



Netherlands Enterprise Agency

Circular economy in Vietnam

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International.*

Circular Economy in Vietnam

Vietnam's per capita GDP growth since 1990 has been among the fastest in the world. A growth which has contributed to impressive progress in alleviating poverty and improving non-income dimensions of welfare. However, this growth has also generated challenges with regard to environmental degradation. The environmental quality of Vietnam's air, land, and water has deteriorated considerably. Moreover, Vietnam is one of the world's most vulnerable countries to climate change, with adaptation challenges accordingly severe, especially in the Mekong Delta. Despite of a relatively high rate of (informal) solid urban waste recycling, the current economy leads to the depletion of precious resources and does not account for negative externalities exerted upon the environment.

The circular economy presents a sustainable solution to this linear economic model. Although circular economy thinking is still quite new to Vietnam, the National action plan on Green growth includes many actions that fit perfectly with the transition towards a circular economy and the Vietnam Chamber of Commerce and Industry (VCCI) is considering the establishment of a Centre of Excellence on Circular economy.

The Netherlands is a Circular Hotspot with a wealth of knowledge and experience on circular economy. Dutch businesses could play a valuable role in accelerating the circular economy (CE) in Vietnam. A scoping study was conducted at the end of 2017 to identify potential areas of circular (business) cooperation.

This factsheet addresses CE related opportunities for Dutch businesses in the following sectors:

- Agriculture
- Renewable Energy
- Logistics
- Water management
- Smart cities

Agriculture

Currently, agriculture accounts for almost 20% of the national GDP. Decentralized, smallholder agricultural production is the norm. Vietnam is one of the world's top

exporters of agricultural commodities, such as rice, coffee, tea, black pepper, cashew, cassava and rubber. In recent decades, Vietnam has also become one of the main exporter of aquaculture products. Horticulture and floriculture presents an interesting new growth market for Vietnam's agricultural sector.

However, it is expected that in the coming years employment in the primary agricultural sector will decrease due to a diversification of rural livelihoods. Nevertheless, the agro-industry's share is expected to grow and the overall agri-food industry (including food processing) will still account for 35% to 40% of employment in the early 2030s. Growth in the agricultural sector is expected to continue, but demand is changing.



The sector faces the following challenges:

- Food safety is a growing concern for Vietnamese consumers. Pesticides, herbicides and fertilizer are excessively used.
- Overall agricultural productivity in Vietnam is relatively low. The agricultural sector is disproportionately affected by climate change.
- The expansion of the agricultural sector in Vietnam has led to deforestation and soil degradation.
- Water quality and availability causes several problems for the agricultural sector.

CE opportunities for Dutch businesses

In the agricultural sector, many opportunities exist for circular practices and business models. Because the sector is largely based on biotic cycles, many practices in the sector can already be classified as circular. Nevertheless, from the scoping study the following opportunities were identified:

- Consultancy services on biomass resource mapping and circular strategies;
- Local production of organic fertilizer;
- Use of stronger seed varieties to eliminate the excessive use of pesticides, herbicides and fertilizer;
- Climate smart technologies and services;
- Climate controlled agricultural production with greenhouse technologies;
- Cattle breeding technologies and services;
- Urban agriculture around Hanoi and Ho Chi Minh City;
- Smart technologies for small-scale agriculture, providing enormous benefits in terms of efficiency and sustainability.

Logistics

The logistics sector is one of the fastest growing sectors in Vietnam, but still at an early development stage. The demand for logistics services in Vietnam is growing rapidly and the sector is estimated to grow at a higher pace than overall GDP growth in the coming years. Currently, the logistics sector already accounts for 15-20% of GDP in Vietnam. Hanoi and Ho Chi Minh City are the main logistic hubs. Particularly investments in the manufacturing industry have been driving the country's demand for international transport and logistics services. Moreover, a growing middle-class and growing population have been driving demand for domestic transport. Cold chain logistics services have a high potential to grow in the nearby future.

