In this way, continuous efforts to drive effectiveness and efficiency in the dynamic context of the energy transition challenge are guaranteed.

As such, the RES has a multi-faceted role. First and foremost, the RES is a product in which the region sets out what energy targets must be achieved and in what time frame. Secondly, the RES is a key instrument for the organisation of spatial integration with community involvement. Thirdly, the RES is a way of organising long-term cooperation between all regional parties.

Many regions will not be starting from scratch, but will have been working with an RES for a longer period of time or will have drafted an RES ahead of the finalisation of the climate commitments. Given that the challenges and capabilities of each region will be different, there is a great deal of flexibility for regions to develop their own regional strategy.

At the same time, it is vital that all regions base their RES on the joint frameworks and the agreements in the Climate Agreements. In respect of the comparability and cumulative nature of the regional contributions, it is crucial that the RES, as a product, align with the national analysis, monitoring and calculation system, as developed by the Netherlands Environmental Assessment Agency.

Since the RES specifically gives shape to the climate commitments, it is vital that the RES regions are facilitated effectively. The National Regional Energy Strategy Programme (NP RES) is a key component of the support provided to the regions. The National RES Programme effectively acts as the pivot between the Climate Agreement and the region, facilitating and supporting the regions in providing a clear framework for the challenge, constructing comparable and cumulative Regional Energy Strategies, systematically developing a common data and information base and offering regions a platform to share knowledge and challenge one another to develop better plans.

The formal start of the implementation process of the Climate Agreement will be ratified and kicked off once the agreement has been formally signed by all participating parties. Clarity on this issue is expected in the second half of 2019. Because the level of ambition in the regions is high and regions, including pilot regions, have already gained significant progress in drafting Regional Energy Strategies, regions have the option of starting or continuing with the RES ahead of the formal signature of the Climate Agreement. The point of departure for regions in this stage is the “negotiation agreement”, which was completed at the end of 2018. In cases where agreements set out in the negotiation agreement differ from the final text of the Climate Agreement, their significance will be reassessed in the light of the continuity of the RES process in the region.

Agreements

The parties have agreed the following:

Governance and decision-making

The Association of Provincial Authorities (IPO), the Association of Regional Water Authorities (UvW), the Association of Netherlands Municipalities (VNG), the Ministry of Economic Affairs and Climate Policy and the Ministry of the Interior and Kingdom Relations will be jointly responsible for creating, organising and implementing the National RES Programme. This programme will facilitate the regions and will serve to increase regional implementation capacity. It will have a signalling role and will provide a cross-sector regional collaboration structure for the achievement of the nationwide goals of the Climate Agreement. First and foremost, the programme is aimed at the implementation committees for Electricity and the Built Environment. Coordination between public authorities on the RES targets will take place through the Administrative Consultation. The National RES Programmes will ensure the representation of, in any case, the Built Environment and Electricity sectors in the implementation committees. In this way, the programme will take on a bridging role between the strategic key points of the national Climate Agreement and the regional and local implementation reality. The National RES Programme will facilitate, monitor (in collaboration with the Netherlands Environmental Assessment Agency), develop knowledge and provide regions with clarity, but will not be responsible for the content and drafting of the Regional Energy Strategies. The regions are responsible for this themselves.

The National RES Programme will receive advice regarding implementation issues from a Programme Council, in which both the government and other stakeholders are represented.

Working structures will be set up within the regions in which the local and regional authorities, alongside the network manager or managers, businesses and representatives of civic organisations within the region, will be responsible for the creation of the RES. If desired by the region, the national government may take part in the steering committee as an informal member. In this role, the national government would have a signalling role, but would not take part in the formal decision-making process. Housing associations or other initiators/owners of the production of renewable energy or transport and storage may also be invited to attend the steering committee. The provinces and municipalities will focus explicitly on the spatial facilitation (in qualitative and quantitative terms) of the RES and on embedding the RES in environmental planning policy.

As soon as the RES process has formally begun in the region, it will be recorded in an initial memorandum or similar document, which will in any case lay down the objective, the schedule, the organisation and the way in which the RES is secured in democratic and spatial planning terms. The task and the implementation thereof will subsequently be determined collectively. If the regions should choose not to draw up an initial memorandum, they must provide an indication of how they intend to guarantee implementation of the RES process

otherwise. In addition, it is recommended that the regions draw up what is known as a cooperation agreement with the parties with which they will cooperate on the RES in the steering committee, which will set out the cooperation agreements for the years to come.

