



Netherlands Enterprise Agency

Accelerate the transition to sustainable buildings with energy performance contracts

5th White Paper on Energy performance contracts and ESCos



*>> Sustainable. Agricultural.
Innovative. International.*

Het nieuwe
theater & concert
seizoen begint weer!

Table of contents

Accelerate the greening of buildings with energy performance contracts	3
“The greatest energy saving per euro invested is realised through an energy performance contract”	4
The Enschede Municipality is reaping the rewards of outsourcing daily maintenance	7
How Nijmegen Municipality is greening its real estate: seven critical success factors	10
Leiden University is greening over 50 buildings on the way to becoming a sustainable education organisation	13
Integrated Management Contract for the Tax and Customs Administration buildings in Apeldoorn	16
One hundred and fifty municipal buildings in Eindhoven have to be fully sustainable in 2027	21
Can all-inclusive leasing accelerate the energy transition?	24
Energy performance contracts as a solution for schools	26
Accelerate the transition to sustainable buildings by outsourcing energy performance contracts	28

Text: Wessel Simons, Irma Thijssen and Selina Roskam

Accelerate the greening of buildings with energy performance contracts

Saving energy in buildings will contribute significantly to our energy and climate targets. There will need to be an enormous acceleration in greening to achieve this goal. Energy performance contracts (EPCs) can play an effective role in this process. In recent years, we have seen a growth in the number and size of these EPCs. Within Europe, the Netherlands is seen as an emerging market.

GuarantEE

The Netherlands Enterprise Agency (Rijksdienst voor Ondernemend Nederland, RVO.nl) supports the greening of real estate, the implementing of energy legislation, working with EPCs and making use of EPC Facilitators from the European guarantEE project, a collaboration of 14 European partners co-financed by the European Commission through Horizon 2020. Further information: www.rvo.nl/esco, www.rvo.nl/epc-facilitators and <http://guarantee-project.eu>.

EPC PreCheck

RVO.nl developed the free EPC PreCheck online tool for the guarantEE project in 2017. This tool allows building owners to quickly see, whether outsourcing an EPC is an attractive option for their situation. The tool has been translated and is available in 14 languages: <https://www.epccheck.eu>.



portfolio level. These examples are now available as the fifth White Paper on energy performance contracts.

Here, you will find the following new insights and practical cases:

- Interview with Irma Thijssen and Selina Roskam
- The Enschede Municipality approach
- The Nijmegen Municipality approach
- The Leiden University approach
- The Dutch Central Government Real Estate Agency approach to the Dutch Tax and Customs Administration buildings, in three parts
- The Eindhoven Municipality approach
- All-inclusive leasing: can this triple-win model accelerate energy transition?
- EPCs as a solution for schools
- The role of EPCs and EPC Facilitators in the energy transition

We'd like to thank Joe Hayden of Codema for co-reading the English texts.

We hope that you will find this read inspirational and enjoyable.

Irma Thijssen and Selina Roskam, RVO.nl



Interview with Irma Thijssen and Selina Roskam

“The greatest energy saving per euro invested is realised through an energy performance contract”

By signing the Paris Climate Agreement, the Netherlands has committed to halving its CO₂ emissions in 2030. One of the main agreements entails additional energy savings in the urban environment. The Dutch government wants to make significant progress with that greening through obligations such as EED Audits, the Environmental Management Act (Wet milieubeheer) and the C Energy Label obligation for offices. But not only sticks are needed; carrots in the form of greater European cooperation should also get greening moving.

The Netherlands Enterprise Agency, as part of the Dutch government, is involved in the European guarantee collaboration project. Irma Thijssen and Selina Roskam, senior consultants Sustainable building and the urban environment, explain what this project involves and how energy performance contracts (EPCs) benefit building owners.

Energy performance contract

Traditionally, the management and maintenance of buildings is contracted to various parties. With an Energy Performance Contract (EPC), a single party (often an Energy Service Company or ESCo) is responsible for all phases of maintenance. The contracting parties agree specific energy savings and other KPIs (key performance indicators) that must be achieved over a period of 10 to 20 years. In turn, the client pays the ESCO through the energy budget savings.

The guarantEE project aims to increase the use of these EPCs in a European context. Within this project, the role of RVO includes:

- collecting best practices;
- developing the EPC PreCheck, a tool to give building owners an indication of whether outsourcing maintenance and energy efficiency is feasible;
- contributing to a national and European EPC Facilitators network that helps the market to implement EPCs.

EPC Facilitators

As market facilitators, Thijssen and Roskam play a pivotal role between the clients, implementing parties and the EPC Facilitators. The latter category are independent consultants who use their technical, financial and energy expertise to help clients outsource their real estate management through an EPC. There are currently some fifteen EPC Facilitators active in the Netherlands.

According to Irma Thijssen, the guarantEE project is highly relevant: “In Europe, and gradually in the Netherlands as well, we are seeing that EPCs can achieve good results. A long-term approach to maintenance through an EPC has various benefits for both the owner and the users, however as a result of the economy picking up, we observe that the market now appears to be slipping back to its traditional ways. In other words, real estate management and maintenance is not resolved integrally but incidentally. In addition, clients have cold feet when it comes to investment for long-term maintenance. We believe that this fear is usually unfounded. Investment, certainly initial investment, costs more in terms of preparation time as you need to decide your longer-term ambitions and envisaged performances in advance. This approach calls for a different role, as director instead of implementer, and effective cooperation. However, if you go ahead, the desired performances on energy and indoor climate are assured for the longer term, while maintenance and energy costs are fixed. You can repeat this strategy the second time around, making it much quicker. It pays to gain in-depth knowledge of this process. As we are currently involved in the energy transition, we believe that outsourcing through EPCs can contribute to the required acceleration and upscaling.”

Her colleague Selina Rokam added: “The means of the EPC must not become an end in itself. The aim is to achieve more sustainable energy and energy savings in order to meet European obligations. Experiences within Europe have demonstrated that the greatest energy saving per euro invested is realised through an EPC.”

Potential

The guarantEE project has shown that other European countries such as Germany and Austria have become front runners in implementing EPCs. In the Netherlands, we mainly have smaller EPCs with relatively high project costs. In countries such as Germany, Austria, the Czech Republic, Norway and France, contracts are being concluded for hundreds to a thousand buildings or even more. According to Thijssen and Roskam, this figure should be put into perspective. Roskam: “We note that the number of EPCs in the Netherlands is growing rapidly, but they are not yet being shouted from the rooftops. Energy is really high on the agenda for both the government and the business community, as well as the real estate sector. This priority just needs to translate into more EPCs and more knowledge sharing. For instance, we believe that contracts should be more standardised to reduce the preparation costs. As RVO.nl, we facilitate clients through the EPC PreCheck, so it is clear within minutes whether an EPC is suitable for their project and organisation.”

The advantages of an energy performance contract

- Cost savings on energy and maintenance
- Guarantee of installation performance
- CO₂ reduction
- Improved comfort and indoor environment
- External technical expertise and capacity
- The anticipated energy savings are used as investment capacity for energy-saving measures

End to “makeshift solutions”

Opting for an EPC means the end of what is known as “makeshift”. Thijssen: “Many building owners still work with one-year maintenance contracts that involve a single type of installation. For example, some school boards do have the central heating boilers maintained but forget to include the ventilation system. Bundling could be a solution: bundling maintenance contracts for central heating and ventilation, for multiple schools over multiple years. This process lets you adopt an integrated approach, invest more intelligently and borrow money more easily.

A true EPC also includes a bonus-malus arrangement, so the market parties also have an interest in good results.”

Roskam: “It still appears that 70% of the installations are not properly adjusted, which leads to 30% energy waste on average. Integrated management and maintenance leads to energy savings but also improves the air quality in the office, hospital or school building.”

Further information:

- The RVO.nl website on performance contracts: <https://www.rvo.nl/esco>
- The guarantEE website: <http://guarantee-project.eu/nl/>
- EPC PreCheck is available online for free at <https://epccheck.eu/nl/index>
- You can find information about EPC Facilitators at www.qbis.nl



Hundreds of municipal buildings outsourced through two ten-year performance contracts

The Enschede Municipality is reaping the rewards of outsourcing daily maintenance

Nihad Mesevic, Team Leader Real Estate Management & Technology Projects at Vastgoedbedrijf Enschede, coordinated the tendering project. What tips does he have for other municipalities? Mesevic: "Outsource the daily maintenance for a longer period. This approach puts the risk on the market and offers the municipality a purchasing advantage."

The National Music Quarter, situated at the heart of Enschede city centre, was the reason behind the municipality taking steps. With a gross floor area of over 20,000 square metres, the building houses various stages for theatre and music, rehearsal rooms, music courses, dance training and many courses.

Mesevic explains: "It was a pain in the neck for us. Since delivery in 2008, we have suffered a lot of breakdowns. When we took stock in 2011, we had dissatisfied users, the costs were far too high and there were at least 64 external parties involved in the building. In addition, the municipality did not have sufficient capacity to resolve the problems."

Cheaper maintenance

The municipality chose to outsource the technical management, preventive and corrective maintenance through what is known as a Most Economically Advantageous Tender (MEAT). After an intensive, European restricted tendering procedure, Strukton WorkspHERE from Deventer won the twenty-year performance contract for the Music Quarter. Mesevic: "Our experience of outsourcing has been good. The amounts offered were lower in comparison with a traditional case-by-case invitation or for a short period."

