



Strategic vision Province of Flevoland

'Making sustainable energy work'



"Co-financed by the ERDF"
"Made possible by the INTERREG IVC programme"

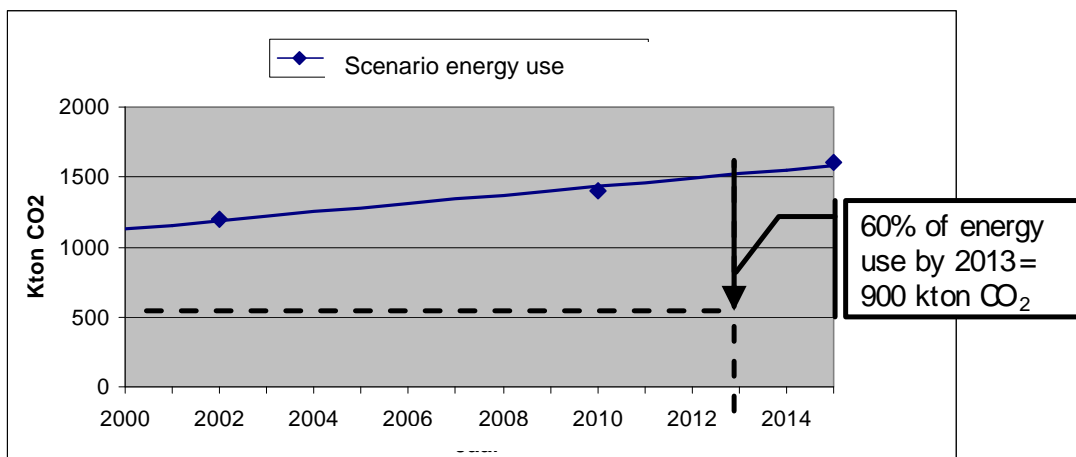
1. The goal of this strategic vision

In the Outline Agreement¹, we opted for an ambitious target for sustainable energy. We are now defining this target as 60% of energy consumption (excluding transport) by 2013. In addition, we want sustainable energy to contribute even more to the growth of Flevoland's economy and to employment and a vital countryside. Moreover, we want to achieve these goals while maintaining and, where possible, improving spatial quality.

In this strategic vision, we specify the measures we want to take to give definite shape to our ambitions in the area of sustainable energy, economy and employment. We want to clearly show municipalities and market parties the route we will take with sustainable energy in Flevoland. After the 'Making sustainable energy work' strategic vision has been discussed in the Provincial Executive, we will work it out into a concrete plan of action that is part of the 2008–2011 Climate Policy Implementation Programme.

2. Introduction

Objective: 60% sustainable energy by 2013
(expressed in kilotons CO₂)



In the Netherlands, Flevoland leads the way in the production of sustainable energy. In its climate and energy policy, the Province focuses on limiting the emission of greenhouse gases. CO₂ (carbon dioxide) is the greenhouse gas responsible for the vast majority of climate problems. The amount of sustainable energy produced in Flevoland is therefore expressed as (avoided) kilotons of CO₂. The production of sustainable energy in kilotons of CO₂ shows how much CO₂ would have been released if the same amount of energy had been generated in a conventional power station that uses fossil fuel.

The target of 60% sustainable energy in the Outline Agreement relates to the total energy consumption in Flevoland, excluding transport. In the years to come, energy consumption will rise due to the increasing population and the growing economy. The following figure displays how energy consumption

¹ Outline Agreement 2007-2011, Flevoland Dynamic in Balance

will develop up to 2015 (Figure 1), based on a recent scenario calculation from the Central Planning Bureau, the Netherlands Environmental Assessment Agency and Spatial Planning Bureau.

Figure 1: CO₂ emissions linked to increasing energy consumption in Flevoland and the emission reduction target for 2013

The figure indicates how the target of 60% sustainable energy (excluding transport) by 2013 will affect the amount of kilotons of CO₂ to be avoided during that time. According to the scenario calculation, CO₂ emissions in Flevoland will come to 1500 kilotons in 2013. Given the target, Flevoland must generate 60% of this amount of energy sustainably, which corresponds to 900 kilotons.

The next question we asked ourselves is where Flevoland currently stands. Based on the most recent calculation of all sustainable energy projects and the effects of energy savings, the amount of avoided CO₂ is 680 kilotons (Figure 2). When set off against Flevoland's current energy consumption of 1350 kilotons of CO₂ this means that the amount of sustainable energy generated in Flevoland currently meets 50% of Flevoland's total energy needs (excluding the energy used for transport).

