

Report of the Netherlands for CSD-14

Review of sustainable development for energy, industrial development
and air quality

Commissioned by the Dutch Ministry of Housing, Spatial Planning and the Environment, International Affairs Directorate. The report was written by CE Delft and represents an accurate factual overview of Dutch policy in the fields of energy, industrial development, air pollution/atmosphere and climate. The opinions expressed in the report are those of CE Delft. They do not necessarily represent the views of the Dutch government. (For CE contact details: see last page of this report)

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Summary

Background

This Dutch national report, reviewing the themes of industrial development, energy and air pollution/atmosphere, has been prepared for CSD14 by the independent environmental consultancy firm CE Delft. Dutch policy on sustainable development seeks to ensure that future generations will have at least as much opportunity as ours to progress and develop. This is translated into the objective for Dutch sustainability policy: an absolute decoupling of polluting emissions from economic growth.

Current status

Compared with other European countries, the Netherlands is densely built and populated, and therefore emits more pollution per square kilometre. A high proportion of the pollution in the Netherlands comes from other countries. As a low-lying country on the delta of major European rivers, the Netherlands is sensitive to the possible effects of climate change. Global warming will increase the likelihood of extreme weather conditions. More severe international measures to reduce the emissions of greenhouse gases and pollutants will therefore be in the interest of the Netherlands.

Dutch environmental policy in the last few decades has been successful in a number of regards. The environment in which we live has become healthier and safer in many ways. Dutch industry has become more eco-efficient (emissions per unit production). There have been appreciable reductions in pollution (NO_x, NH₃, SO₂) in recent decades. In particular, national policy and policy formulated at European level and subsequently implemented in the Netherlands has been successful, have led to improved air quality. This improvement, however, has not been sufficient to comply with international air quality standards. The improvement does mean that the linkage between economic growth and environmental pressure has been severed. This 'absolute decoupling' was brought about largely by technical measures and ongoing change in the structure of the economy (growing service sector).

For 30 years now, the Netherlands has a policy promoting energy conservation where various different policy instruments have been applied. Through this policy constant energy savings have been achieved. Recently, the goals for energy saving have been set higher. Sustainable energy does not have such a long tradition in the Netherlands, mostly due to the lack of hydro-power. Wind energy and bio-energy both have considerable potential. In the

case of CO₂ emissions there has been a slowdown in the rate of growth, but not an absolute decoupling. This is a fundamental challenge for Dutch environment policy.

Policy measures

Dutch policy for achieving sustainable industrial development, energy and air quality relies heavily on a further greening of the tax system, energy saving, sustainable energy and emissions trading for CO₂ and NO_x. The receipts from green taxes climbed from €6 billion in 1990 to €15 billion in 2003, about 14% of total tax receipts. The increase in excise duty on petrol and the energy tax are responsible for this increase. The further greening of the tax system is relies less on new green taxes than on introducing differentials on existing taxes reflecting environmental effects, or on creating exemptions for environmentally-friendly technologies. Hybrid vehicles, for example, will be exempted from tax on vehicle purchase. Two new instruments have also been introduced since 2005, i.e. emissions trading for CO₂ and for NO_x. Though the former is based on a European directive, NO_x emissions trading was a Dutch initiative. These two instruments are expected to help the Netherlands meet its objectives for climate and air pollution (the NEC objectives) in a cost effective manner.

Interrelationships between themes

There has been increasing interest in recent years in the interrelationships between the various sustainability themes and the possibility of achieving synergies. This should make Dutch sustainable development policy more cost-effective. The main synergy is between energy/climate and air pollution, since these both share a common main cause, i.e. the combustion of fossil fuels. Climate policy has in fact led to a considerable reduction in emissions of acidifying substances and other pollutants. Current energy and climate policy also has a positive knock-on effect for industrial development, since it contributes to the Lisbon objectives of making industry 'clean, clever and competitive'. Table 1 indicates the relationships between the policy instruments and the themes.