What are the results in 2017? Energy consumption in the Music Quarter has fallen by 16 per cent. In total, the tenants of the National Music Quarter are saving around 80,000 euros annually on their energy. The number of breakdowns has fallen by 65 per cent compared with 2011, which has brought about significant savings in the breakdowns budget. Mesevic: "Support among the tenants has grown enormously. For example, an energy team was set up with the users in 2015 to increase energy awareness."

National Music Quarter objectives

The Music Quarter building is a first step. Enschede wants to have energy savings of 20 per cent in 2031 compared with the baseline year 2011. In addition, 30 per cent of the energy must be from renewable sources. The following measures were implemented in the building during the period 2012 to 2016:

- intelligent and better adjustment of the climate control systems;
- optimisation of the Building Management System;
- installation of PV panels;
- research into the use of LED lighting and more efficient transport pumps.



Expansion of outsourcing

The municipality is so happy with the new way of working that it decided to put all the technical management as well as the preventive and corrective maintenance out to the market. This portfolio involves a hundred municipal and official buildings in total.

Strukton WorkspHERE and Homij won this contract through a European restricted procedure. The first party is handling the social locations and the latter the official buildings.

This contract is for a ten-year term with the option to renew twice for a period of five years. Enschede has set a number of conditions:

- energy savings of three per cent per year;
- a reduction in breakdowns of five percent per year compared with 2015;
- a minimum score of seven on customer satisfaction;
- all the buildings must satisfy the requirements in the Environmental Management Act (Wet milieubeheer) and the European Energy Efficiency Directive (EED);

- the contract parties are obliged to come up with proactive proposals for improvement;
- for each intervention, the contract parties must substantiate the advantages and disadvantages to the key performance indicators (KPIs) in the contract.
- In addition to technical management, preventive and corrective maintenance, the contract parties are also responsible for identifying the consequences of changes in legislation.

The total value of the contract is approximately 400,000 euros per year. Each of the parties is implementing the contract in a different way. Homij is using the integrated RgdBoei method (Government Buildings Agency fire, maintenance, energy and sustainability method) and Strukton is using a Sustainable Maintenance Plan. These contract parties are only paid after they have satisfied the key performance indicators (KPIs) in the contract. The Enschede Municipality does retain responsibility for replacement maintenance and changes.

Yellow and red cards

What happens if the contract parties do not perform satisfactorily and fail to meet the agreed KPIs?

Mesevic: “We use yellow or red cards and have third parties conduct random testing. After one red card or three yellow cards, the party loses the contract. Suppose that a report is not submitted on time. This failure results in a warning. If the report is not received by the new deadline, a yellow card is awarded. We have had to issue a single yellow card in the initial project at the National Music Quarter. This process resulted in the contract party having to change a large part of its project organisation. This type of measure has a sobering effect, as no one wants to lose a twenty-year contract.”

More efficient

Another result of the tendering is that the number of staff hours at the Music Quarter and the municipality has fallen sharply. Mesevic: “Our own organisation is more efficient and more compact. As an organisation, we entered into a dialogue about the transition with the staff a few years ago. This dialogue was an important precondition for starting the project in a transparent and constructive manner.”

Ten recommendations from the Enschede Municipality

1. Base the contract on a functionally directed real estate policy: the user’s primary business processes are leading.
2. Give the maintaining party at least a year, as it has to get used to the buildings, the users and the processes.
3. Occasionally bring forward investment, think from the total cost of ownership (TCO) perspective.
4. Identify all risks. Make sure that there is an option to terminate the contract at all times.
5. Prepare your organisation for the directive role in time – at least one year before the outsourcing comes into effect – and provide it with transparent information on the consequences for your own organisation.
6. Ensure that you enter into a collaboration with each other for a longer period.
7. Take an integrated approach to the building, ensure that the different aspects of management and maintenance are merged.
8. Be sure to create opportunities for local parties.
9. Involve the purchasing department in the process as early as possible.
10. Ensure that energy savings which are achieved lead to a future investment budget. As users are the ones who determine consumption, they continue to pay the energy bill.

How Nijmegen Municipality is greening its real estate: seven critical success factors

The municipality has already greened at least eighty municipal buildings since 2012. We talked to Erik Cobussen and Jan Navis, buildings manager and project leader respectively at the Real Estate, Sports Services and Accommodation department of Nijmegen Municipality. What do they believe to be the critical success factors for their greening policy? Cobussen: "Skip the comprehensive portfolio analysis and just start with greening."

1 Establish a revolving fund

Cobussen: "In 2012, the Municipality set up a revolving sustainability fund. Every year, the municipality reserves the energy savings from its own operations to invest an average of two million euros in sustainability. The fund is filled with the pre-calculated savings on our energy bill for each property. In this way, the fund covers the capital costs (rent and amortisation) of our sustainability investments. This working method makes the investments budget-neutral. The sustainability fund is separate from the maintenance fund. To date, eighty to one hundred municipal buildings have been greened."

2 Create support

Cobussen: "Naturally, there were internal challenges to the introduction of the fund. Each department has its own energy budget which allows it to pay the energy bills of our users. We, as the real estate department, implemented the improvements but other departments bore the costs. This situation was unsatisfactory. The fund has resolved that internal split incentive. Two of the councillors on the Municipal Executive strongly supported the fund. This support finally led to more support from the civil service. The Municipal Authority said: "It's a case of payout and clawback, so it could be settled internally. Now, Real Estate suggests improvements to the department concerned and the department contributes to the greening of the municipal real estate in this way. The hours that we put into greening are included in the investments."

3 Start

Cobussen: "Our advice: just start. Skip the comprehensive portfolio analysis. It is a good idea to start with the easy pickings. Because we started there, the calculated savings flowed directly back into the fund."

Navis: "We started by replacing the fluorescent lighting in a car park. The investment in LED lighting is recouped in between one and six years, depending on the building. Improvements to existing climate control systems, wall, roof and floor insulation or sealing gaps can provide immediate returns."

4 Combine greening with maintenance

Navis: "Since 2008, regular maintenance has been carried out by Royal HaskoningDHV. Following a tendering process, AAFM has been our new maintenance party since 2016.

With new measures, we are always looking for natural replacement opportunities. When the roof cladding is replaced, insulation is applied, for instance. Every year, we ask ourselves the question: which components of each real estate property can we green this year and what can we do in addition? Think of solar panels or a weather forecasting system, which allows us to heat and cool our city hall more intelligently. It is important to have excellent communication on projects with your maintenance party."

5 Experiment

Navis: "Nijmegen allocates time and money to experiment with measures as well as new, innovative technologies. Our city hall has been greened from energy label F to energy label C using various technologies. This improvement is the result of diverse measures such as triple glazing, climate control systems (heat recovery, heat exchangers), wall and roof insulation, and solar panels. Because we pay relatively little for our electricity as a bulk consumer, the return on the solar panels is relatively low and the cost recovery period is more than 20 years. The approximately 500 solar panels generate around 100,000 kilowatt hours annually."



Op het dak van dit pand liggen 486 zonnepanelen. Goed voor 100.000 kWh stroom per jaar. Dit is gelijk aan het stroomverbruik van 33 huishoudens en geeft een besparing van 37 ton CO₂ uitstoot.

SOLESTA
Zonnepanelen

Royal HaskoningDHV
Enhancing Society Together

Nijmegen

Cobussen: “Nijmegen wants to set a good example for its residents in this way. You cannot just tell everyone to buy solar panels themselves and not do anything yourself. Pragmatism is pivotal here. We are currently employing a strategic sustainability policy and examine the options per building.”

Navis: “Our Municipal Executive is progressive in this regard. One of the mottoes of the 2014–2018 coalition agreement is: Nijmegen as a zero-energy, sustainable city. And the title of the 2010–2014 coalition agreement was ‘Working towards a sustainable future’”.

6. Ensure safeguarding

Navis: “Properly safeguard all information in your own system. Keep a close eye on all measures and new data. Ensure that everything larger than 250 square metres which you own is labelled in accordance with the law. Ideally, someone will be assigned to work on the information provision.”

Cobussen: “This safeguarding ties in with the advice to keep sufficient knowledge and expertise in-house. What helps is a dashboard showing all primary information. What measures have been implemented? What did they cost? What opportunities still exist? This process also helps in your dialogues with an external maintenance party who knows your building inside-out.”

7. Keep innovating

Navis: “After four years, we noticed that it was time to expand our horizons. There came a need for a more fundamental vision on strategic real estate. That vision is one of the joint objectives with our maintenance partner for this year and the next objective is a zero-energy real estate portfolio.”

Cobussen: “What is new are account managers in our department who, on behalf of the municipality, are the linchpin for a building and for communication with the users. We have various users with many diverse wishes. Account management must help to feed the strategic real estate cockpit with information. Where and when are you going to invest, what are you going to acquire or divest? The sustainability potential and therefore the future-proofing of a building also play an important role in this process.”

Navis: “Users are increasingly in line with the municipalities. We ran a pilot to examine how we can stimulate energy-aware behaviour. For short leases with a relatively high energy consumption (radiant heaters with a photo shoot, for instance), our approach could be to ask for more rent. A sustainability annex to the lease contract is one of the options for the future.”