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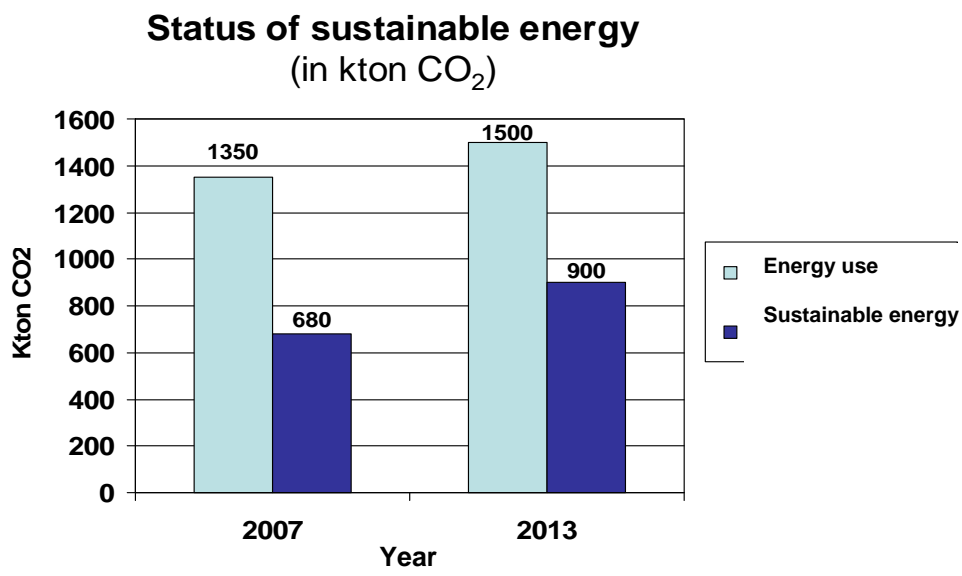


Figure 2: Production status of sustainable energy and the targets for 2013

Our work in the area of sustainable energy is aimed at making the energy supply completely sustainable in the longer term. This is why the target in the Outline Agreement was recently increased to 60% by 2013. Flevoland will continue to grow strongly in terms of both the population and the economy. The demand for energy will also grow as a result. That means that our current score of 50% would decrease if the amount of sustainable energy remained the same. It is therefore important to keep doing everything we can to make our energy supply even more sustainable. Not just up to 2013, but also for the years after that. This strategic vision specifies the main tracks that we will focus on to make the energy supply sustainable, but that does not mean that we will reject initiatives that do not correspond with these tracks. It indicates the tracks on which we are focusing as a Provincial Government, because we believe that in the long term they will significantly help us to make our energy supply sustainable.

Our sustainable energy objective greatly exceeds the national target. We therefore want to look for the European dimension with comparable foreign regions.

Sustainable energy is receiving a great deal of attention in Flevoland. Many different parties are approaching us with initiatives, varying from cultivating algae to setting up an application centre for sustainable energy. They are asking for our support in different ways. We need a clear testing framework in order to decide on initiatives we want to stimulate so that we can do everything possible to achieve the goals of sustainable energy, economy and employment with the available resources and manpower.

3. The problem, or rather the challenge

Sustainable energy can be generated in many different ways • for example, using wind turbines in rural areas or using solar cells on roofs in the built environment. To efficiently and effectively achieve the targets of sustainable energy, a sustainable economy and sustainable employment, we will now compare the different types of sustainable energy to determine how they can help Flevoland to:

- increase sustainable energy production
- develop the economy
- create direct and indirect employment
- determine the period within which this is possible.

Our conclusion is that as the Province of Flevoland we must concentrate on the themes of wind energy, bio-energy & green raw materials, and sustainable urban development:

- Wind energy is technically mature and can continue to grow in a controlled way within the new policy framework (see below).
- Bio-energy and green raw materials are providing the agricultural sector with new opportunities to lead the way in this new growth sector.
- The extensive building specification for the coming decades and the expertise already gained mean that Flevoland can lead the way in the Netherlands in the field of sustainable urban development.

Although our scope is focused on these themes, that does not mean that we will discourage any initiatives outside that scope. The target-oriented development of these themes will create an extensive growth market in the province. We want to encourage the Flevoland business sector to utilise this market but we also want to attract new companies.

The question that we then asked ourselves is: ‘Which bottlenecks are obstructing the development of these sustainable energy sources and which role should the Provincial Government play to remove those bottlenecks?’ In the next three chapters, we answer this question for the three priority themes of wind, biomass and green raw materials, and sustainable urban development.