Table 1 Indicative relationships between policy instruments and themes

	Effect on Energy	Effect on Industrial development	Effect on air quality
CO ₂ emissions trading			Possible
NO _x emissions trading			
Implementation IPPC directive			
Sustainable energy policy (MEP grant scheme)			
Energy conservation policy (tighter energy performance coefficient, white certificates)			
Multi-year agreements/Benchmark covenant			

energy efficiency			
Sector transition management			Possible
Liberalisation and privatisation of the energy market	Possible		Possible
Corporate social responsibility			
Promoting sustainability through public sector procurement			
Green taxes			
Dutch source policy for (NO _x , PM ₁₀ en SO ₂)	Unknown	Unknown	
Road pricing (per-km charge)			
Reducing speed limits around large cities			

	= positive relationship
	= positive and negative relationship
	= negative relationship

The policy instruments IPPC and NO_x emissions trading support or prescribe measures, which can improve or worsen the combustion efficiency of an installation. From this follows a positive or negative effect on energy/climate (orange).

Constraints and challenges

Industrial development

Compared with other EU member states the Netherlands appears not to be generating enough demand for products and services from sustainable supply chains. The challenge facing the Netherlands is to set such a process into motion on a large scale. This will probably mean encouraging the large retail chains to take voluntary initiatives, supported by robust use by government of market-based instruments (green taxes, levies and subsidies) and regulation. Dutch freedom of action is limited, however, by the international bodies to which it belongs. The Netherlands will contribute, through its proposals, to guiding international policy agendas into the desired direction.

Energy

Energy consumption is continuing to grow, both in the Netherlands and worldwide. This is a worrying trend, which affects energy security, energy prices and climate. The Netherlands takes its commitments under the Kyoto Protocol very seriously. The reductions in greenhouse gases up to 2012 agreed in the Kyoto Protocol are, however, insufficient to halt the harmful effects of global warming in the long term. Further reductions will be needed after 2012 in order to control climate effects. This requires considerable efforts, which can only be attained if- apart from national efforts-an international regime is developed with very

wide coverage (important countries, sectors and gases), and all possible mitigation options and instruments are used. The Netherlands is emphasising the long-term 'transition' approach to achieve substantial reductions in energy use and effects on the environment after 2012.

Air quality

With its high population density and heavy traffic the Netherlands will need a stringent emissions policy. Extra efforts will be needed to combat air pollution. This will call for an integrated vision of transport and the environment which takes air pollution seriously, and a pro-active approach to environmental measures at both national and European level.

1 Introduction

1.1 Background

Dutch government policy on sustainable development seeks to ensure that future generations will have at least as much opportunity as ours to progress and develop. This means nurturing the natural world and the environment (ecological aspects), respecting people and their aspirations, motivations and cultures (sociocultural aspects) ensuring they are able to provide for their present and future needs (economic aspects, such as employment, knowledge, capital goods). And it means understanding the relationships between our actions here in the Netherlands and their effects elsewhere in the world.

These concerns about the world which the present generation ('now') will pass to the next ('later'), and about the 'footprint' left by the Netherlands ('here') in developing countries ('there') are the main reasons why the Dutch government is working for sustainable development (see "Sustainable Action", the Dutch national sustainable development strategy).

The UN Commission on Sustainable Development (CSD) is the body charged with implementing Agenda 21, the action plan for sustainable development adopted in 1992 at UNCED in Brazil. The Commission meets annually to discuss progress in implementing Agenda 21. In preparing for the 14th meeting of the CSD, the Committee Secretariat asked all countries to submit a report reviewing the progress made to date on the themes of the CSD-14/15 cycle, i.e. industrial development, energy and air pollution/atmosphere. This document, which was drawn up by the Dutch environmental consultancy CE, represents the Dutch report for CSD-14. As far as the three Ps of sustainability (profit, people, planet) are concerned, the main focus of this report is on 'planet', since the depletion of the carrying capacity of the Dutch environment is the most urgent problem.