Nijmegen Municipality key figures

- Approximately 500 municipal real estate properties
- Sustainability measures have been implemented in 80 to 100 buildings since 2012
- A total of 200 different sustainability measures have been implemented
- The annual leasing income is 11 million euros
- Each year, 4.7 million euros is spent on maintenance

The advantages

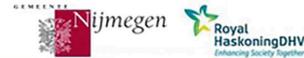
- Greened real estate
- Improved energy labels/GPR scores
- Exemplary role towards residents
- Quality and comfort improvements
- No additional call on budget for funds
- Reduction in CO₂ emissions

Sustainability figures

- The total investment to date is 6 million euros
- Every year, 480,000 euros is saved on energy costs compared to 2012
- CO₂ emissions have been reduced by 2,000 tonnes (235 households)

Verduurzaming 2016 - 2030

Dashboard verduurzaming vastgoedportefeuille gemeente Nijmegen



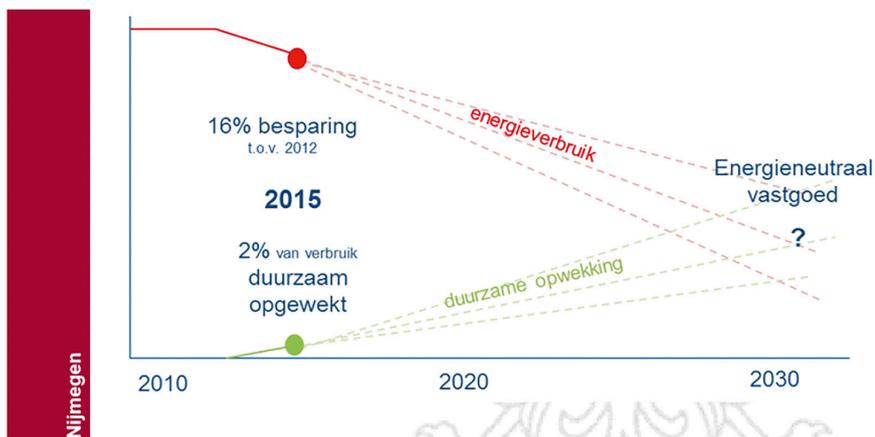
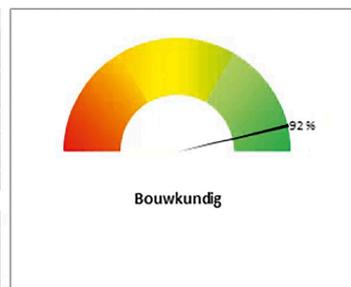
Kies adres uit pulldown menu ↓

Adres:	Korte Nieuwstraat 6
Type gebouw	Stadhuis
Bouwjaar	1982
Oppervlakt	14.920 m2 BVO
Energie label	C (in 2015)

Energieverbruik		per m2 BVO	Benchmark	
Gasverbruik in 2012	251.570 m3	16,9 m3/m2	18,0 m3/m2	94%
Gasverbruik in 2015	0 m3	0,0 m3/m2	18,0 m3/m2	0%
Elektraverbruik in 2012	2.001.023 kWh	134 kWh/m2	140 kWh/m2	96%
Elektraverbruik in 2015	0 kWh	0 kWh/m2	140 kWh/m2	0%

Bouwkundige status		Toelichting
Gevel:	Geïsoleerd	Tijdens bouw 7cm wol
Glas:	HR+++	2015: Triple glas in alle houten en aluminium
Panelen	Geïsoleerd	2015: Houten klepramen en
Vloer	Geïsoleerd	2008: vloer boven parkeergarage met PUR
Dak	Geïsoleerd	2015: Alle daken betapor

Bouwkundige verduurzamingkansen:
0





Leiden University is greening over 50 buildings on the way to becoming a sustainable education organisation

Leiden University wants to showcase itself as a sustainable organisation. This ambition includes reducing its CO₂ footprint by 50%. Sustainable real estate maintenance plays an important role in this process. We talked to Project Leader Installation Technology Léon de Roode together with Energy and Sustainability Coordinator Jeroen van Waijenberg about the practical application of sustainable maintenance and management.

You recently concluded a new maintenance contract with Van Dorp Installaties. What does the contract involve?

De Roode: “Van Dorp Installaties is responsible for maintaining the mechanical engineering installations for at least five years. In addition, there are two consecutive options to renew for two years. Heijmans will maintain the electrical installations. We are further fleshing out the details of the performance agreements.

The contract parties are asked to come up with improvement proposals in order to have the existing installations function as well as possible. They are working in accordance with sustainable management and maintenance principles.

The questions that keep arising are: what is the building used for, what are the usage times and areas, what functions exist, what aspects of building physics, what materials and what systems are present, and how can these elements be shaped better and more intelligently? In this way, the maintenance party focuses ever more closely on the details.”

What energy savings are you pursuing?

De Roode: “An energy saving of 3% per year is the minimum. We are aiming at a saving of 10% over the coming three years. There are enough easy pickings to have the installations run optimally. In our experience, there is something to be found in every system. So a 10% saving is quite feasible with effective management.”

Why has maintenance been outsourced?

De Roode: “The statutory requirements for the installations are becoming increasingly complicated. Having market parties commit to you for a longer period gives them a greater stimulus to contribute ideas on energy saving. They will have to come up with their own innovative proposals; for example, energy savings in the form of an Energy Services Company (ESCO). The market parties fund the renovation and compensate the investment through the energy savings achieved. Every little extra in energy savings is a bonus.”

What work has been outsourced and what do you do in-house?

De Roode: “We have drawn the line between implementation and management. Our own people check, monitor, alert, and so on. The maintaining parties act as their extension in the implementation. We consciously choose to retain the control function over our installations, the statutory requirements set for them and the monitoring of this situation. Our technical managers are responsible for management and deal with breakdowns. In future, the maintaining party will be responsible for dealing with breakdowns in buildings with a ‘higher maintenance level’. That approach should provide sufficient stimuli to bring maintenance up to the best possible level, resulting in fewer breakdowns.”

What role does the user's energy awareness play?

Waijenberg: "Since September 2016, Leiden University has had its own Leiden University Green Office. The Green Office works on sustainability projects, forms a community of students and staff who specifically want to work on sustainability, and stimulates sustainability teaching and research."

De Roode: "We allow the maintenance party freedom of how they want to make the user more energy-conscious. They profit from a lower energy consumption when they can achieve high returns from a relatively low investment by making users aware. Peak period consumption can have a technical cause or a user cause. In the latter case, our technical manager can discuss this situation with them to improve the behaviour."

What role does monitoring performance play?

De Roode: "The building management system is the steering tool for monitoring performance and for keeping the systems at a certain level of quality. The basic principle is user-oriented maintenance with the underlying aim of having the installations function more energy-efficiently. We chart the operating hours for the installations and the maintenance that is required. While we now have insight at the property level, we would like to have insight at the installation level. Using CO₂ measurements tells us how the room is occupied and what the usage is. So, by asking the user, we can work in a more question-driven fashion."

Is there a penalty clause when the contracting party does not function satisfactorily?

De Roode: "We have included a clause on this situation in the contract, but we consciously refrain from using the terms yellow or red cards. The reason is that we see this terminology as a negative starting point. Although poor behaviour may be overcome with penalties, you actually want to stimulate good behaviour. If we are not happy with anything, we discuss it. A party does start looking in the mirror if we express our dissatisfaction. You achieve more by working together as partners."

What are the consequences of an ESCo on your organisation?

De Roode: "In practice, a performance contract leads to more management hours for the client. In fact, we need more people in order to monitor the performances of all buildings effectively.

Investment in new knowledge is also required to keep your knowledge up to date. But we are also being pulled in two directions. As our core business is education and research, we are not an installation company or similar. So, we cannot keep on doing everything ourselves. We conduct random checks to keep a grip on the process and the quality. In addition, we hold a weekly practical working meeting with the contractors. The necessary evaluation opportunities occur at other times."

The Netherlands wants to stop using natural gas after 2050. How are you responding to this ambition as a bulk consumer?

Waijenberg: "We are participating in the long-term energy efficiency agreements (Meerjarenafspraken energie-efficiëntie, MJA3) and we draw up an Energy Efficiency Plan every four years. The switch to renewable is playing a major role in this process. We use the total cost of ownership (TCO) method to investigate whether we can use seasonal thermal storage in the Faculty of Humanities buildings. Here, we have a choice of a large system for multiple buildings or smaller Aquifer Thermal Energy Storage systems for separate buildings."

De Roode: "Heating without gas is the future, but we are dependent on the building physics. I estimate that only 10% of our buildings are currently suitable for heating without a gas connection."

You were one of the first to have an Aquifer Thermal Energy Storage in the Netherlands. Did you learn a lot from it?

De Roode: "I think that half of the consultants in the Netherlands have learned from our ATES (he laughs). Although ATES works perfectly as a technology, the management of the system requires a lot of time and attention. As soon as we lose concentration, the system becomes unbalanced within a year. We mostly learnt how not to do things. That lesson was a costly one, in a literal sense. Continuous management is still needed. After the last very mild winter and relatively warm summer, the system has become unbalanced again."

We are already planning developments to adjust it even more intelligently.”

Finally, do you have any tips on EPCs for other owners?

De Roode: “Get an independent opinion on the content of the contract. For example, we had the opinions of our technical managers play a major role in the content of the contract. In other words, take control into your own hands and keep it there. Nothing happens here without one of our own employees having a say in it. Market parties can earn money from us. They are welcome to do so, but it must remain within reasonable bounds. We are conscious that it is public money that is being spent.”