4. Wind energy

- **We are collaborating on the Noordoostpolder plan that falls under the ‘old’ policy.**
- **We are collaborating on two projects in Zeewolde that will test the new policy in practice.**
- **We are working hard to involve municipalities, promoters and the State in the new policy framework for landscape design and the realisation of replacement locations.**

The playing field

Wind energy is currently by far the greatest contributor to the production of sustainable energy in Flevoland. The wind capacity in the province is 625 MW distributed over 600 wind turbines, including the projects still under construction. These turbines are supplying sustainable electricity to 380,000 households and are generating an annual flow of income of approx. EUR 20 million, 80% of which goes to the owners in the agricultural sector. In that way, wind energy is compensating for the decrease in income caused by competition in the European Union, amongst other things. Furthermore, the wind sector is currently responsible for 310 permanent jobs in Flevoland.

Besides these positive effects, the strong growth of wind energy in Flevoland has led to what many feel is the 'uglification' of the landscape. For this reason, in 2005 the Provincial Executive called a temporary halt to the placement of wind turbines and requested the development of a new wind energy policy. This policy came into effect with the 2006 Environmental Plan. The main elements of the policy framework are:

- the original open landscape must be restored by concentrating wind turbines in one location
- existing wind turbines must be replaced with new wind turbines
- due to upscaling – new wind turbines have a greater capacity – by 2020 the number of wind turbines will have decreased by 50%
- new projects must meet the requirements for wind turbine capacity, axis height and project size and must financially contribute to projects in the area.

Minister Cramer recently said that she wants to more than double the production capacity of wind energy on land from 1,500 to 3,500 MW. She considers good spatial integration and a healthy investment climate to be important tasks for the State.

The opportunities

We believe that, in the first place, the new provincial policy will increase the landscape quality by reorganising those (solitary) wind turbines that are seen to be a blot on the landscape. In addition, both the total wind capacity and the yield per MW will increase if there is a steep decrease in the number of wind turbines. We foresee a development that will result in 320 wind turbines in 2020 with a total capacity of 1350 MW and a 20% higher yield per MW.

As a result, the significance of wind energy as a source of additional income for the agricultural sector will further increase and will contribute to the vitality of the countryside and the small centres. But also the number of temporary and permanent jobs in the Flevoland wind sector will grow to 550 FTE in 2010 and possibly 700 FTE in 2020. This is making Flevoland an attractive province for wind energy companies to set up business. Examples of this include the recent arrival of producer Harakosan and the planned arrival of maintenance company De Wolff.

The challenges

In view of the way wind energy can contribute to goals of sustainable energy, economy and employment, it is important that the new wind energy policy is successful. However, this policy framework means that all parties are facing new and major challenges, because it represents a break with the hitherto common practice of project development for wind energy. We have identified the following challenges:

- it is important that there is a good cooperative relationship between promoters as they switch from being a wind turbine owner to one of many participants in a wind farm
- the income from new wind farms must benefit the Flevoland parties as much as possible
- replacement locations, spatial reservation and planning must be designed in relation to national goals such as radar protection zones and legislation in the field of nature and fauna
- there must be regional and inter-municipal cooperation in the upscaling and reorganisation policy.

The role of the Provincial Government

During the transition period from the old to the new policy, we will collaborate on:

- realising the existing plan in the Noordoostpolder that falls under the old policy
- two projects in Zeewolde that will test the new policy in practice.

To make the new policy a success together with municipalities and promoters, we will need to pursue more management than is now the case. We want to actively control the process and promote it. Here, it is very important that we jointly develop a (wind) landscape vision. Given the Minister's ambitions, we will also appeal to the State for assistance in implementing the project. In particular, we are thinking of involving the State landscape adviser in the design and realisation of the wind landscape. In a European context, we want to find out which other regions are facing comparable challenges and how we can help each other.

5. Bio-energy and green raw materials

- We are primarily focusing on innovation (the production, distribution and sale of bio-natural gas, the high-quality processing of residual and waste flows, and bio-refinement) and cluster formation (industry, suppliers and purchasers of residual flows, the agricultural sector and knowledge institutes).
- We will try to find locations for larger bio-energy production units and provide experimental space for innovative developments.
- We are promoting Flevoland as a bio-energy region and will help companies to become established in that context and support innovative starters in their search for capital and experimental space.

The playing field

Bio-energy is very much on the rise in Flevoland, and a number of co-fermentation systems have already been realised. This number will increase even more when the Environmental Quality for Electricity Production (MEP) subsidy scheme is restored. The Flevoland Development Company (OMFL)² recently drew up a list of 34 bio-energy initiatives. These varied from small individual systems on farms to large industrial production units. The four larger industrial and • by all accounts • feasible initiatives have resulted in a total of approx. 200 jobs with an investment of EUR 70 million. Two of these initiatives have since applied to set up business in Flevoland and new initiatives are putting themselves forward. In April 2007, the Wageningen University Research Centre (WUR) set up ACCRES³ in Lelystad. ACCRES is the application centre for sustainable energy and raw materials.