RES 1.0 product content

The RES sets out the development of the regional supply of electricity, gas and heat for the period up to 2030, with specific search areas that are suitable for the generation of solar, wind, (sustainable) heat and sustainable gases. This supply will take into account spatial quality and support in the community. In addition, the network manager will have developed what modifications to the energy infrastructure are required to connect the production capacity to the grid and what the consequences would be (in spatial, financial, planning and decision-making terms). This will also take into account the energy flows from the agreements with the other quality control consultation bodies and the generation from small-scale projects, such as solar on rooftops. Finally, the RES 1.0 contains a Regional Structure for Heating (RSW), in which insight is provided into the regional demand for heating and the availability of heating sources based on the Guidelines. The Regional Structure for Heating in part constitutes the input for the Transition Vision for Heat and corresponding district plans that each municipality will have drawn up by 2021. The final choices arising out of the Transition Visions for Heat and the implementation plans at district level will be included in the follow-up versions of the RES 1.0.

The regions will produce an RES 1.0 on 1 March 2021. This RES will have been approved by the Provincial Executives, the Municipal Executive, the Administrative Boards of the regional water boards, the municipal councils, the provincial councils and the general meetings of the water boards.

The RES is intended primarily for the implementation of the tasks of the Built Environment and Electricity Platforms. At the initiative of the region, at the invitation of sectors or otherwise, spatial planning and other measures in the field of mobility, industry and agriculture can also be included in the RES. With regard to mobility, this may relate to the effective integration of the charging infrastructure and the spatial impact of zero-emissions urban logistics. With regard to the industry, for example, this may relate to the landfall of offshore wind energy close to industrial clusters and the transport and storage of hydrogen and other sustainable gases and raw materials. More examples are included in the guidelines. The regions themselves will be best able to determine what social tasks and targets are relevant to guaranteeing an integrated area assessment.

Draft RES

The regions will produce a draft version of the RES on 1 June 2020, containing the following components:

1. regional implementation of the capacity in MW (and expected MWh) to be established for renewable energy on land and its significance to the energy infrastructure, taking into account spatial quality and support in the community, set against other interests, including spatial planning interests. The regions will be asked to steer toward overprogramming, in order to achieve the national target. In addition, this may also serve to absorb any additional electricity demand, within the corresponding agreements laid down in component C5.10. It is expected that certain search areas will be disqualified or will shrink as the implementation phase draws closer. In addition to fulfilling the commitment of at least 35 TWh in large-scale renewable energy on land by 2030, regions are also encouraged to include small-scale solar on roofs in the RES, for which an autonomous growth of 7 TWh is expected by 2030. The additional capacity that can be realised above those 7 TWh may be included as an additional ambition on top of the 35 TWh;

2. clear and traceable substantiation of the supply and choices in favour of potential search areas that can be used, including a description of the process. If possible, these search areas should also be shown on a map;
3. a Regional Structure for Heating, containing a validated list of all available large-scale sustainable heating sources within the region, the overall heating demand in the region and an overview of the existing and projected infrastructure for heating. This will involve an estimate of the actual feasibility of these sources within the region in terms of time and money. The principles and methodology to be used are outlined in the Guidelines;
4. in addition, this Regional Structure for Heating should include which relevant stakeholders (for heat transport, production and purchase) will be involved in the process and a process proposal will be produced regarding how the region intends to connect available sources, heating demand and infrastructure logically, efficiently and affordably and how stakeholders wish to be involved moving forward.

The regions will ensure that the draft RES, submitted by the chair of the RES steering committee, has at least been approved by the Provincial Executive, the Municipal Executive and the Water Authority Board and has been submitted to the provincial and municipal councils and the general meeting of the water boards.

The draft version of the RES will be submitted to the PBL to establish whether the plans formulated in all the Regional Energy Strategies add up to achieving the national climate targets. If this is not the case, then the local and regional authorities will have four months to draw up a breakdown of the remaining target per RES. This breakdown will be published on 1 October 2020. In the meantime, the local and regional authorities will start the planning process with the content of the draft version of the RES. The RES regions will then have until 1 March 2021 to determine and adopt the final RES, in supplement to the draft, which will include the remaining target. By mid-2021, the majority of these Regional Energy Strategies will have been incorporated into environmental policy.

Monitoring and review

Although the objectives in the Climate Agreement will be maintained in the long term, the way in which these objectives and targets can best be achieved is uncertain. This will require an adaptive and iterative process in which the approach is reviewed every two years. Two years after the RES 1.0, it will be succeeded by an RES 2.0, etc. This biennially converging, adaptive cycle (plan-do-check-act) guarantees that the Regional Energy Strategies are in line with the investment plans of the network managers required by law, and also that they increasingly guarantee the necessary security for the heating transition plans of districts.