Leiden University figures

- Approx. 55 premises
- Some 35 staff are employed in the real estate department, including 7 technical managers
- The total gross floor area is 455,000 square metres
- Total accommodation costs: € 41.4 million (2015); the energy bill is not offset internally
- The university consumes 541,000 GJ of energy (2015) In comparison, a house on district heating consumes 35 GJ
- Total official value (*WOZ-waarde*) of real estate: € 323.7 million (2015 prices)

- Total real estate investments in 2015: € 43 million, of which €37 million in new building (the Gorleaus Building on the Science Campus), certified with a BREEAM-NL “Very Good”

Objectives from the Environmental Policy Plan (2016)

- Achieve a 50% reduction in the CO₂ footprint, among other things by using seasonal thermal storage instead of gas-fired boilers.
- Take a baseline measurement for 25 buildings based on the BREEAM-NL “In Use” certification method.
- In 2017, 100% of the electricity consumption was to be greened with Guarantees of Origin from Nederlandse Wind.
- In 2018, 0.5% of the total electricity consumption (44,000 MWh) is to be generated by the university itself using solar panels.
- In 2017, 100% of the gas consumption was to be greened using Verified Emission Reductions (VERs) from a Cookstove project in Kenya.
- The most frequently implemented measures are replacing conventional lighting with HF-VSA TL or LED lighting, replacing old CH boilers with HE107 CH boilers, making modifications to installations (e.g. air conditioning, heat recovery, and measurement and control technology), using insulation and purchasing green power.

“Nothing happens here without one of our own employees having a say in it.”



Integrated Management Contract for the Tax and Customs Administration buildings in Apeldoorn

Part 1

The Central Government Real Estate Agency: the IMC analysed in ten points

The Central Government Real Estate Agency and Heijmans have concluded what is known as an Integrated Management Contract (IMC) for the management as well as the maintenance of data centres and offices at five Tax and Customs Administration buildings in Apeldoorn. Contract Manager Special Contracts at the Central Government Real Estate Agency René Leeuw says: “Fortunately, it is still a human affair.”

I The contract

1. The background

Leeuw: “The old maintenance contract for the Tax and Customs Administration, comprising various single-discipline contracts, was coming to an end. When the Tax and Customs Administration heard

about the IMC with the Van Gogh Museum, it wanted to know more about the situation. Prior to the award of the contract, we discussed the Tax and Customs Administration’s business processes with them in detail. When doing so, we examined health, safety, usability, energy and the environment. The candidates had to elaborate case studies during the tendering phase. After the award of the contract, we still had several intensive sessions between Heijmans, the Tax and Customs Administration, and the Central Government Real Estate Agency. We needed an answer to the question: what are the opportunities and risks, and how are we going to shape the cooperation?”

2. The contractual principles

Leeuw: “The principle behind this contract is multidisciplinary and integrated working. In essence, it rests on the five pillars of the Building Decree (Bouwbesluit): safe, healthy, usable, energy-efficient and as environmentally friendly as possible. However, the services of the Tax and

Customs Administration must continue to be provided without interruption. The tax return still has to land on the doormat after all, doesn't it? Every day, one billion euros comes through the door here and one billion goes out. Data processing is extremely important here. If that service comes to a halt, the Dutch economy comes to a halt."

3. The sustainability requirements

Leeuw: "Following renovations in 2015, the buildings were awarded energy label A and we want to keep it this way for the next ten years. The buildings' energy performance must be maintained and they must continue to satisfy the functional requirements that we set. What we ask of the contractor is demonstrably extending the service lives of the systems. The services provided by the Tax and Customs Administration must be optimised against the highest possible energy requirements."

4. The reward

Leeuw: "Heijmans must demonstrate in the service provision report pursuant to the ISO-9001 quality method that they have complied with and implemented all contract requirements before the company will be paid. Where a requirement has not been satisfied, the contractor must explain why and rectify the shortcoming. If this rectification is insufficient, a deductions clause is invoked. This process sometimes leads to discussions, but they have been conducted harmoniously up until now. A symbolic yellow or red card? Yes, that is good way of putting it (he laughs). Another way is the 'last one to the bar pays' principle. That approach does not reduce the gravity, but it does improve the ease with which the situation can be discussed."

II Cooperation

5. The preparatory sessions

"All three parties have really immersed themselves in the contract texts. An example of a functional requirement could be a temperature of 20 degrees in all offices. It is down to the contractor to adjust the installation components for this purpose and to monitor that the requirements are achieved. But if the Tax and Customs Administration wants to install an additional five servers in the data centre, they must give advance notification; otherwise, the rise in temperature consumes more energy."

6. Integrated action

Leeuw: "Heijmans has to perform 'smart' maintenance. Engineers can maintain cooling unit X in

accordance with the statutory requirements. However, if they hear a squeak from air conditioning unit Y or Z, they will have to conduct an additional inspection and replace a bearing if necessary. If they fail to do so and the fan belt breaks, the unit will cease to function and the provision of service will be interrupted. This failure would be due to the contractor and the underlying process, resulting in a deduction being made from the periodic payment. It is true that taking integrated and multidisciplinary action is asking a lot of all parties. But I have to say: Heijmans is going through a steep learning curve, as are the Tax and Customs Administration and the owners."

7. "It is still a human affair"

Leeuw: "Despite all contractual obligations, it is still a human affair. We pursue sustainability principles such as: do not just throw materials and building materials away. That awareness has to be there, because it all amounts to CO₂ and NO_x. You need to find the perfect balance between the optimal functioning of the system and reducing energy consumption. In addition, you need to consider how an installation can be smaller by adapting the building physics. This integrated consideration of buildings and installations, which was almost unheard of in the Netherlands until ten years ago, is now becoming commonplace."

III The external factors

8. The users

Leeuw: "User behaviour as a phenomenon is difficult to grasp. I am a technician, not a psychologist. We anticipate awareness campaigns: what are their consequences and how can they be monitored technically? Currently, we are still in the 'initial phase of the contract. I do know that there will be fewer breakdowns over the next fifteen years. It is precisely by actively anticipating now that this process could lead to additional income for Heijmans. Many contractors in the market do not yet see that potential."

9. The monitoring

Leeuw: "We conduct systems and product audits of the activities, among other things. Heijmans delivers a report every three months which demonstrates that the requirements have been met. There are consequences if it turns out that the contract is not being fulfilled. Heijmans will make sure that such a situation does not happen, because they employ risk management as well and will implement control measures as quickly as possible."

IV The figures

- Type of tender: Most Economically Advantageous Tender (MEAT), 70% quality and 30% price
- Type of contract: Integrated Management Contract (IMC)
- Activities: multidisciplinary civil engineering, mechanical engineering, electrical engineering and technical transport maintenance
- Number of buildings: 12
- Gross floor area (GFA): 167,000 m²
- Duration: Ten-year term with an option to renew for five years
- Contract value: approx. € 25 million for 10 years

Part 2 The Dutch Tax and Customs Administration: “A change in culture”

The Central Government Real Estate Agency and Heijmans have concluded an Integrated Management Contract (IMC) for the management as well as the maintenance of data centres and offices at five Tax and Customs Administration locations in Apeldoorn. The minimum duration is 10 years and the contract is valued at 25 million euros. This new, integrated management contract means a different way of working as well as more coordination between the existing engineering team and Heijmans. However, the collection of taxes is the prime concern. Alexander Markus, Manager Building and Installations Management at the Ministry of Finance: “The primary process is always more important than energy saving or sustainability.”

1. The background

Markus: “The Central Government Real Estate Agency took the initiative for a new contract. This contract includes all building installations that provide energy, heating and cooling to the data centre, which is the beating heart of the Tax and Customs Administration. The mainframe, to which all the Administration’s data processing systems are connected and on which every tax office in the Netherlands depends, is housed here. If errors are made in the contract, the Dutch economy will feel it immediately. The old contracts, which were spread across various maintenance parties, did not adequately guarantee the integral coherence of the installations. This contract must resolve that situation.”

2. An energy-saving target?

Markus: “We specifically chose not to specify an energy-saving target contractually. A focus on energy saving presents a greater risk to the primary business process. We must avoid Heijmans seeking the limits of the installations. All activities are checked and monitored thoroughly. We certainly consider better, cleaner solutions. However, as a government body, we keep an eye on the costs. At the same time, the service life of the existing installations is not infinite. For instance, the lighting in the car park was no longer reliable. We want to replace it with LED lighting, which can be dimmed to a basic level of lighting.”

3. New way of working

Markus: “Integrated maintenance means that a squeak in cooling unit B has to be checked, even though the engineer was only called in for air conditioning unit A. Improvements are always possible. Both our regular maintenance specialists and Heijmans are learning this truth. A squeak could indicate a defect, but a defect is not a failure. And no failures means no deduction from Heijmans’ fee. The contractor must personally report whether a defect is involved. We do our own checks as well and keep a close eye on all reports.”

“Our internal team comprises eight expert technicians, who continuously manage and monitor all building installations. They have a special position because, among other things, they have a right of veto under the contract. For example, switching off an installation early could avoid a defect in this installation. However, if this action causes an uncontrolled power-down of the primary process, the installation cannot be switched off. Obviously, all critical installations have a fully redundant design. The continuity of the primary business process takes precedence over everything else, followed by energy saving and sustainability.”

4. Trust takes years to build...

Markus: “There is occasional friction between Heijmans and ourselves. If Heijmans is called in for immediate intervention, which almost never happens at any rate, it is difficult to discover the cause of the breakdown. This type of intervention does not result in deductions for Heijmans.”