Two external developments will contribute to the further development of bio-energy. The first is the Incentive Scheme for Sustainable Energy production, the successor to the MEP scheme that ended last year. This scheme, the details of which are not yet known, will focus on the cost-effective stimulation of the environmental quality of electricity production. To achieve volume growth, options with a low non-profitable element will be chosen in the scheme. This means that smaller (co-) fermentation initiatives with a large non-profitable element will probably not receive any subsidy, which

will therefore give rise to initiatives for larger fermentation systems. This scheme will now also stimulate the production of green gas (biogas) and innovations.

The second external development involves the recommendations to the Government in the Green Paper⁴ to base 30% of energy and material consumption in the Netherlands on green raw materials before 2030. The recommendations relate to the following:

- An increase in the domestic supply of biomass through the optimal use of residual flows, the development of crops and cultivation on land and in water
- The accelerated development and application of bio-refinement⁵.

The opportunities

Our province has a strong agricultural focus and can provide space for agricultural entrepreneurship. Even in Flevoland, however, the profitability of this sector is under pressure. On the other hand, it is a

² Approach to sustainable energy in Flevoland, Inventory and supervision of initiatives related to bio-energy in Flevoland, Ontwikkelingsmaatschappij Flevoland BV, May 2007

³ ACCRES stands for Application Centre for Renewable RESources and is an initiative of Wageningen UR. The centre focuses on experimenting, demonstrating and learning in the field of regional energy concepts, the closure of biological cycles and the utilisation of biomass.

⁴ Green Paper Energy Transition, Platform Green Raw materials, commissioned by the Interdepartmental Project Directorate for Energy Transition, April 2007

⁵ From the Green Paper: **Bio-refinement: the future of agriculture:** *Plants are mainly made up of cellulose and proteins and then substances such as oils, sugars and organic acids in alternating amounts. Bio-refinement is a concept that focuses on the separation and marketing of all these parts of the plant. One example of this is the bio-refinement of grass as developed by Avébé. Unrefined grass is worth just EUR 50-70 per ton. After separation into its individual parts, it is worth EUR 700-800 per ton.*

Until now, plant refinement was mainly aimed at increasing food production. In the Netherlands, knowledge about plant refinement is among the best in the world. This expertise is therefore the ideal starting point for developing and cultivating green raw materials for bio-refinement.

very innovative sector and knowledge and training institutes are a major part of the agricultural cluster in Flevoland.

In view of the above, it is our ambition to vigorously stimulate the development of bio-energy and green raw materials in Flevoland. This perfectly combines the strengths of our province in this area, the initiatives of market parties and the opportunities offered by the State.

For bio-energy/green raw materials, the focus will be on the following:

- Innovation⁶: produce, distribute and sell bio-natural gas (FAPS report)⁷, high-quality processing of residual and waste flows and bio-refinement.
- Cluster formation: attract and bring together industry, suppliers and the purchasers of residual flows, the agricultural sector and knowledge institutes, to create a robust trade sector. One person's waste is another person's raw material.

Through this innovation and cluster formation, we want to turn Flevoland into the leading region for bio-energy and green raw materials in the Netherlands.

The challenges

To realise this ambition, we will have to overcome a number of challenges. For everything to work efficiently and cost-effectively and in order to utilise the new State subsidies, we will need to attract large bio-energy production units. The provincial location policy will provide the necessary space in business parks and industrial zones. For large production units that involve the import of raw materials and possibly the sale of products abroad, a port facility is vitally important. And for innovative projects, it is also important that 'experimental space' can be provided. In some municipalities, business parks and industrial zones in the urban area must satisfy the requirements related to the number of jobs per hectare. To stimulate the production of bio-energy, the Provincial Government will therefore actively look for opportunities for companies to set up business and will make every effort – if necessary, by abolishing the requirements for the number of jobs per hectare in business parks and industrial zones – to find space for these initiatives.

The role of the Provincial Government

The Provincial Government will work together with municipalities to make it possible for larger bio-energy production units to establish themselves in business parks or industrial zones, to provide experimental space for innovative developments and, together with the gas companies, to look for (local and regional) possibilities to distribute and sell bio-natural gas. The Provincial Government also wants to play a promotional and coordinating role:

- to promote Flevoland as a bio-energy region inside and outside the Netherlands
- to interest companies in Flevoland and help them to set up business here
- to support innovative young businesses in their search for capital and experimental space.