Not only the optimal approach, but even the quantitative targets may change over the years: 49% carbon dioxide emissions reduction by 2030 is a stepping stone toward even higher targets for 2050. If subsequent RES versions have to take into account other carbon emissions reduction percentages, then the parties will have to make decisions on the issue through the appropriate structures on the recommendation of the National RES Programme.

Frameworks and development

In the development of the RES, when using data, the regions will use the principles, calculation rules and assumptions as elaborated in the RES Guidelines. The regional energy strategies will provide a framework for the regional energy system in close connection with the implementation of the main energy system. The coordination of the regional implementation (RES) and national implementation (main energy system) will take place in the programme council of the National RES Programme. With regard to implementation, local and regional authorities and the national government will naturally remain responsible for the use of their own instruments.

In the development of measures in the physical environment, parties will make use of the principles resulting from the National Environmental Planning Strategy (and the relevant government position paper).

Support

The national government will make an amount of €22.5 million per year available in support of the National RES Programme for the 2019 – 2021 period, of which €5 million will be used for the organisation of the programme and the development of data infrastructure and knowledge. A total of €15 million will be available for facilitation of the thirty regions. The regions will use these funds in a targeted manner for the definition of the RES. Furthermore, €2.5 million has been reserved for the participation coalition so it can make specific contributions to the Regional Energy Strategies.

In addition to making financial resources available, the local, regional and central government authorities will ensure the maximum degree of flexibility for the energy transition, for example by removing any barriers in applicable laws and regulations. For example, an amendment of the Water Authorities Act (Wschw) will be set into motion in the near future, based on the principle that the water boards have the authority to produce more sustainable energy than they use and that they should charge the burdens and benefits of these investments to their taxes. This should ultimately allow them to become climate neutral. Another example in this regard is the focus of the national government on increasing the generation potential in the regions by including government-owned and other land in the tendering procedures for sites.

Participation

The RES is not just a strategy, but also a way of working together and a process to design plans that enjoy support in the community and allow the national target to be achieved. To this end, a welcoming process must be set up around the RES in which the participation of interest groups, businesses and residents is embedded. Involving these parties from the outset in the translation of the national aims to a regional level and clearly situating the interests in play in the deliberation and consideration process will increase support in the community.

Participation can also go toward accelerating implementation, making it possible to integrate energy transition plans into our landscape more carefully. Stakeholders and the parties designing the RES will exchange information in a prearranged process. As the implementation phase draws closer, the needs and opportunities regarding co-development and co-ownership of renewable energy projects will also be involved to ensure that the revenues benefit the region too. The RES Guidelines set out a number of recommendations and guidelines for effective implementation and organisation of RES participation, including the way in which the participation coalition should be involved. The experiences of the Green Deal for Participation and the Programme for Natural Gas-Free Districts will also be taken into account.

Centre of Expertise

Work is currently ongoing for the development of a centre of expertise for heating and a centre of expertise for renewable energy for local and regional authorities. However, the regions would stand to benefit from transparency and clarity in terms of knowledge, support and data. In order to facilitate the regions as much as possible, in a way in which the National RES Programme can still operate in a cost-effective manner, knowledge fragmentation should be avoided. To achieve this, in the first half of 2019, the integration of knowledge and expertise centres for the energy transition in the regions will be developed further. The objective will be to be able to provide independent factual knowledge, calculation rules, assumptions and clarity on laws and regulations in the field of both heating and renewable energy from one single platform.

Analysis and assessment

The regions will submit the draft RES to the Netherlands Environmental Assessment Agency for analysis via the National RES Programme. This analysis will be based on the principles, assumptions, and calculation rules that are laid down in the RES Guidelines. The analysis will provide insight into the extent to which the regional efforts add up to achievement of the national climate targets. In addition, each draft RES will be assessed in qualitative terms by the National RES Programme, including according to the four components as outlined in the section on the draft RES.

If an RES insufficiently contributes to the national target (for Electricity, for example) or if the qualitative weighting of the process could be improved, the region will be asked to increase or improve the potential of the RES, taking into account the regional context (acquired support, participation and generation potential) and the short lead time. Naturally, the principal focus of the National Programme will be to support, stimulate and allow the regions to learn from one another, to enable them to produce good Regional Energy Strategies in terms of quality and quantity.

