



# Eneco, at the heart of society

Annual Report 2012 Eneco Holding N.V.



# Generating energy together

Some of our customers already generate their own sustainable energy locally. For example by means of solar panels or wind turbines. This energy is intended for their own use and, in case of overproduction, also for others. Instead of simply paying for energy, they now save and sometimes even earn money with the energy they produce.

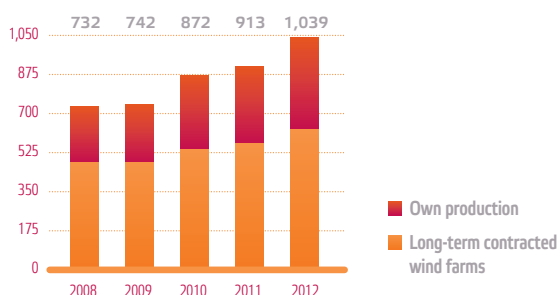
## What did we aim to achieve in 2012?

Eneco strives to actively involve customers in sustainable energy. We invest in increasing the share of sustainable production, together with customers or through our own wind farms, solar installations or biomass plants. The target for 2012 was to expand our sustainable production to 15% of the total supply portfolio (2011: 9.9%). An additional aim was to keep our CO<sub>2</sub> emissions per kWh of energy produced below 300 grams.

By developing interconnected services, we aim to offer more customers the opportunity to generate their own energy. To this end, we also provide the appropriate infrastructure in the form of smart grids. Eneco enables customers who do not have the possibility to generate their own energy to join in, by giving them the opportunity to participate in a wind or solar energy project. Furthermore, we are applying our knowledge and expertise in the area of infrastructures for the practical use of residual flows such as steam and heat. Our ultimate goal is to reduce the CO<sub>2</sub> emissions from the energy that we produce.

## What have we achieved?

- Total sustainable energy production increased from 9.9% in 2011 to 12.6% of the total supply in 2012
- 51% of the electricity sales is produced by Eneco or supplied under purchase contracts (2011: 59%)
- In part due to start of operation Enecogen plant, CO<sub>2</sub> emissions per kWh of energy produced amounted to 226.9 grams (2011: 154.1)
- Introduction of Eneco Zon&Zeker®, enabling end users to generate their own energy by means of solar panels
- Participations in several solar energy projects in the business sector
- Investment of €273 million in onshore and offshore wind farms and biomass and solar energy installations
- Further development of experience with smart grids
- Start of the construction of the steam pipeline network in the Botlek area
- Connection of an additional 6,000 home equivalents to the district heating networks. Contract concluded with AVR for the supply of residual heat in the Rotterdam area



**WIND CAPACITY ENECO**  
(in MW)

**Sustainable electricity production increases, but not sufficiently**

We have worked hard on expanding our sustainable electricity production in 2012. The sustainable electricity production encompasses sustainable electricity that is either produced by Eneco or supplied to Eneco under purchase contracts. The development of our own sustainable production capacity is on schedule, even though we did not achieve our objective. This is described in further detail elsewhere in this chapter. Due to the lower than expected demand for dark green products, the sustainable electricity production amounted to 12.6% of the total supply portfolio, instead of our target of 15%. With WWF, we have agreed a target of 20% for 2013, which we expect to be able to achieve.

Although electricity is produced in a sustainable manner as much as possible, we still need gas plants, especially on windless and cloudy days. Electricity generated from gas is the least polluting alternative to sustainable energy generation. In 2012, 51% of the total amount of electricity supplied by Eneco was generated by our own production facilities or purchased under power purchase agreements (2011: 59%). The main reason for the decrease compared with 2011 is that, during 2012, it was often more sensible to purchase electricity than to deploy our own gas plant production capacity. The growth of our sustainable production capacity and the start of operations at our gas-fired energy plant Encogen have resulted in an increase of our production capacity by 5% to 2,740 MW (2011: 2,623).

**CO<sub>2</sub> emissions**

The measure for the sustainability of our own production is the amount of CO<sub>2</sub> emissions per kWh of electricity produced. Fully sustainable energy does not generate any CO<sub>2</sub> emissions. At present, all our domestic and SME customers are supplied with sustainable energy, an increasingly larger part of which is generated by Eneco itself or in collaboration with partners.