This report complements the 2006 progress report on "Sustainable Action", which has also been sent to the CSD secretariat.

1.2 Objective

To identify and describe the policy measures, tangible steps, actions and lessons learned with respect to sustainable development and the progress made by the Netherlands in this field. This report complies with the CSD-14 Guidelines.

1.3 Structure of report

Each of the three main themes addressed by this report on the Netherlands' sustainability policy, i.e. industrial development, energy and air pollution/the atmosphere, is dealt with separately, in chapters 2, 3 and 4 respectively, using a fixed format. The Netherlands' international contribution to sustainable development is discussed in chapter 5. The Dutch performance in relation to its international obligations under the Kyoto Protocol is not dealt with explicitly in this report but can be found in the Dutch reports to the UNFCCC (www.unfccc.int).

3 Energy

3.1 The context

Increasing energy use

Over the last 150 years the world's energy usage has increased enormously (MNP, *Quality and future*, 2004). This growth has been particularly rapid in the last 50 years. The same pattern can be seen in the Netherlands: between 1950 and 2000, our energy use increased by a factor of five. This increase is attributable to high economic growth and industrialisation in the twentieth century. The growth in energy consumption has slowed in recent years, except in the transport sector. This is due to increased energy efficiency, caused in part by the energy conservation policies and a trend towards a more service-oriented economy. Energy conservation policy has contributed to this.

The declining share of energy-intensive sectors and more efficient energy use counteract the upward pressure on energy consumption due to economic growth. During the period 2003-2010, energy consumption is expected on balance to continue to grow at between 0.25% and 1% p.a. The strong increase in the demand for energy is largely caused by a growing demand for mobility due to economic growth. Although vehicles have become more fuel-efficient, this is being offset by the fact that cars in the Netherlands are generally becoming larger and heavier.

The impact of energy use on the physical and natural environment

Energy use affects the physical and natural system. The use of fossil fuels (coal, oil, gas) causes emissions of greenhouse gases and pollutants affecting air quality such as nitrogen oxides, sulphur dioxide and fine particles.

The present effects of climate change are larger than expected. A recent study by the European Environment Agency (EEA) suggests that Europe is warming up faster than elsewhere and that various effects of climate change can be observed in Europe. The Netherlands will also be affected by climate change.⁷ For example, there is an increased likelihood that rivers will burst their banks. And a rising sea-level not only has implications for coastal protection, but also impacts agriculture (salinisation) and natural habitats like the Wadden Sea, a nature conservation area of European importance. These matters will have a major impact on spatial planning.

In a densely-populated country like the Netherlands, air pollution causes substantial health problems. Much of the air pollution is caused by the combustion of fossil fuels by traffic and industry (see chapter 4).

Some forms of energy production (gas and oil extraction) consume natural resources and therefore have an impact on landscape and countryside. Renewable energy also has spatial requirements. Solar collectors, wind turbines, and the cultivation of energy crops sometimes require large tracts of land to the exclusion of other uses for that land (housing, offices, agriculture, nature conservation, recreation).

Policy is effective, but takes increasingly more effort

There are a number of quite favourable trends in the Netherlands. It has had an energy conservation policy for thirty years and a climate policy for almost fifteen years. Energy consumption in the home and in industry has become more efficient over this period. Dutch industry is amongst the most energy-efficient in the world (IEA, 2004), due in part to the extensive use of efficient cogeneration of heat and power in industry and the energy sector.

Hesitant progress is being made with sustainable energy, and a start has been made with the reduction of greenhouse gases. There is a good chance that the Kyoto objective will be met, although great efforts will still be required. The fact remains, however, that economic growth generally leads to increased fossil fuel consumption, and therefore more emissions of CO₂. The decoupling of climate-related emissions from economic growth has become a very fundamental challenge for Dutch environment policy. Measures to cut emissions require increasing effort and may disadvantage industries competing in the international arena.