6. Sustainable urban development

- **In the coming decades, we want to utilise our trendsetter role in the area of sustainable urban development and construction and the possible uses of sustainable energy in the construction sector for further knowledge development and activity in this area.**
- **We want to enable the Nieuw Flevolands Peil working group (NFP) to quickly grow into an effective project organisation for the market and the Government that can broaden and deepen sustainable urban development.**

The playing field

⁶ Environmental Plan 2006, page 103: Innovation development focuses, for example, on the development of sustainable innovation energy carriers.

⁷ Potential of biogas production in Flevoland to replace natural gas, Flevo Advice & Project Service, March 2007

In the Outline Agreement, we defined Theme Five as follows: 'Flevoland wants to be a sustainable society; a society that builds for future generations, that focuses on a healthy living environment and that invests in quality'. We want to work out this theme in detail as far as energy and climate are concerned.

The building specification in Flevoland for the period 2010 to 2030 is 5,600 homes per year. That means that the housing stock will grow from around 150,000 homes in 2007 to 270,000 in 2030. These new homes will easily surpass the energy performance requirements of the Building Decree⁸. This will not only lead to a significant CO₂ reduction but will also mean that the future residents in these homes will be less dependent on increases in energy prices due to the exhaustion of fossil fuel and/or to political tensions. Which is good not only for the environment but also good for quality.

Moreover, the success of the Nieuw Flevolands Peil project shows that parties other than us are also aware of this future scenario. In the 'Nieuw Flevolands Peil' manifesto, 45 parties in the Government and on the market declared their ambition to work to achieve sustainable and high quality construction, paying special attention to energy. This has resulted in a number of ground-breaking new projects⁹.

The opportunities

The initiatives that we have taken here in Flevoland are also being responded to more and more on a national level. For example, the national Energy Transition for the Built Environment Platform has declared its intention to realise 5,000 to 6,000 homes with high-quality energy within 5 years by implementing the Innovation Plan for energy efficiency in new and renovated buildings. Flevoland wants to play a leading role in this area for the following reasons:

- With the Nieuw Flevolands Peil project we have already created the basis for and gained experience with public-private cooperation in the area of sustainable urban development.
- We can utilise our acknowledged trendsetter role in this area and expand it to stimulate new knowledge development and activity that is concentrated in Flevoland.

Moreover, sustainable urban development is also contributing to our aim to achieve a sustainable energy supply:

- By constructing very low-energy buildings, we are restricting growth in the demand for energy, which means that less energy needs to be generated sustainably.
- Sustainable energy production by means of heat pumps, heat/cold storage and solar-photovoltaic/solar boilers are an integral part of sustainable urban development and they help to make the energy supply sustainable.

The challenges

We are on the right road but we also realise that we need to do more to achieve our ambitions. Cooperation between all disciplines is required early in the planning process in order to realise sustainable urban development concepts. Although everybody is aware of this, we are still not seeing it enough in practice. We will have to work with the municipalities to bring it about.

In order to broaden and upscale what are now trial projects so that sustainable energy can be supplied to thousands of homes in the future, we will need to have a powerful organisation that initiates and directs activities and in that way realises our collective aspiration. The scale and ambition of the building specification is providing the perfect opportunity to develop a knowledge and business cluster for sustainable urban development.

The role of the Provincial Government

In our Outline Agreement, we state that we will continue with the NFP project. We want the NFP organisation to rapidly develop into an effective project organisation, positioned between the market and the Government, with the capacity to tackle the challenges described above.

7. The follow-up

⁸ Environmental Plan Flevoland 2006, page 78 Sustainable Urban Development

⁹ 60 passive homes in the social housing sector and 120 passive homes in the regular sector, renovation of homes in the Almere Stad neighbourhood.

Based on a discussion on this strategic vision in the Space and Work Commission, it has been adapted and presented to the Provincial Executive for provisional approval. It will then be presented to PS for definitive approval.

Our ambitions can only be realised if the 'Making sustainable energy work' strategic vision is supported by the municipalities, market parties and knowledge institutes. This is why we consulted a number of external parties when formulating this vision. We want to continue on this track by drawing up a joint plan of action with the relevant parties in the future. In that plan of action, we will include agreements about the tasks and organisation that the public sector – the Provincial Government and municipalities – and the private sector – market parties and knowledge institutes • want to implement for the 2008-2013 period. This plan of action will be an integral part of the new 2008-2011 Flevoland Climate Policy Implementation Programme. We will also study which action is being taken in other European programmes and regions that may be able to contribute funds and ideas to the practicability and quality of the plan of action.