We have agreed with WWF that, in 2013, the average CO<sub>2</sub> emissions per kWh of electricity generated by Eneco will not exceed 300 grams. To this end, we invest in wind, solar and biomass energy installations at the most suitable locations in the

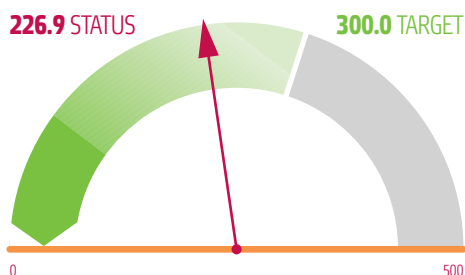
Netherlands, Belgium, Great Britain and France. As a result of these efforts, the average CO<sub>2</sub> emissions resulting from our energy production amounted to 226.9 grams/kWh in 2012 (2011: 154.1). This value does not include our purchasing contracts with production facilities of which we have less than 50% ownership. If we also take these into account, our CO<sub>2</sub> emissions per kWh amounted to 294.5 grams in 2012. The increase compared with 2011 is caused by the fact that the gas-fired Encogen energy plant came into production. As a result, the share of production from conventional resources increased at the expense of the production from sustainable resources.

**Together in wind energy**

During the course of 2012, the demand for sustainable energy production solutions increased. Wind energy is becoming a premium product that helps customers in some segments to enhance the visibility of their efforts in the area of sustainability. For a number of major customers, we meet this demand by providing customised solutions. With the combination of HollandseWind® and an SMK foundation eco-label, we offer companies the possibility to obtain a higher score on the CO<sub>2</sub> Performance Ladder. In this manner, we help them to increase their business. In order to spread our risks, we have wind energy activities in a number of different countries. The successful completion of our wind projects has resulted in a substantial expansion of our wind energy portfolio. In the Benelux, Eneco is market leader in the area of offshore wind energy. Good cooperation with the right local and non-local partners is a very important factor for the realisation of the planned growth.

Our aim is to complete different onshore wind energy projects with a total capacity of approximately 100 MW each year and to realise one offshore wind energy project about every three years. At 1039 MW, our total onshore and offshore installed wind capacity, generated by Eneco production facilities or supplied under purchase contracts, exceeded the 1000 MW mark in 2012 (2011: 913 MW).

**CO<sub>2</sub> PER PRODUCED KWH**



### Onshore wind energy

In the Netherlands, we obtained a building permit for the construction of the Laaksche Vaart wind farm in the province of Noord Brabant. Furthermore, we acquired the company WindWise, one of the developers of the Delfzijl Noord wind farm and other projects in and around the municipality of Delfzijl.

We obtained a number of permits in other countries. In Belgium, we acquired permits for projects in Molenbaix, Herentals, Boneffe, Arlon and Fauvilliers. There are still some follow-up procedures to complete, but we trust that we can start the construction of these projects in the coming years. In Great Britain we obtained permits for the expansion of the Tullo and Lochluichart wind farms.

In 2012, we completed the construction of the Dutch wind farms Accres, Hoevensche Beemden and Zwartenbergseweg. The Romerswaal and Houten projects are under construction. In Belgium, the wind farms Ciney, Perwez and Eeklo became operational. The Lochluichart project in Great Britain is under construction.

### Offshore wind energy

The next offshore wind farm that we have planned is Eneco Luchterduinen. Van Oord and Vestas are the preferred partners for this project. Early 2013, we also entered into a partnership relating to this wind farm with the Japanese company Mitsubishi Corporation (MC). MC also intends to acquire half of the Prinses Amalia wind farm. The development of the Norther offshore wind farm in Belgium is progressing according to plan. We have now obtained the permits. We have sold 50 percent of the Navitus Bay project in Great Britain to EDF. We will continue the development of this project, which will supply energy to approximately 775,000 households, together with EDF.

### Together in solar energy

Solar energy is also very important to Eneco's sustainability approach. The general expectation is that there will be a rapid increase of energy production by means of solar panels in the Netherlands and that the parties involved will investigate all the possibilities to support this expectation. Eneco's aim is to take the lead in this process and actively approach other parties. In 2012, the solar energy portfolio increased to 29.5 MWp, encompassing 140 locations, in particular, in Belgium and France.