Following the quantitative analysis by the PBL, the remaining ambitions and targets will be distributed amongst the regions themselves. If the regions cannot themselves arrive at a distribution, then the joint distribution system will be applied. This distribution system will be developed by the local and regional authorities in joint responsibility with the Ministry of Economic Affairs and Climate Policy and the Ministry of the Interior and Kingdom Relations, prior to the first submission of the draft RES. The civil society parties will provide input for the distribution system.

A binding Climate Agreement

The parties are confident that administrative and other cooperation will ensure that the targets and objectives in the RES are achieved in time. Principally, the purpose of the national and regional working structure is to prevent interventions from having to take place. The National RES Programme constitutes a platform for cooperation, comparison, learning and challenging one another.

From the perspective of the National RES Programmes, there may be various critical times at which joint administrative discussions may have to take place to reach a solution, such as in cases:

- where the Regional Energy Strategies do not add up to the national target; for Electricity, this is at least 35 TWh of large-scale renewable energy on land by 2030;
- where the RES has caused cross-region infrastructure problems;
- where a public authority in the region no longer wishes to take part in the creation of the RES or refuses to embed the RES in environmental policy;
- where an RES is not achieving implementation;
- where there are scheduling agreements from the Electricity and Built Environment Platforms of which it has become clear that these cannot be met.

The agreement is that these issues will, first of all, be resolved through administrative cooperation and consultation within the relevant region and within the relevant program. If this should not result in the desired outcome, further consultation will take place by the parties in the steering committee of the National RES Programme.

If the regions are ultimately unable to successfully come to implementation of the targets for renewable energy and heating on land, then each government party in the steering committee of the National Programme will accept its own responsibility.

This will take place through the administrative structure of the Netherlands and the instruments of the Spatial Planning Act and the Environment and Planning Act. The latter means that public authorities will be prepared to use formal legal instruments to ensure the

task is achieved. These include instruments, for example, on establishing environmental value, as well as environmental programmes or ultimately the use of the project decision instrument, first by the province and then by the national government.

It will be agreed that administrative and legal intervention will be specified further in the RES Guidelines (by Q3 of 2019), with the common goal of ensuring that the RES will have been incorporated in environmental policy for the majority of the regions by mid-2021 and that, by 2025, all requested and necessary permits for the spatial integration will have been issued so these projects may be eligible for the SDE++ scheme.

The progress with regard to drafting and translating the RES into the various regions will be monitored on an annual basis by way of a progress report that will be published each year on a fixed date as yet to be determined. If any difficulties are identified, the VNG, the IPO, the UvW and the national government will jointly take the initiative alongside other parties to produce concrete proposals to keep up the pace within the RES, due to the importance of effective and timely implementation of the RES to the realisation of the targets and the agreements on the cost reduction trajectory.

If, by mid-2021, it turns out that the spatial planning measures for renewables on land have not yet been completed in many of the regions, the impact thereof will be included in the survey regarding possible alternative instruments (other than the SDE+ scheme) in order to guarantee security of investment beyond 2025 in a cost-effective manner.

D8 Financing by the market

The financial sector (banks, insurance businesses, pension funds and asset managers) supports the energy transition envisaged by the Climate Agreement, which is crucial to meeting the objectives and targets of the Paris Agreement. In the years to come, the transition will, on the one hand, require new funding for sustainability projects in all sectors and, on the other, will face financial institutions with the challenge of reassessing existing energy portfolios in a controlled and lasting manner.

Market conformity will be the guiding principle for the financial sector in that regard. After all, the customers of banks, insurance businesses, pension funds and asset managers expect an appropriate return on their savings. Risks and returns on financing and investments must be in balance. Contributions of the government to this Climate Agreement are key in strengthening the business case of sustainability initiatives and, as such, to bringing forms of market financing for such initiatives into reach.

The Financing Task Force, in which banks, insurance businesses, pension funds, asset managers and Invest-NL are represented, has in recent months been the interlocutor of the various sector platforms, with the aim of providing insight into the opportunities to fund initiatives through the market. Given the intensive negotiations and consultations at the various platforms, the number of specific financial issues in relation to which additional funding by the market would resolve an obstacle are currently limited. However, such issues are expected to emerge now that the broad strokes of the various platforms have been negotiated definitively. The task force subsequently worked on identifying existing obstacles, which could be avoided in the future, and on drafting a financing guide on "private sector funds" that are available in the Netherlands, expressed commitment to the issuance of green government bonds and made proposals on the expansion of the green projects facility.