3.2 Objectives and policy approaches

Energy supply is a crucial factor in economic development. In recent decades policy has focused on ensuring a reliable, affordable, clean and safe supply of energy (Energy Report, 2005). More recently, concern for sustainable development has meant that policymakers are now also attaching importance to controlling greenhouse gas emissions, security of supply and the relationship with poverty. Though primarily the responsibility of the Ministry of Economic Affairs, energy policy is formulated in cooperation with the Ministry of Housing, Spatial Planning and the Environment.

⁷ EEA, Copenhagen: Europe's Changing Climate.

Approaches taken to reducing the emissions from energy use include (MNP, 2004):

- increasing the efficiency with which energy is used for its various functions (technological improvement of processes and equipment);
- switching from high-carbon fossil fuels (for example coal) to lower-carbon energy carriers such as natural gas, or energy sources with negligible CO₂ emissions such as nuclear energy;
- switching to renewable energy such as hydro, wind, solar or biomass;
- capturing and removing pollutants (acidifying components, CO₂) after the combustion of fossil fuels (“clean fossil”).

Dutch policy embraces all four approaches. In the next section we consider renewable energy and the improvement of energy efficiency.

3.3 Concrete actions taken

3.3.1 Decision-making

Dutch policy for achieving a sustainable energy system is built on four cornerstones:

- transition management
- climate policy
- energy conservation
- renewable energy.

Each of these cornerstones is considered in turn below.

Transition management

In the Netherlands market participants, NGOs and the government are working together to achieve a transition to a sustainable energy supply within 50 years. This means cutting our demand for fossil fuels with increasing levels of comfort. Renewable energy will have a dominant and increasing role. The emissions of waste materials will be consistent with the absorptive capacity of ‘system earth’. Energy will be clean, affordable for all and available wherever and whenever needed. The energy transition project has identified a total of seven themes on which it will focus in order to realise a sustainable energy system. These were chosen because they represent good and practical economic opportunities for the Netherlands:

1. green fuels
2. sustainable mobility

3. supply chain efficiency
4. new gas
5. sustainable electricity
6. energy in the built environment
7. clean fossil.

Some of the themes are directed by a platform made up of representatives of the market participants, scientific bodies, NGOs and government. These platforms are public-private partnerships which broker and initiate projects. The platforms are meant to create opportunities for innovation in the Netherlands and identify policy and regulatory bottlenecks.

The government facilitates and encourages these committees, while subsidising concrete initiatives from the market, for example feasibility studies and experiments which make a tangible contribution to the transition project. The benefits of this approach are apparent from the applications being received from the market. In 2005, for example, there were:

- 99 initiatives for feasibility studies approved, with the government contributing €4.5 million, and the originators €3 million;
- 22 experiments approved, for which the government has put up €30 million as the sustainability cost premium (but not exceeding the extra investments involved).

Activities will be stepped up and further funding will be made available in the coming years. An interdepartmental transition management committee has also recently been set up.

The long-term (post-2012) climate policy, currently being actively developed, will have an important role in ensuring that these innovations are properly followed up. The short-term climate policy is dealt with below.

Climate policy

The Netherlands has decided to implement its commitments under the Kyoto Protocol in 2010 by means of emission reductions at home and abroad. The national measures are spread over different sectors and consist largely of CO₂ emissions trading, energy taxes, agreements with the industry, energy and agriculture sectors, regulation and grants for promoting energy conservation and sustainable energy projects. Grants are also being provided for researching the emission of other greenhouse gases and promoting abatement technologies and methods.

The government is purchasing 100 megatonnes of emission allowances in other countries (over a five-year period) by means of the flexible mechanisms CDM (Clean Development Mechanism) and JI (Joint Implementation), in order to reduce the costs of meeting the Kyoto objective. The remaining Kyoto reduction to be achieved by domestic measures is 220 megatonnes. The Netherlands has been participating since 1 January 2005 in the EU emissions trading system for CO₂ allowances, in which only *energy-intensive* companies participate. Dutch companies can trade within the EU trading system, but there is also a limited option for making use of JI and CDM.