### Eneco Zon&Zeker®

In 2012, we introduced Eneco Zon&Zeker®, a complete package for the domestic market that enables consumers to generate their own energy by means of solar panels. Eneco Zon&Zeker® is now also available for SMEs, through housing associations, as a special offer for the employees of a number of large companies in the Netherlands and for specific target groups such as members of WWF. With Eneco Zon&Zeker®, we aim to achieve a distinctive position in the consumer solar energy market in the Netherlands. To this end, we have acquired a strategic interest in the company ZonIQ and we work as a mediator with Greenloans, which is a service provided by ABN AMRO bank for green loans to consumer.

### Solar projects in the business market

The projects that we have developed at DSM (Geleen), Tata Steel (Ijmuiden) and Philips (Best) in the Netherlands were all put into operation in 2012. In Amsterdam, we are developing a project on the roofs of housing corporation Eigenhaard.

In Belgium, we realised a substantial number of projects, including nine locations at Wienerberger (stone factories), ten locations owned by the municipality of Destelbergen and nineteen locations owned by the province of Oost-Vlaanderen. In 2012, there were a number of rapid developments in Belgium in the area of subsidies on solar energy. In Flanders, subsidies were significantly reduced, as a result of which the market shifted to Wallonia and Brussels. The Walloon government aims for a five-fold increase of the installed capacity in Wallonia to 1,200 MWp in 2020.

### Investments in solar energy production capacity

Eneco has decided to expand its solar energy production capacity by developing its own production facilities and through the acquisition of existing parks. In 2012, these activities were mainly focused on Belgium and France. The first result of a thorough exploration of the French market was the acquisition of 70 installations in the south of France, with a total capacity of 11.8 MW, from the French company Fonroche Energie. We also entered into a partnership with this company aimed at investigating more suitable installations for the production of sustainable energy in France. We have entered into a similar partnership with the Swiss company Susi Partners.

### Together in biomass

Producing energy from biomass is a sustainable process. Over time, we have gained considerable experience with biomass installations. At the end of 2012, our total installed capacity of energy generated from biomass amounted to more than 10 MW. We now have over 130 MW of biomass installations in development for the production of electricity, heating and green gas.

### Investments in biomass production capacity

In 2012, we made substantial progress with the construction of 'Bio Golden Raand', the biomass energy plant in the municipality of Delfzijl. Work started in November 2011 and all major construction work was completed at the end of 2012. The plant is expected to become operational by mid-2013. This power plant, in which an amount of € 170 million has been invested, will have a production capacity of 49.9 MW. The plant will convert waste wood from, for example, construction and demolition activities, into electricity.

### Heating-cooling solutions

A large part of the energy demand of our customers relates to heating and cooling. Consequently, the propositions for heating and cooling form an important part of our sustainability strategy.

**Growth continues**

Heat networks are more environmentally friendly than conventional heating with gas and are energy efficient. Customers can save a lot on gas, since no boiler is required in homes that are connected to such a network. The number of heat network connections is being expanded year after year, which contributes to the reduction of energy consumption. In Rotterdam, Utrecht and The Hague, we taking significant steps together with regional partners in improving the sustainability of the large district heat networks. In 2012, we signed a contract with waste processing company AVR for the supply of residual heat to our customers in the Rotterdam area. For this purpose, a heat pipe will be installed between the Botlek area and the city. In Utrecht, we are exploring the possibilities for a biomass plant that produces both electricity and heating.

The Harnaspolder heating station was put into operation in October 2012. The plant replaces the temporary boiler installation. The Harnaspolder combined heat and power plant is the first of our heat production units that works with a large heat pump that uses energy from the residue of the adjacent wastewater treatment plant.

Despite the decline in new construction, Eneco is able to continue its growth and to acquire new heating customers. Due to a stronger focus on the renovation market and commercial real estate, our business is expanding by some 6,000 home equivalents per year in both the residential and the office market. Housing corporations and real estate developers are responsible for most of this growth. Furthermore, there is an increasing demand for sustainable cooling. Cooling by means of groundwater and river water is a sustainable and financially attractive alternative to traditional air conditioning.

**Joulz takes over the management of heating network from Essent**

On 1 April 2012, Joulz took over the fault repair and maintenance activities on a large part of the district heating installations in the province of Noord-Brabant from Essent Local Energy Solutions for a period of five years. The installations for which Joulz is responsible supply district heating to approximately 43,000

household customers and business customers in Noord-Brabant. The acquisition is in line with Joulz's strategy to expand its activities in the field of sustainable energy infrastructures, such as heating networks, and contributes to strengthening its national coverage.