“There is a reason why the adage says that trust can take years to build, but seconds to break. Getting used to this way of working is really hard for our organisation. Heijmans is further along with this integrated way of thinking than we are. A simple example: a wall tile comes loose. It looks ugly and our team will report it. Heijmans will say: “The ‘corridor’ function is perfectly usable, so it does not constitute a defect”. Such a situation leads to discussion. But it will usually be non-urgent matters that end up being discussed, work without time commitment in the contract. Repetition is the mother of all learning.”

“The contractual obligations are not sacrosanct. If better ideas can improve cooperation, we should adopt them. By the end of this year, everyone should more or less have a handle on the maintenance process. There should not really be no major points for the parties left to discuss. Saving energy is an enormous challenge, because we consume a substantial amount of energy here. I see the mainframe components becoming smaller, but this development often leads to higher energy consumption. You cannot compensate for it with a couple of solar panels.”

“One final tip: this contract actually concerns sustainable cooperation. You need time to master the finer points of this process. In engineering, something either works or it does not. (Laughing) But all kinds of variations are possible in human affairs. There, optimal communication is decisive. In practice, there is too much communication by email. Email is fine for making an appointment, but I prefer the telephone or a physical meeting to coordinate something with each other.”

Some figures for the Walterbos and Quintax complexes of the Tax and Customs Administration in Apeldoorn

- Renovation and new-build years: 2000 to 2007
- Surface area of the two complexes: 167,000 m² GFA
- FTE factor: 0.7 FTE per workplace
- Energy consumption: 2.4 million kWh of electricity and 95,000 m³ of gas per month. This consumption refers to the offices as well as the Tax and Customs Administration’s data centre, to which all the Tax and Customs Administration’s locations in the Netherlands are connected.
- Energy label: A

Sustainability measures

- Seasonal thermal energy storage
- Evaporative roof cooling, extinguishing water, grey water for sanitation
- High-frequency TL lighting (automatic dimming)
- LE lighting in lifts and soon in the car park
- Dry cooling instead of mechanical cooling
- Intelligent sun blinds responsive to weather conditions and lighting
- Facilities: waste separation, active approach to climate complaints from office staff

Integrated Management Contract

- Contract value: € 25 million
- Length of contract: Ten years with option to renew for five years

Part 3

Heijmans: “A good marriage”

For the listed company Heijmans, performance contracts have become an integral part of business operations. Following experience gained with the Tax and Customs Administration in Rotterdam, among other things, the company has entered into a ten-year Integrated Management Contract with the Central Government Real Estate Agency. The goal is the integrated management and maintenance of structural, mechanical and civil engineering as well as electrical installations for the Tax and Customs Administration in Apeldoorn.

Contract Manager Michel van de Pol from Heijmans Utiliteit provides insight into its implementation. “I know of few contracts where the interests of the owner, user and contractor are mutually synchronised to such an extent in practice.”

MEAT

Heijmans was selected via a Most Economically Advantageous Tender (MEAT). The contractor based its offer on the anticipated technical status of the buildings [status 3 under the RgdBOEI method (Government Buildings Agency fire, maintenance, energy and sustainability method), or condition level 3 as per NEN 2767; editor’s note]. In practice, however, the buildings turned out to have more defects than expected. Van de Pol: “At the time, we had to intervene in the service team’s working processes. After adjustments were made, they were able to work in a more targeted manner. It does not really matter if mistakes are made, as long as they can be made the subject of discussion. The most

important thing is: how can we change the process without incurring a deduction from our payment?" He tells how there are approximately 2,500 minor and major breakdown reports each year. "Occasionally, you do incur a deduction from the payment."

Starting phase

Looking back, the nine months of the contract have been "quite intensive", says Van de Pol. "Although Heijmans is used to managing DBFMO contracts, we had no influence over the Design, Build and Finance aspects in this case. A multitude of installers worked on these buildings in the past. We are now doing our utmost to master the practicalities."

Communication

A lot depends on optimal communication. That aspect is extremely important immediately after the contract is signed, says Van de Pol. "Have a physical meeting immediately to discuss all contract points. What does it say here and what do you mean by it? Have I clearly explained what you will get and do you think you will be getting what you need with the proposed working method? If not, what now? Yes, on to the next point."

He gives an example of this process: "Suppose that a number of boilers have to be replaced. What can I deploy in terms of workforce and what investments can the Central Government Real Estate Agency make? How much inconvenience can the user bear? What is the actual technical urgency and what optimisation does it achieve? Sometimes, the solution is to repair the defect in full later."

"It was their house"

This new method of integrated working occasionally leads to different interpretations on the shop floor, says Van de Pol. "The Tax and Customs Administration's regular maintenance specialists are used to repairing or replacing anything defective immediately. It was their house. When we arrived, it became our house. In fact, we have different contractual interests. Where a defect makes a risk unacceptable, we replace or repair it as quickly as possible. If there is no risk, it is resolved by planning. Compare it with a car. Some people drive straight to the garage or look at the car themselves if they see an orange warning light. Others do not

make a separate trip to the garage; they have it checked when they are in the vicinity to fit it in optimally. But if there is a red light, stop, ring the garage and get it done. This approach is the one that we take with the integrated maintenance contract."

Good marriage

The cooperation is now so highly developed that the Central Government Real Estate Agency clearly tells us if a quoted amount is too high or too low. "Can you really do that work for this amount of money? We really want you to deliver the desired quality." Van de Pol describes the cooperation as a "good marriage": "Although you argue now and then, you subsequently take a break, reconsider and enter into discussion with each other again. It is a continuous dialogue."

The first year was a total success. Van de Pol: "It is one of the few contracts where we could make a substantive contribution to the Central Government Real Estate Agency's business processes. I know of few places where there is so much freedom to implement the contract. We strictly adhere to the terms of the contract, but the terms are not always fixed. It is good if the client is open to dialogue and does not think that their regulations are sacrosanct. Otherwise, you end up with a contractual battle which harms everyone."

Heijmans is running similar contracts for the Tax and Customs Administration in Rotterdam, the Ministry of Justice and Security, and the Ministry of the Interior and Kingdom Relations in the Hague.

Contract details

- Integrated Management Contract
- Duration: ten-year term with an option to renew for five years
- Contract value: € 25 million
- Contract Manager: Michel van de Pol
- Contract contents: integrated management and maintenance of five Tax and Customs Administration locations in Apeldoorn
- Surface area of locations: 167,000 m²
- Energy: the guidelines from the *RgdBoei*, no additional energy-saving measures in connection with the Tax and Customs Administration primary process, which takes precedence.



One hundred and fifty municipal buildings in Eindhoven have to be fully sustainable in 2027

Eindhoven Municipality has sizeable sustainability ambitions that it would like to achieve by greening the municipal real estate. The tendering of its own accommodation premises is an innovative method of achieving this aim.

This article is a summary of earlier publications in Duurzaam Gebouwd (Sustainably Built).

Since 2008, it has been Eindhoven's stated ambition to become zero-energy in the period 2035–2045. Zero-energy means that all energy used in the city is generated from renewable sources. On top of this ambition, the Municipal Council laid down in its 'Klimaatverordening gemeente Eindhoven 2016' (Eindhoven Climate Regulation 2016) that the city's CO₂ emissions would have to be reduced by 55% in 2030 and by 95% in 2050 compared with 1990.

How will that aim be achieved? Among other things, it will be done by stimulating energy savings in the business world and by starting to build sustainable power plants such as dozens of solar roofs (40,000 solar panels up to 2030), a number of wind turbines and an additional biomass power plant. Initially, the ambition was to have the entire real estate portfolio zero-energy in 2025. Eindhoven conducted a full portfolio scan to produce a core portfolio (criteria: ownership, long-term use, economically sound investment). The core portfolio of approximately 150 buildings must be fully greened in 2026.

Joop Ketelaers, Sustainable Building Consultant at Eindhoven Municipality, explains the municipality's ambitions: "In practice, this goal means that the use of natural gas for heating in the urban environment will have to be scaled down quickly. We want to stop using natural gas for our core portfolio (150 buildings) before 2026."

The greening of seven landmarks innovatively tendered

Eindhoven, which currently owns 800 real estate properties, is taking a first step by designating seven landmarks for greening. They are the following buildings: Designhuis, Van Abbemuseum, Municipal offices, Stadhuislaag (town hall), Stadhuishoog (town hall tower), NRE building and Mercado building. The !MPULS consortium won the tender. This market consortium has committed to the sustainable renovation and maintenance of seven municipal buildings in Eindhoven for the next ten years, with an option to renew for five years. The project amount over a period of 15 years is 72 million euros. After 3.5 years of preparation, the renovation started in March 2017.

Co-creation

Initially, Eindhoven adopted a traditional approach to tendering the town hall tower building, as Strategic Contracts Manager for the Eindhoven Municipality Garry Whitrick explains to the magazine *Duurzaam Gebouwd*. "In view of the changed market and our ambitious sustainability targets, we knew that a different, innovative approach was required."

The municipality decided to interview various leaders in the field of sustainability from the construction and finance sectors. Three conclusions were drawn from the market research: look to the

long term, ensure a systematic approach and cooperate in a different way. Whitrick: “Subconsciously, we knew that the current way of cooperating in the form of client versus contractor was no longer the right way.”

In collaboration with the market, a so-called co-creation method was adopted. Following an initial selection from over 400 businesses, 200 businesses remained. For this group, the municipality organised a matchmaking event where participants could pitch their ideas, but where there was also an express request to forge mutual alliances with other participants. Whitrick: “In practice, we see most innovation coming from smaller SME companies. We organised speed dating sessions during the event to stimulate cooperation.”