It is vital that "green" projects that potentially have a market-based risk/return profile should be able to find future-proof funding. In the context of the task force, financial institutions intend to set up a funding portal alongside Invest-NL. The exact shape and format of this portal will be developed further in the first quarter of 2019, which will also involve the consideration of best practices from the UK and Germany in addition to lessons learned. The objective is that, in the future, Invest-NL will function as a portal for the financing of green projects, where parties will make referrals to the right type of financial partners. Where useful, necessary and effective, Invest-NL can also carry out a directive role for projects. This will allow investments through Invest-NL to actually promote and subsequently increase the share of funding from the market.

A properly functioning market for green financing requires that private, public and semi-public financial institutions work well together. To that end, work is ongoing on the standardisation of the agreements between banks, regional development agencies, regional energy funds and Invest-NL. This will give sustainable entrepreneurs easier and quicker access to combined funds of regional development agencies, regional energy funds and banks.

The Task force requests that the Sustainable Funding Platform continue the work of the task force in the field of identifying and mitigating obstacles and barriers. The Sustainable Funding Platform is ideally positioned to bring all relevant actors together and to encourage the exchange of knowledge.

The financial sector will reinforce its support to the targets of the Climate Agreement through the following commitment.

Commitment of the financial sector

The financial sector (banks, pension funds, insurance businesses and asset managers) will take the initiative to contribute to the implementation of the Paris Agreement and the Climate Agreement. The Climate Agreement aims to reduce the emission of greenhouse gases (hereinafter simply referred to as CO₂ or carbon dioxide) by 49% by 2030 in a cost-effective way, compared to 1990 levels. The Climate Agreement affects all sectors of the Dutch economy and society and requires broad support and effective cooperation of all actors and stakeholders.

To this end, the signatories, in accordance with their role in the financial chain, responsibilities and capacities, will commit to the following actions:

- a. The parties concerned will take part in the funding of the energy transition and to this end accept an obligation to act, within the framework of the law & regulations and the risk-return objectives. Where necessary and beneficial, the funding opportunities for sustainability will be optimised, in partnership with Invest-NL and other relevant parties.
- b. The parties will take action to measure the carbon footprint of their relevant financing and investments. As of the 2020 financial year, they will report publicly in the form that is most appropriate and convenient to them. The parties will be able to choose their own methodology, but will commit to taking part in a process for mutual exchange of experiences and comparison of results, which allows steps to be taken to improve and deepen measurements. The international developments and standards in this field will be used as a basis for these steps.
- c. By 2022 at the latest, the parties will announce their plans of action, including reduction targets, for 2030, for all their relevant financing projects and investments. The parties will set out what actions they will be taking to contribute to the Paris Agreement. This may include a combination of approaches, including carbon emissions reduction targets for the portfolio where that can be achieved, engagement and funding of CO₂-reducing projects.
- d. This commitment constitutes an integral part of the Climate Agreement. The parties will convene an annual consultation with all stakeholders on the progress of the implementation of the agreements. Reports on progress will take place in the Climate Change Committee to be set up. Where the parties have identified systematic barriers that hinder the implementation of the agreements, these will be actively brought to the attention of stakeholders.

The commitment of the financial sector to the success of the crucial energy transition relates both to providing suitable market-based financing arrangements for sustainability and to the integration of climate targets, including carbon emissions reduction targets, into the sector's own strategy.

The financial sector wishes to make a substantial contribution to the sustainability projects, in order to shape the energy transition in the various sectors of the economy and society in a positive way, based on the market. Through the Financing Task Force of the Climate Agreement, the financial sector has chosen to focus on advancing cross-sector forms of financing to improve coordination of supply and demand and to identify and resolve any obstacles. Where necessary and beneficial, this function will be embedded in a portal in collaboration with Invest-NL, resulting in a further increase in the opportunities for the optimisation of cross-sector funding.

The energy transition has presented financial sector parties with the challenge of carrying out their role in a controlled and sustainable manner. Climate policy and developments in carbon-neutral technologies may lead to rapid changes. This is something parties must anticipate, in

relation to both the corresponding opportunities and the threats. For financial parties, this may be a reason to engage in dialogue with businesses and other customers, with the aim of reducing carbon dioxide emissions.

At the heart of the sector's commitment is the notion that each party will focus primarily on the activities that lie in its immediate sphere of influence, match the financial risk-return objectives and are in line with the role of the relevant party in the financial chain. In the case of asset management, for example, the relevant customers ultimately decide how their funds are invested.