**The smart grid of the future**

Smart grids are necessary to make the energy supply of the future as flexible as possible. In 2012, grid administrator Stedin further determined its position in the field of smart grids. An internal multidisciplinary team has determined which functionalities are required to enable intelligent grid management development during the coming years. We now have a good idea of the challenges that lay ahead.

**Current developments**

Stedin is involved in a number of pilot projects to acquire useful experience with smart grids. In its capacity as coordinator of the Couperus project, Stedin received a grant for this purpose in 2011. The technical side of this pilot project was completed in 2012 and the systems have been tested. Due to a delay in construction, the pilot project will not go live until February 2013, with the arrival of the first residents. Stedin is also involved in projects of the Smart Energy Collective, Energieneutraal Heijplaat and Evander, which run more or less parallel to the Couperus Smart Grid project.

**Direct current offers possibilities**

In new development areas, direct current networks offer good possibilities for substantial energy and cost savings. Infrastructure company Joulz develops smart concepts in which the market and the media show increasing interest. Concepts for a holiday park in the province of Zeeland and a business park in the province of Flevoland have already demonstrated that the use of direct current definitely saves energy. Joulz and its partners have received a grant from the Nederlandse Innovatie Programma Intelligente Netten (Dutch Smart Grid Innovation Programme) for the realisation of a direct current network in the Haarlemmermeer greenhouse horticulture area. In 2012, Joulz won the Smart Grids Innovation Award 2012 and a nomination for Sustainable Innovator for its smart concepts in the field of direct current.

**ZON&ZEKER**

With nine solar panels, an average household can generate sustainable energy with a value of approximately 450 euros each year, but many people have no idea how to go about this. With Eneco Zon&Zeker® we handle every aspect for our customers: the installation of high quality solar panels, a unique Zon&Zeker warranty for guaranteed supply, 24-7 online insight into the functioning of the solar panels and settlement of the resupplied surplus electricity.

## Reusing residual flows

Residual flows such as steam and CO<sub>2</sub> are not waste as far as Eneco is concerned. On the contrary, they can form a valuable contribution to the energy chain. This is why we continue to develop new initiatives. We supply CO<sub>2</sub> to the horticulture sector, where it is used in greenhouses to stimulate the growth of the crops. Our new steam network in the Botlek is also a prime example.

### Steam pipe network Rotterdam Botlek

Stedin is developing a steam transportation network in the Rotterdam Botlek industrial area. In this region, different industries are located in close proximity to each other. Residual steam from one company can be transported efficiently via a steam network to be used in the production process of another company. Reusing the steam in the primary process of another company improves the energy efficiency of the entire chain. Lower volumes of fossil fuels are needed and less CO<sub>2</sub> and NO<sub>x</sub> is released into the atmosphere. Once the network is fully operational, CO<sub>2</sub> emissions in the Rotterdam port area will be reduced by 200 to 400 kilotons per year. The project thereby contributes significantly to the climate targets of the city of Rotterdam.

### First customers connected to steam early 2013

Stedin invests in and will be the owner of the new steam transportation network. The first customers with which transport and connection agreements have been signed are waste processing company and steam supplier AVR and chemical company and steam user Emerald Kalama Chemical (EKC). The steam network is now under construction and will become operational in the spring of 2013. Plans are being made for a second part of the network between EKC and Akzo Nobel. The investment decision for this three-kilometre section of the network will be made in the middle of 2013. If the decision is positive, this extension can be operational by 2015.

## Together in green gas

Our ambition is to continue to expand the production of green gas, which is a sustainable alternative for natural gas. We do this

by means of partnerships, for example with waste energy plant ARN. Our efforts in 2012 have resulted in a green gas portfolio of 15 million cubic meters.

### Green gas fuelled buses

In cooperation with Agro Energy, Eneco has concluded a contract with waste energy plant ARN in Nijmegen for the purchase of 2.5 million cubic meters of green gas per year until 2016. The green gas is fed into the gas grid and Eneco supplies the corresponding green certificates to bus company Hermes. As a result, the buses in the Arnhem-Nijmegen area will be fuelled by regionally produced green gas.

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### COUPERUS GETS SMART GRID

Couperus is a development project for smart grids. Eneco and Stedin are developing this project in collaboration with a number of partners. We supply the sustainable energy for the heat pumps in the 300 apartments in the building, taking into account the grid load. As soon as it appears that the grid load may become too high, we adjust the capacity. This is not only efficient, but also limits costs.