Mary-Ann Schreurs, Councillor for Sustainability, Culture, Innovation and Design, looks back on the event: “In total, 400 businesses came up with some 200 ideas. That figure was a lot higher than we had expected. Apparently, we struck a chord with this approach. We received ideas varying from an LED tree for the city hall to a real estate developer who wanted to take over our real estate portfolio.”

“Soft” organisational factors

The tender was won by the !MPULS consortium, a joint venture between the Brink Groep, DOOR Architecten/Rudy Uytenhaak Architectenbureau, DWA, Kuijpers and Laudy Bouw & Ontwikkeling. Key to this choice was the fact that the consortium is open to innovations from other businesses and organisations, such as TU Eindhoven and Fontys University of Applied Sciences. !MPULS was created in 2013 from the Ministry of the Interior’s Energiesprong-programma Kantoor vol Energie (Energy Leap programme “Office Full of Energy”). The beating heart in !MPULS’s approach is the

so-called Value Case tool. In its own words, this process approach aims to achieve zero-energy accommodation on the basis of key values, key performance indicators and the associated added value. The owner and user of the building draw up the basic principles of greening together.

This consortium puts “soft” organisational factors such as improving comfort, reducing absence through illness, increasing work productivity and improving the image more to the forefront of its approach. Insight into these factors and their improvement stimulates organisations to choose sustainability interventions with a longer cost recovery period as well as unconventional solutions. A different working method is chosen for the funding aspect as well, explains Whitrick. “As flexibility is important, we untied the budget. All the available money was heaped together. The key thing is that the eventual business cases must tie in financially. “

Zero-energy?

Ketelaers welcomes the new approach: “Laws and regulations do not always safeguard the commitment of market parties to delivering projects without gas connections, in alignment with our ambitions mentioned above. Thanks to the new way of asking questions and cooperating in this major greening task, we have found a new way of working to achieve this aim. (...) The energy savings for the seven buildings in the contract differs from year to year and from building to building. A saving of 30% is to be expected over the full contract period. Another part of it will be renewable. As a result, we will be 50% renewable-energy at the end of the contract compared with 2014. We also expect to save 10% relative to the current maintenance budget.”

Starting from these conclusions, the municipality “entered into discussions” with the market through the framework below:

Phase	Activities/objective	Participation
Exploration period	Familiarise with the project	400 businesses, 650 participants
Propose market consultancy	Get initial ideas from the market	200 ideas
In-depth sessions with online matchmaking tool	Establish contacts with potential cooperation partners throughout the market	160 participants
Matchmaking Event	Pitches, themed sessions and speed dating for and by market parties	200 participants
TU/e*	Cooperation with Master’s students for drawing up a business case project	N/A

Machiel Karels of DWA/Buro Loo, part of the consortium, explains that 50% renewable-energy for the seven buildings in 2027 is the highest feasible figure. Karels: “We have been realistic about this fact right from the start: 100% building-related is not feasible. For this reason, we also want to install solar panels on schools, for instance. We are currently also investigating achieving 100% in combination with integrated, district-based solutions. District-based, we are providing an STES hub underneath Stadhuisplein. In future, we want to connect other buildings in this square to the hub.”

Contract agreements

The ten-year contract is for the sustainable renovation and maintenance of seven municipal buildings, with an option to renew for five years. Some examples of the ambitions and agreements:

- Central advice centre (Residents Plaza) relocates to town hall; town hall tower is set up for

civil-service accommodation and for a Living Lab on two floors, where local SME companies can display their innovations

- 95% reuse of demolition material during the renovation pursuant to the basic principle of [The Natural Step sustainability method](#)
- 30% lower energy and water consumption
- 10% lower maintenance costs
- Living Lab with specially developed Intelligent Climate Control Ceilings for air, light, heating, cooling, acoustics and user interventions
- Intelligent and interactive building monitoring
- Comfort management: user satisfaction must score at least 7.5
- Green and water-rich environment (“green & blue spots”)
- Use of ambassadors to promote sustainability within and beyond the municipality organisation
- 150 charging points for electric bikes
- Etc.

Can all-inclusive leasing accelerate the energy transition?

What is known as the “split incentive” between owner and user is often an impediment to the greening of buildings. After all, the owner has to invest while the user enjoys the benefits of a better building and lower energy costs. This dilemma could be resolved with all-inclusive leasing. Will this model accelerate the energy transition on the office market?

All-inclusive leasing is one of the so-called triple-win models, which the European guarantee project sees as promising to resolve the split incentive dilemma and accelerate energy saving in buildings.

During the *Cobouw Café* on 11 May that was organised on the initiative of the Dutch Sustainable Housing Platform (*Platform Duurzame Huisvesting*) and the Round Table discussions at the Real Estate Meeting Point (*Provada*) on 31 May that were organised by the Netherlands Enterprise Agency (RVO.nl), the greening of real estate and working with all-inclusive leasing were the subject of discussion.

Research by Maastricht University and ING Real Estate Finance has revealed that energy-efficient office buildings are worth around 9% more and can deliver 10% higher leasing income. Greening real estate increases the market value and the leasing income, while the investment costs are recovered after four years on average.

Full-service workplace for central government

The largest real estate owner in the Netherlands, the Central Government Real Estate Agency (Rijksvastgoedbedrijf, RVB), manages a total of 13.2 million square metres of real estate space. This figure involves offices, courts, army bases, and so on. Since 2016, the RVB has been putting all-inclusive leasing into practice at 150 offices. The new pricing method is based on all-inclusive regional rates (including building shell, fit-out package, management, security, parking and energy costs). Water and IT are not included. Rutger de Gier, central government accommodation consultant, explains how this principle works in practice. De Gier: “We have abandoned the ‘single-tenant principle’, because our buildings more often accommodate multiple tenants. At the same time, our office ownership is decreasing from 2.9 million square metres GFA in 2012 to 1.6 million in 2021.”

Long-term vision

From the perspective of service life, the RVB does not settle the energy consumption individually per user. De Gier: “As the owner, we pay for any shortages or surpluses on the energy costs. Every user pays the uniform regional rate, including a fixed energy component per year. Not everyone was happy with this process because, for instance, they had recently renovated and were suddenly saddled with higher energy costs. In the end, however, everyone was convinced that the future regional rates would fall as a result of divesting mainly energy-intensive buildings and that every user would benefit from the savings. We are moving ever closer to a market model where we provide a full-service workplace with predictable costs.”

De Gier: “We also cover any costs of investments in energy-saving measures. It really is madness that a user currently pays for a fit-out package which they will only use for a few years.”

The crucial factor in all agreements is energy monitoring, admits De Gier. “Optimal monitoring and occupancy detection are needed for effective management. We install a monitoring system in every sustainability project.”

Tenants want a modern and sustainable building

Various real estate experts also see the benefits of all-inclusive leasing. According to Jaap Dijkgraaf, Director of DWA, all-inclusive leasing combined with greening leads to higher leasing income and higher real estate values as well as better financing conditions. Dijkgraaf: “The sustainability issue is forcing owners to examine their property in detail. Greater insight leads to greater financial benefits. Conversely, tenants benefit from predictable accommodation costs as well. They simply want a good, modern and green building with optimally designed workspaces.”



Director Philip Blaauw of ‘building greener’ Innax, agrees with Dijkgraaf. “All-inclusive leasing is a good tool for greening. The problem is that the parties do not see energy as their core business and put off energy-saving projects. I know a care institution where almost a million euros can be saved on energy, but they are confronted with a large amount of work and the investment does not involve their core activities.”

Vastgoed Belang

Vastgoed Belang, an interest group for private landlords, uses an intermediate model for its offices. Cees Jonker, Project Manager Energy Savings at *Vastgoed Belang*, explains: “Paying rent includes a fixed amount for the fit-out package. On concluding the lease contract, the ceiling – including light fittings and lighting – is transferred to *Vastgoed Belang*, threatening a reverse split incentive.”

Jonker believes that all-inclusive leasing is the right solution for multi-tenant commercial buildings in particular. “It avoids the administrative burden for the landlord. For a single tenant, a Greenlease could work to prevent the split incentive, or you could put a surcharge on the service costs.”

A meeting with a number of large office landlords, all members of *Vastgoed Belang*, revealed that the interest group is not averse to an all-inclusive leasing structure. Jonker: “All-inclusive leasing can accelerate the greening of offices because it resolves the split incentive. There has to be a bonus-malus agreement in the lease contract so as to ensure that there is no overconsumption of energy.”

Stiffer requirements for stragglers

Simply charging all-inclusive rent does not take you all the way there, though. Both Dijkgraaf and Blaauw are calling for additional legal obligations in order to move

a large group of stragglers to green their buildings. Blaauw: “The requirements coming from the government, banks and the market are on the rise. However, there is still a group waiting on the sidelines, often because greening is not their core activity. Only enforcement will work for this group.” Which buttons will have to be pressed for the group of stragglers to get moving? Blaauw is advocating stiffer requirements for the energy label or the Energy Index. “The energy label is fairly easy to enforce from the office. Keep it simple and set specific Energy Index requirements per target group. A ‘one size fits all’ approach will not work, because it does not fit the market. Sare institutions need a different standard to commercial office landlords. To this end, set different requirements for both of them.”