The umbrella organisations will support this commitment, coordinate the efforts of their members and play an active role in the annual consultations on the progress of the implementation of the agreements.

In the implementation of this commitment, parties will try to align with national and international developments and standards in this field (as included in the annex).

The Sustainable Funding Platform will offer relevant parties a platform to share knowledge and experiences amongst themselves, with regard to both the funding of sustainability projects and measurement of the carbon footprint of their relevant funding efforts and investments. Alongside the four financial umbrella organisations (the Netherlands Bankers' Association (NVB), the Dutch Association of Insurers (VAV), the Federation of Dutch Pension Funds (Pensioenfederatie) and Dufas), the platform will organise working conferences on measuring and controlling climate impact. By exchanging best practices, frontrunners within the financial sector can help other financial parties – who may have less capacity to initiate innovations themselves due to their smaller size – to formulate ambitions that suit the institution and to develop an approach for the effective implementation of those ambitions.

D9 Key principles for the expansion of the SDE+ scheme

At present, the SDE+ scheme is the most important instrument available for the stimulation of the production of renewable energy. This subsidy instrument contains a number of features that allow the scheme to perform effectively according to international standards. These features include technology neutrality, mutual competition and multi-year security for investors.

In accordance with the Coalition Agreement, the SDE+ scheme will be expanded into the SDE++ scheme, to allow it to offer incentives for the development of other CO₂ reduction technologies in addition to renewable energy. This will in principle also apply to other greenhouse gases than carbon dioxide, such as methane. The effective elements of the SDE+ scheme will be retained, which will allow the climate targets for 2030 to be achieved in a cost-effective way.

However, this does not mean that every type of technology is eligible for the SDE++ scheme. It may be the case that a technology requires no stimulation through subsidies, given that it can already be operated in a cost-effective way, or that another instrument may be more suitable to providing access to the technology (including pricing, standards or obligations). Efficiency and the scarcity of the subsidy funds have resulted in subsidy, in principle, being a last resort measure.

The target of 49% in carbon dioxide emissions reduction by 2030 and cost effectiveness in achieving that goal are the foundation of the SDE++ scheme. The SDE++ scheme therefore focuses on emissions reduction on Dutch territory. The SDE++ scheme will encourage the roll-out of mature and relatively large-scale CO₂ reduction technologies by covering the operating shortfall of these technologies by way of an operating subsidy.

The focus on CO₂ reduction is achieved by having applicants compete with one another based on the required amount of subsidy per tonne of carbon dioxide avoided. Conversion factors will be used for the various technologies in order to determine the CO₂ reduction level. For example, for renewable electricity, it is assumed that an efficient modern gas-fired power station will be replaced.

Based on the aims of the various sectors, an indicative allocation has been drawn up for the budget of the SDE++ scheme by 2030, which reveals what funds are expected to be required to achieve these ambitions. This allocation is shown in the table below.

Indicative allocation of SDE++ funds by 2030

Renewable electricity	€200 million
Renewable heating and green gas	€135 million
Renewable heating, small-scale (ISDE)	€100 million
Biofuels	A total of approximately €200 million will become available, spread across a number of years, for the stimulation of the production of advanced sustainable biofuels for transport through the broadened SDE+ scheme in conjunction with national standards. Joint efforts are underway on a proposal that aligns with the requirements of the SDE++ scheme (including cost-effective CO ₂ reduction).
CO ₂ reduction in the industry	€550 million

€985 million

As a result of mutual competition, it may be the case that the actual subsidy budget awarded per sector year-on-year may deviate from the indicative breakdown as agreed upon. This is because annual allocation depends on the projects submitted. In addition, it would be undesirable if the cheapest technique (such as CCS) would win each time, thus removing the other technologies from consideration.

In order to prevent such an imbalance from occurring in the long term, the desirability of caps for certain technologies or categories of technologies will be reviewed. Including caps will have an impact on the operation of the instrument, specifically with regard to cost effectiveness. A cap would allow restrictions to be placed on a relatively cheap technology, resulting in other options being considered. This would, however, result in lower CO₂ reduction per euro of subsidy. A cap would allow for adjustments to ensure that multi-year budgets do not hugely deviate from the indicative allocation, taking the effects on cost effectiveness into account. The indicative allocation will be the point of departure for the allocation of the available budget between the technologies. This should ensure that the ambitions of the various sectors are not interfered with and that, simultaneously, the instrument will continue to stimulate cost-effective technologies. This is to prevent an imbalance from emerging between the ambitions of the Climate Agreement and the realisation of those ambitions leading up to 2030.