The sector faces a number of challenges:

- For international transport, Vietnam relies heavily on sea freight;

- The vast majority of domestic transport takes place via road;
- Improvements in the national road infrastructure are necessary to meet the demand of the growing logistics sector;
- The logistics sector in Vietnam is fragmented;
- Warehousing facilities are underdeveloped;
- The expansion of the logistics sector has been accompanied by significant environmental impact.

CE opportunities for Dutch companies

In the logistics sector, circular opportunities are less evident than in the agricultural sector. However, opportunities exist that benefit both the competitive position of the sector and a circular economy. Opportunities cover the following areas:

- Sustainable packaging, climate controlled (cold chain) logistics and technologies;
- Warehouse Management Systems;
- Fuel efficient trucks and buses;
- Sustainable airport development;
- Sharing platforms for logistic services;
- Municipal Solid Waste management services;
- Recycling technologies, for used cars, tires and plastics.



Renewable energy

The energy economy in Vietnam is changing rapidly. Vietnam has a large range of primary energy sources such as crude oil, coal, natural gas and hydro power. In 2015, the primary energy supply in Vietnam consisted of 35% coal, 28% oil, 14% natural gas, 17% biomass and 6% hydro. The industrial sector is the main consumer of primary energy (43%), followed by the residential sector (30%) and the transportation sector (23%).

The sector faces the following challenges:

- Vietnam has become a net importer of power;
- Demand for electricity is rapidly growing;
- The Vietnamese power sector is dominated by the EVN. Almost all households in Vietnam are

attached to the national grid;

- Electricity prices are set below cost price and feed-in-tariffs in Vietnam are one of the lowest in the world;
- Grid-connected energy projects are often not-bankable for foreign investors;
- Net metering is introduced to stimulate the development of rooftop solar PV.



Vietnam has good potential for renewable energy. Vietnam is considered to have the best wind resources in Southeast Asia and therefore Vietnam has great potential to develop and generate wind energy. Both on- and off shore wind show good potential with sufficient wind year round. Vietnam's agricultural activities result in vast amounts of agricultural waste, resulting in a relatively high potential for biomass energy generation. While Vietnam has largely exploited its potential for large-scale hydro power generation, small hydro power generation (up to 30 MW) still provides significant potential.

CE opportunities for Dutch companies

A circular economy is powered by renewable energy. From the scoping study the following opportunities are identified that have the potential to enhance the circularity of the sector:

- Consultancy services on biomass resource mapping;
- Improve energy efficiency;
- Solar PV with net metering;
- Consultancy services on the energy transition;
- Captive business models in biomass to energy.

Water management

A large percentage of Vietnam's GDP depends on water. It is of primary importance for food and health and contributes as a key resource to economic activities. Water sustains the agricultural and industrial sectors, including energy production, logistics/navigation and tourism. Agriculture is responsible for 80% of water use, followed by industrial water use (15%), households (3%) and services (2%). Only a small share of urban wastewater

is treated (10 percent), and an even smaller share (4 percent) of septage (septic tank sludge) is safely disposed. Industrial zones discharge an estimated 1 million cubic meters of untreated wastewater a day directly into receiving water bodies. Over the next 15 years urban wastewater is expected to account for the largest share of effluents (about 60 percent). Industrial wastewater (25–28 percent) and rural wastewater (12–15 percent) follow.

The sector faces some major challenges:

- A growing water demand resulting from agricultural production, aquaculture, urbanisation, industrialisation, tourism development and population growth;
- Water pollution resulting from urban waste water (main contributor), wastewater from industry, aquaculture and the polluting effects of fertilizer and agrochemical runoff in rural areas;
- Climate change will sharply increase salinity intrusion in coastal areas, hurting crop yields.

CE opportunities for Dutch companies

Circular economy opportunities in the water management sector range from 'building with nature' opportunities in case of climate adaptation strategies, to the recovery of nutrients from waste water sludge. Opportunities with regard to climate adaptation and desalination are already being addressed by Dutch businesses participating in strategic partnerships, like the 'Mekong Deltaplan'.