Yet tenants can also sometimes resist innovation, says Blaauw. “It is particularly in multi-tenant buildings that owners sometime have the greatest difficulty to get every tenant in the building on board. People are afraid of having to pay too much for their energy with all-inclusive leasing.” According to Blaauw, guarantees on the building-related energy costs could alleviate that fear.

Energy management systems

Dijkgraaf is in favour of obligatory energy management systems from 1 January 2018, specifically for business sectors where energy consumption is mainly attributable to the use of climate control systems. “I believe that this measure is more substantial than the energy label, which tells us little about the actual energy consumption. Tighter agreements on energy consumption can be reached between the parties involved on the basis of measurements. Predictability plays into the owner’s hands when purchasing energy, for instance.”

In conclusion, all-inclusive leasing is crucial to get sustainability on the table, but a combination of stricter legislation in the field of energy labelling and energy monitoring is probably the only thing that will move office owners to act.

Finally, Jonker also predicts that all-inclusive leasing will be stimulated by the Energy Performance Mark (*Energie Prestatie Keur*, an MOT for offices) and by the expected obligation under the Activities Decree (*Activiteitenbesluit*) to introduce an energy management system (EMS). Jonker: “It is also attractive for the landlord, because research has revealed that improving the settings of installations leads to over 20% energy saving in the first year.”

Energy performance contracts as a solution for schools

Implementing energy-saving measures can be arranged in a very effective way through an energy performance contract. At the same time maintenance is organized for a number of years and possibly for multiple buildings. In this way, school boards are guaranteed effective maintenance and a healthy interior climate as well as the certainty of fixed energy costs.

“Many school boards have separate, one-year maintenance contracts for the central heating, lighting and ventilation of all their buildings. If they want to green their buildings, they enter into separate contracts for solar panels, LED lighting or the readjustment of installations, for instance. Bundling contracts, combining energy-saving measures with effective management and maintenance, and making performance agreements in an energy performance contract (EPC) for at least five years offers long-term guarantees on the maintenance quality, the indoor climate and the energy bill”, says Irma Thijssen, consultant at the Netherlands Enterprise Agency. Irma: “We believe that performance contracts can be very useful to school boards. You can make choices at the strategic or stock level and invest more intelligently. In this way, you engage expertise and capacity but retain control.”

Energy label leap

A number of school boards in the Netherlands have already concluded an EPC. What is their experience of them? Wim Lengkeek is policy adviser at the Florion school foundation in Zwolle with 21 schools under its management. Florion has entered into a five-year EPC with Frog Energy installation engineers in Zwolle. Wim: “This process is new for us. To a large extent, an EPC revolves around trust. They have to live up to their promises. Still, every greening project starts with a long-term sustainability vision alongside the will and belief to tackle your buildings.”

The result is impressive: using wall insulation, a wood chip boiler and a solar panel roof, among other things, the energy bill has dropped by 90% and the energy label has leapt from D to A. The total investment of 130,000 euros was paid in part by the school and in part by Frog Energy.” Wim: “We will own the installations after five years. It was our conviction that this structure is neater than a long-term lease contract. We share the profits from the energy savings with the contractor and invest them in new energy-saving measures such as LED lighting.”

Pioneering

Chantal Broekhuis is head of education accommodation at the PCOU & Willibrord foundation in Utrecht, which covers 65 schools, and talks about “pioneering”. “We often have to reinvent the wheel. To green our properties in stages, we initiated various projects. We go from the objective level via planning to strategy at the portfolio level. Our ambition for existing buildings is an NEN 2767 condition score of 3, Fresh Air in Schools (*Frisse Scholen*) category B, and compliance with the Activities Decree (*Activiteitenbesluit*). For new buildings, our aim is the Nearly Zero-Energy Buildings plan (*Bijna Energieneutrale Gebouwen, BENG*).

Integrated maintenance contracts

A recent achievement is two integrated maintenance contracts with the Wolter & Dros and Strukton installation companies. These contracts includes a baseline measurement and the maintenance of all installations, an upgrade to condition score 3, a seasonal adjustment and a sustainable maintenance plan. One of the leading principles of the contracts is “performance-based maintenance”. Chantal explains: “In practice, this term means that a CH boiler or the lighting is replaced when it is cost-effective to do so instead of when they suffer technical failure. We will do so as soon as the running costs mean that it would be cheaper to replace it with a more energy-efficient model.”

Integrated thinking

Machiel Karels, partner/consultant at Buro Loo, has advised a number of larger school boards on their approach to sustainability. Machiel: “I know of various examples where everything functions as per the requirement on delivery of a new installation. The school board then believes that its work is done and forgoes an effective, performance-based maintenance contract. After two years, you notice that the performance on energy and interior climate drop off measurably, from category B to D or worse.” Machiel sees that many schools have trouble



professionalising maintenance and directing it strategically: “Commissioning must be more professional, particularly for school organisation that comprise several schools. Usually, there is still a lack of knowledge about installations and performance-based contracts. A pretty facade on delivery is fine, but a properly functioning “core” during the user phase is much more important. Where incidents were previously resolved with an hourly invoice, a long-term integrated maintenance approach is leading with an EPC, so your costs and quality are ensured for the longer term.

Grip on energy costs

School boards expend more on energy costs than they receive in reimbursement: this fact was revealed in a recent report by Berenschot and ICSadviseurs. Wim

and Chantal also have experience of this situation. The report recommends monitoring the energy and water consumption, stimulating energy-aware behaviour and implementing energy-saving measures. These matters can be agreed in an EPC. Irma: “For many school boards, switching to integrated contracts is a major step to switch. The first time takes a lot more preparation time, as you have to get into the details of outsourcing or tendering, while it also requires a directive role and a different way of cooperating. However, it can be an effective solution. In my opinion, school boards should dare to take this step! Begin with a couple of schools. We see that it is working well in other European countries and that it leads to an acceleration of energy savings in buildings. This development is a real necessity given our climate targets.”

*Examples of schools with an EPC for maintenance + energy + indoor environment
(Please note: there are also so-called Product ESCos exclusively for lighting, solar panels or STES)*

Starting year	Project and school board	Location	Contractor	Term
2011	11 schools from Stichting Poolster	Lochem	PHB Facility	15 years
2015	Petrus Canisius College, combined renovation and new build	Heiloo	Stichting Maatschappelijk Vastgoed	30 years
2015	De Smaragd primary school from Stichting Florion	Zwolle	Frog Energy	5 years
2016	VBS De Regenboog (primary school)	Eindhoven	Ovvia	15 years
2016	Mytyschool Ulingshof from Onderwijsgroep Buitengewoon	Venlo	Escoplan	4 years
2016	MFA Kapelle zero-energy new build	Kapelle	Merosch in a consortium	25 years
2017	40 schools from the PCOU and Willibrord foundation	Utrecht	Strukton, Wolter & Dros	7 years
2017	De Kolom primary school	Amsterdam	Klimaat-service Holland and Janssen de Jong	10 years

Accelerate the transition to sustainable buildings by outsourcing energy performance contracts

Is greening a thousand buildings a day realistic or far too ambitious? We know for certain that an enormous acceleration – a breakthrough – is needed to achieve our energy targets and that the contribution from real estate is crucial. While the Paris Climate Agreement means halving Dutch CO₂ emissions in 2030, we only have around 3,500 working days until 2030.

Outsourcing more work and concluding effective energy performance contracts (EPCs) for this purpose seemingly offers an important contribution to this acceleration. How can we overcome existing barriers and give a boost to EPCs? An energy transition of this type requires leadership, ambition and cooperation.

In training sessions for EPC Facilitators organised by RVO.nl, the use of EPCs to accelerate the greening of real estate took centre stage, as did the role of Facilitators in supporting building owners with this energy transition and new ways of tendering as well as cooperating.

Make or buy?

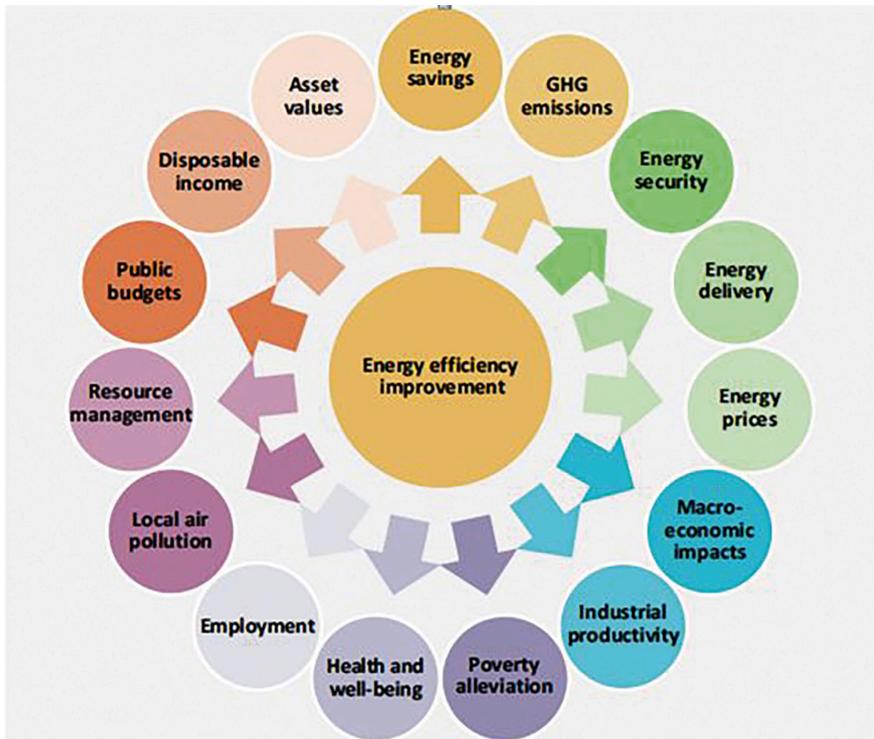
Austrian-born Jan Bleyl is the European Energy Services Coordinator for IEA DSM Task 16

(International Energy Agency – Demand Side Management). He has years of experience with energy performance contracting. Bleyl: “The question is not if we need to make energy savings or use renewable energy; the question is, how can this aim best be implemented? What do building owners want to keep in-house and what do they want to outsource? If you want to tender or outsource services such as energy efficiency improvement and maintenance, you should opt for an energy performance contract and cooperation with an ESCo. This solution has already proven its worth in many European countries, including The Netherlands. Set your objectives for implementation (a 3% energy saving per year, for example), facilitate the performance and monitor progress. Make or Buy, and Act!” Jan Bleyl claims that this development requires leadership: a decisive manager who believes in such an approach.