The scheme will be developed further in 2019. In principle, the various technologies and sectors compete on the basis of cost effectiveness. The following exceptions apply, which will be specified further in the future:

1. An (indicative) cap for CCS of 7.2 Mt as part of the reduction target of 14.3 Mt for industry by 2030 and a cap of 3 Mt as part of the reduction target of 20.2 Mt for electricity, taking into account a limited horizon. CCS projects that realise negative emissions and CCU projects do not fall under the aforementioned cap.
2. The aim for renewable electricity is to realise 35 TWh of subsidy-eligible production from onshore wind energy and solar power (> 15kW).

3. The cash budget for carbon reduction technologies in industry, not being renewable energy, will be capped at €550 million in 2030.

The first two points will be evaluated in 2023 and 2021 respectively. In the case of renewable electricity, this evaluation will coincide with a decision on the potential scaling up of renewable electricity due to additional electricity demand (see also the agreement under C5.10, part e).

Although there is technology neutrality, the scheme will use various technology categories with different maximum subsidy amounts and a maximum duration of the subsidy decision, as is currently the case. These maximum subsidy amounts will be adjusted for the actual relevant market price, such as the carbon price (the carbon price in the ETS or the average electricity price). This will provide investors with the multi-year security they require.

The support for these technologies will have to be temporary, with a view to integration into the market without subsidy. Non-marketable technologies will be stimulated through other ways, via innovation policy and the pilots and demonstrations, including those under the Climate Budget. It is clear and crucial that innovations, pilot projects and demonstrations and the roll-out of technologies can also be successful in conjunction with one another (three-track policy). For that reason, it will be determined on an annual basis what technologies or categories of technologies can be included in the SDE++ scheme. Consultations will take place with the sector to this end and a market consultation will be held.

Crucial prerequisites to the roll-out of CO₂ technologies, for example, such as the presence of energy and other infrastructure or the prevention of undesirable side-effects, will also be guaranteed through the applicable laws and regulations or through other instruments. The SDE++ scheme will come into force as of 2020. From that year onwards, subsidies will also be awarded for technologies that are not covered by the current SDE+ scheme. Until that time, the SDE+ scheme will remain focused on the stimulation of renewable energy and contribute to CO₂ reduction in this way.

The surcharge for sustainable energy, which constitutes the source of the SDE+ funds, will be amended to be able to stimulate CO₂ reduction technologies in addition to renewable energy. Resources for the SDE+ scheme will increase to €3.3 billion per year by 2030, of which approximately €2.3 billion will be required for the expenditure for the SDE+ decisions (up to 2019) and approximately €1 billion for the decisions to be issued under the SDE++ scheme.

Technologies

Below is a summary of what technologies will qualify for the SDE++ scheme for the time being.

Technologies that are included in the request for advice to the PBL for the SDE++ 2020

- Current SDE+ categories (solar, wind, biomass)
- Expansion of solar thermal energy (greenhouse horticulture)
- Expansion of geothermal energy (shallow geothermal energy and applications for district heating and greenhouse horticulture)
- Aquathermal energy
- Composting heat
- Thermal storage greenhouse horticulture
- Electrification (electric boiler, heat pump)
- Use of residual heat (industry and data centres)
- CCS (incl. pre-combustion)
- Hydrogen production via electrolysis

Technologies that will be investigated further

- Advanced renewable fuels for transport
- Recycling
- Renewable raw materials (biobased production)
- CCU
- Electrification (other than heating or hydrogen production) and process efficiency
- Methane oxidation from manure

The analysis of the draft Climate Agreement by the PBL has concluded that there would be room, within the available funds and with the expansion of the SDE++ scheme for the application of CC(U)S for the residual gases released in the production of steel to be made eligible for subsidy. In the context of the structure of the SDE++ scheme, the stimulation of this option will be elaborated. In relation to the support of any projects, the following will apply:

- The resulting amount of CCS eligible for subsidy will be capped at 3 Mt per year.
- The subsidy will not be part of the indicative €550 million available for the sustainability improvement of industry in 2030.

With regard to the technologies in the right-hand column of the table above, further research will be required before they can be included in the SDE++ scheme. This relates to advanced renewable fuels (production of advanced biofuels) for transport, efficiency options (energy savings, including LED lighting), recycling, and renewable raw materials (biobased production) and methane oxidation from outdoor storage of manure.