Opportunities regarding circular economy and water utilities (supply of drinking water and waste water treatment) include:

- Water purification and water re-use techniques (closing the water loop);
- Recovery of nutrients from waste water (closing the materials loop);
- Heat recovery from water distribution and energy recovery from waste water treatment.

These opportunities are supported by Vietnam's Green growth policy and policies on water supply and water sewage in urban centers and industrial parks. To benefit from these opportunities, companies may be able to build on:

- Existing Dutch-Vietnamese cooperation, like the 'Mekong Deltaplan' and the 'Vietnamese Climate Adaptation Partnership';
- City partnerships, like Amsterdam-Hanoi and Rotterdam-HCMC;
- Water management inclusive trends, like the growing focus on smart cities;
- The focus on industrial symbiosis within economic zones;

- The need for improved water management in major tourist destinations, like Ha Long Bay;
- Dutch cooperation on circular economy and water management in the region, like the cooperation with ReCirc Singapore. This cooperation may serve as a 'hub' to Vietnam for Dutch companies based in both countries.

Smart cities

The concept of smart cities is about scalable solutions that take advantage of information and communications technology (ICT) to increase efficiencies, reduce costs, and enhance quality of life in cities. The interest in the smart city concept in Vietnam is triggered by the rapid process of urbanization and the resulting challenges. Between 1991 and 2014, Vietnam's official urban population doubled from 14 million to 30 million. The smart city concept is still relatively new to Vietnam, but the number of initiatives is growing. In Binh Duong province, Brainport Eindhoven and Becamex IDC Corp have worked together on developing a smart city in the region. In May 2017, a training program on Smart Sustainable Vietnamese Cities (SSVC) has been designed and launched in Vietnam, involving the Hogeschool Utrecht (HU).



Cities in Vietnam face the following challenges:

- Water pollution. Urban wastewater one of the largest contributors to water pollution;
- Air pollution due to traffic and the growth of fossil fuel energy consumption by industry and coal-fired power plants in northern Vietnam;
- Traffic congestion;
- Land use, environmental impacts and loss of raw materials due to landfill and burning of municipal and industrial solid waste;
- Social-economic challenges and health hazards in the nearly 3000 villages which specialize in recycling discarded plastic and other waste materials, like electronics (e-waste). The people involved (operating in the informal sector) tend to be socially marginalized, tend to live on or near garbage

disposal sites, and are exposed to environmental and safety hazards.

CE opportunities for Dutch companies

The concept of smart cities offers opportunities to Dutch businesses that can provide the knowhow, products and services that contribute to *sustainable* smart cities, addressing the current challenges. The National Green Growth Strategy and the National Waste Management Strategy provide a policy framework for green and circular initiatives.

Opportunities include:

- Circular City baseline assessments; identifying the opportunities for and benefits of circular strategies in smart city initiatives;
- Circular building concepts and materials;
- Smart lighting solutions, including smart LEDs;
- Smart urban mobility systems, including smart planning, multi modal solutions and car sharing;
- Inclusive (involving the informal sector), environmentally sound solid waste processing and recycling technology;
- Urban mining concepts and technologies (e.g. Closing the Loop);
- (Online) asset sharing platforms;
- Closing water loops (see 'Water management');
- Renewable energy solutions (see 'Renewable energy').

To benefit from these opportunities, businesses can build on existing Dutch-Vietnam cooperation on smart city development (e.g. Brainport Eindhoven in Binh Duong), city partnerships (e.g. Amsterdam- Hanoi, Rotterdam-HCMC) and the experience of Dutch businesses on smart city related sustainability topics in Vietnam (e.g. Royal HaskoningDHV on water management, Philips on smart lighting, AEB AfvalEnergieBedrijf on waste management), in other Asian countries (e.g. TNO on smart logistics in China) and in other regions (e.g. Closing the Loop on urban mining).

More information

For more information on Vietnam's circular economy opportunities and the available instruments to support Dutch businesses, please contact the economic section of the embassy at:

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