Decision criteria	In-house	Energy Contracting / ESCo (outsourcing)
Financing of investment	100 % owner	0 – 100 % owner
Technical + economic risks	Owner	ESCo
Optimization, operation & maintenance	Requires motivated personal	in the own interest of ESCo
Guaranteed results (e.g. savings)	No	Yes
Functional guarantees	only warranty period	Over contract term
Price guarantees (e.g. all-in heat price)	No	yes („all inclusive“)
Long-term contractual obligation	No	Yes
Transaction cost for ESCo project	No	Yes
Work force (e.g. operation & maintenance)	(often) in-house	(partly) outsourced
Know-how+ competition of ideas	Owner (+ Consultant)	Owner (+ Facilitator) + ESCo
Project specifications	(generally) detailed, sub projects	(typic.) functional, overall project
Service package / Outsourcing	No	Yes
Size of building / facility	Any	Energy cost: ESC: > 20.000 € /a EPC: > 100.000 € /a
Compliance with regulations (e.g. EPBD, EED)	if looked after	mandatory (if specified)
Life cycle cost (LCC)	(generally) higher	(generally) lower

Bleyl – Energetic Solutions | For requests: EnergeticSolutions@gmail.de | Task 16 „Innovative Energy Services“ | 17-10-17 | Slide 9

Summary of the characteristics and the pros and cons of doing it yourself versus outsourcing (IEA DSM Task 16, Bleyl et al., 2017)



Multiple benefits of energy efficiency improvement (IEA DSM Task 16, Bleyl et al., 2017)

Multiple Benefits of DER	Range	Valuation		Beneficiaries			
		EUR/ (m ² * y)	NPV: EUR/m ²	Different owner perspectives			
				Property develop.	Occupant owner	Lessor owner	Tenant
1. Work productivity increase (0.3%)	Lower Upper	8.0 8.0	169 169	-	169 169	-	169 169
2a. Rental income increase (1 - 5.3%)	Lower Upper	1.2 6.4	25 134	-	-	25 134	-25 -134
2b. Building sales price increase (2.5 - 6.5%)	Lower Upper	100 260		100 260	[100] [260]	[100] [260]	-
3. CO ₂ savings (5 - 79 EUR/t)	Lower Upper	0.2 3.8	5 79	-	5 79	-	5 79
4. Maintenance cost savings (2.1-3 EUR/m2/y)	Lower Upper	2.1 3.0	44 63	-	44 63	44 63	-
5a. Energy cost savings project term (25 years)	Lower Upper	16.8 16.8	354 354	-	354 354	-	354 354
5b. Add. energy cost savings over techn. lifetime (40 y)	Lower Upper	16.8 16.8	157 157	-	157 157	-	[157] [157]
Totals			Lower NPV: Upper NPV:	100 260	729 822	69 197	503 468

Source: [Bleyl et al. 2017]

Jan M. Bleyl – Energetic Solutions | For requests: EnergeticSolutions@gmail.de | Task 16 „Innovative Energy Services“ | 17-10-FTT Seite 23

Source: Bleyl et al., 2017

Energy saving in buildings leads to Multiple Benefits, primarily that the building owner and the user benefit from it (IEA DSM Task 16, Bleyl et al., 2017)

Innovation through tendering

Petra Heemskerk is a partner and solicitor at CMS Praktijkgroep Real Estate & Construction, specialising in procurement law and PPP. She sees the following impediments to outsourcing and tendering: a fear of the unknown, a need to be in control, an excessive emphasis on legitimacy and purchasing, and a tendency to copy what has gone before. She also believes that leadership is required for a new approach. Heemskerk links innovation to outsourcing maintenance and energy efficiency, and working with performance contracting, which requires a different role of remote direction. Many building owners believe that outsourcing, and tendering in particular, is legally very complicated and that this difficulty the transition to sustainable buildings. Heemskerk has a different view: "Procurement law presents many possibilities, provided that it fits in with the principles of equality, proportionality and transparency. Dare to be innovative, let go of existing patterns and use the expertise from the market. Innovation and a larger role for the market do call for a different type of contract and a different type of supervision. However, you need to choose the right order of things. Accelerating sustainability starts with a vision. Tendering and types of contract are always the result of policy-related choices rather than vice versa."

"The energy transition needs unreasonable people"

André Salomonson is Managing Partner at ResetManagement, specialising in change management and cooperation. Salomonson: "The energy transition is truly a transition. How can you create trust, garner political support and foster cooperation? If you go through or manage this type of transition, you realise that you have to break down existing patterns, avoid seeking a compromise and take small steps. This transition needs unreasonable people."

His tips for managing a transition process:

- Set a course and direction, start from your intention and do not make it SMART.
- Progress in small steps.
- Whatever you choose, it is always the second-best solution.
- Work from the solution and desired situation (rather than from the problem).
- Do not compromise.
- Secure the interests of all those involved.
- Accept the way that things are going, as long as they move full speed ahead.
- If the masses are critical, create a critical mass.
- Achieve progress by being unreasonable.
- Think of it as a journey.

Principle of equality

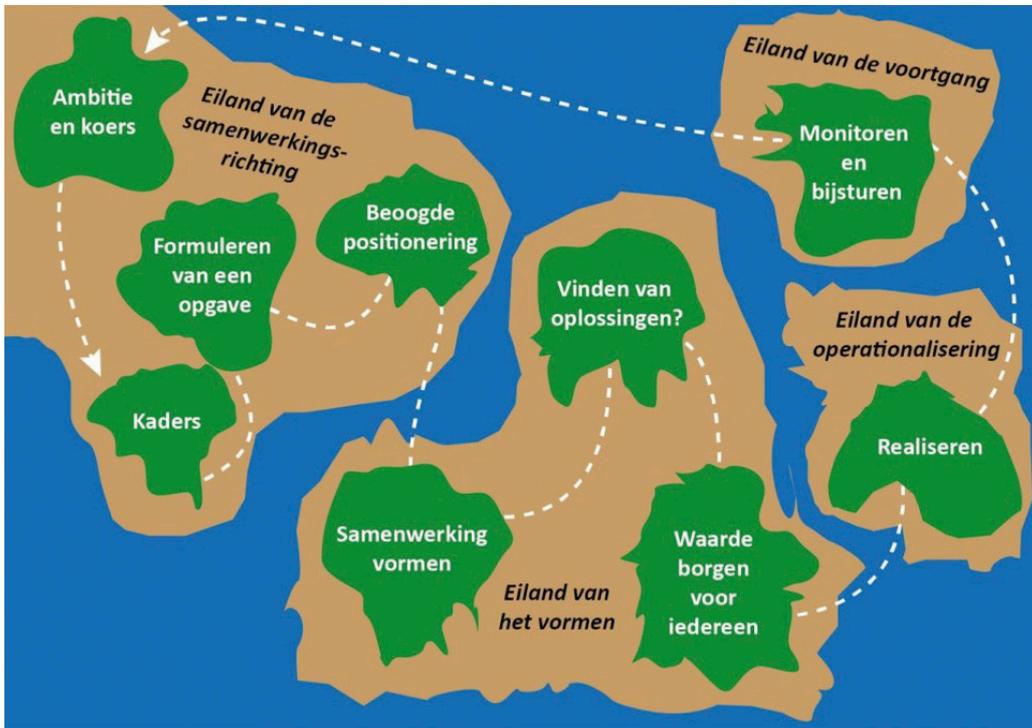


Principle of transparency



Principle of proportionality

The "journey" of a transition process (Illustration by ResetManagement)



Procurement law presents many possibilities, provided that it fits in with the principles of equality, proportionality and transparency. (Illustration by CMS)

This is a publication of:

Netherlands Enterprise Agency
Croeselaan 15 | 3521 BJ Utrecht
PO Box 8242 | 3503 RE The Hague
T +31 (0) 88 042 42 42
E klantcontact@rvo.nl
www.rvo.nl

This publication was commissioned by the Ministry of
the Interior and Kingdom Relations

© Netherlands Enterprise Agency | June 2018
Publication number: 113652

NL Enterprise Agency is a department of the Dutch ministry of
Economic Affairs that implements government policy for
agricultural, sustainability, innovation, and international
business and cooperation. NL Enterprise Agency is the contact
point for businesses, educational institutions and government
bodies for information and advice, financing, networking and
regulatory matters.

Netherlands Enterprise Agency is part of the ministry of
Economic Affairs.