In order to avoid insufficient funds being available for the technologies for which further research is yet to be carried out, the opening budget for the SDE++ scheme in 2020 will be determined in such a way that not all available space will be obligatory in 2030. In this way, each of the technologies will have a chance to obtain a budget through the SDE+ scheme, even if they are only included in the SDE+ scheme later, and will be able to contribute to the targets of sectors and to achieving the carbon reduction target of 49% by 2030.

D10 The exemplary role of the national government

Through its own actions, the national government wishes to contribute to making the Netherlands more sustainable. By applying sustainable solutions in its own business operations and purchasing processes, and by supporting and encouraging other public authorities to do this, government organisations wish to contribute to the sustainable transition the Netherlands is undergoing.

The governmental parties have agreed the following:

- a. The government will work toward achieving climate-neutral business operations by 2030 in contribution to the Climate Agreement.
- b. The national government will carefully consider the sustainability of its own vehicle fleet and mobility (including the Governmental Shipping Company), reduction of its own energy consumption and the sustainability of its property, sustainable procurement for ground, road and water works, climate-friendly consumption in catering and sustainable IT.
- c. By 2030, the office portfolio of the government will hold environmental label A on average.
- d. By 2030, the gas consumption of the government will have decreased by 30% and 50% of all gas consumption will come from renewable sources.
- e. By 2030, the electricity that is used by the national government will be 100% renewable and the energy consumption of offices will have been reduced by 50% compared to 2008 levels.
- f. The national government will halve the emissions of its business mobility by 50% by 2030. In addition, the government has set itself the goal that, by 2020, 20% of its vehicle fleet will consist of zero-emissions vehicles, and that its entire fleet will be zero emissions by 2028. In order to realise these objectives, the national government is undertaking several steps, including launching a project aimed at car sharing, taking the initiative in the development of logistics hubs in locations where there is a concentration of government-owned property and adjusting personnel rules to stimulate sustainable mobility.
- g. Where possible, the government will make any land it owns available to achieving the climate target, particularly with regard to renewable energy and for carbon capture.

In respect of the circular use of feedstocks, the governmental parties have agreed the following:

- h. The government will contribute to the realisation of the climate targets of various sectors by way of circular use of feedstocks.
- i. The national government will encourage the circular use of raw materials through circular procurement and substitution of (non-renewable by renewable) raw materials and innovative production methods.
- j. Through its tenders, the government will also focus on sustainability and innovations in ground, road and water works, given that the government, together with other public authorities, plays a significant role on the market (100% of government procurement).
- k. The national government will express the wish for 10 of the procurement categories (such as clothing, office design and IT hardware) for the government to be circular by 2023.
- l. By 2030, the governmental office portfolio will be managed in a circular manner.
- m. The national government will broaden pilot projects (for example on shadow carbon pricing) and will develop them moving forward.

With regard to the organisation of the government, the parties have agreed the following:

- n. A strategic procurement agenda will be drawn up in consultation with the Ministries for all governmental procurement.

- o. The Ministries will be asked to translate the cross-governmental transition targets into objectives for the individual ministries/implementing organisational divisions.

In order to highlight the exemplary role of the national government and to persuade others to follow suit, the governmental parties have agreed the following:

- p. The sustainability of the government business operations and procurement is not only aimed at reducing the government's carbon footprint.
- q. The national government will also be supporting other public authorities to make their business operations and procurement processes more sustainable. In this way, the government will focus its combined procurement power of 73 billion euros on making a contribution to the transitions in society. This will be carried out by the government through professionalisation of procurement, knowledge dissemination on Socially Responsible Procurement and Commissioning through the SRP platform and monitoring.
- r. The national government will support other public authorities to make their procurement processes climate-neutral and circular. The national government will take the initiative to establish the eight most impactful procurement categories/product groups of CO₂ reduction objectives together with other public authorities (including, in any case, ground, road and water works, energy and transport). This is aimed at achieving at least 1 Mt in CO₂ reduction per year as of 2021.
- s. In 2018 and 2019, the national government provided a stimulus to circular and climate-neutral procurement under the Climate Budget, through national learning networks for, among others, construction, ICT, energy, office furniture, textiles and sustainable catering, through support of circular and climate-neutral procurement pilot projects by authorities and via dissemination of knowledge. The national government will be pursuing this policy and will intensify it as part of the Climate Agreement.
- t. The national government will actively share examples from practice, experiences with formulating and monitoring targets and procurement power and knowledge with other public authorities via a transition platform.
- u. This progress will be reported as much as possible through the SRP self-assessment tool.