Energy conservation

Energy conservation here means producing the same volume of goods and services with less energy.⁸ From 1995 to 2002 energy conservation in the Netherlands averaged 1.0% p.a. The target of 1.3% p.a. was therefore not achieved. This was cause for the Dutch government to intensify energy conservation policies. The target percentage was recently increased.

Energy efficiency was designated a policy priority in the 2005 Energy Report, because it is a cost-effective way of reducing CO₂, but also because it increases energy security, a policy consideration which is becoming increasingly relevant both nationally and internationally. Energy conservation policy is expected to gain momentum rapidly in the coming years. Apart from the tightening of the energy performance standard for new buildings, a system will be developed for providing incentives for conservation measures in the built-up areas. The idea is to specify a mandatory percentage energy saving in combination with *tradable white certificates*, but the precise details are still under discussion.⁹

Renewable energy

Renewable energy has formed part of Dutch energy policy since the early 1970s. This policy is heavily influenced by international developments and agreements, such as European legislation and the Kyoto Protocol. The government would like to see 10% of the total energy consumption in the Netherlands produced from renewable sources by 2020. Achieving this objective is only a first step in the transition to a sustainable energy system.

The Dutch government is promoting renewable energy in a number of different ways:

⁸ The same effect could be achieved by reducing the *volume* (for example passenger-kilometres, TVs sold or energy-consuming services). Dutch policy is not generally aimed at achieving these 'volume' effects. Where such effects have occurred, this is usually because of autonomous trends rather than as a direct result of policy.

⁹ Certificates which represent the amount of energy saved.

- **financial**, i.e. providing tax incentives and grants for research, development and production of renewable energy;
- setting **energy performance standards** for *new* housing and non-residential buildings;
- making **agreements** ('covenants') with stakeholders on the development of onshore wind energy and the use of biomass as a secondary fuel in coal-fired power stations;
- and finally, eliminating **regulatory barriers** to the realisation of projects. An example is the national biomass action plan, intended to increase the number of biomass projects in the Netherlands.

3.3.2 Capacity building

Rationalising energy research

The Energy Research Grant programme is an instrument for building the energy research capability of research institutes and companies. This programme is intended to enhance energy-efficiency know-how and sustainable energy in the Netherlands and link it closely to Dutch innovation and transition policy. This know-how will form the foundation on which an affordable, reliable and clean energy system can be built in the future. The programme supports projects from conception to market introduction. The programme encourages Dutch research institutes and companies to contribute to the knowledge base and the creation of a sustainable energy system.

The Netherlands has financed the expansion of the RAINS-model with greenhouse gasses. With this expanded model (GAINS) cost-efficient scenarios can be calculated for economic growth policies with minimal effects on air pollution and climate change. Based on the GAINS model the NEC review will take place in the EU and in the UNECE CLRTAP the revision of the Gothenburg Protocol. Apart from GAINS Europe, the Netherlands is financing a study into the possibility of building the GAINS model for both Latin America and Africa. The European Commission is financing the building of the GAINS model for Asia. The Netherlands also has a communication programme on climate change and contributes on a structural bases to research of Dutch institutes one of which is the Royal Institute for Meteorology.

3.3.3. Financing

Although energy conservation and renewable energy projects may have a positive overall societal return, the financial return in the short term is usually negative. Various instruments exist to bridge this financial gap, such as grants (for the production of 'green' electricity), tax concessions (deductibility for the purpose of corporation tax) and Green Investment.

Green Investment

Green Investment is intended to make investment in 'green projects' attractive. The government provides tax concessions to savers and investors in green funds. This allows these funds to extend low-interest loans to, for example, a sustainably built house, a wind farm or an organic farm.

In order to qualify for a low-interest loan an investor needs a 'green certificate' for the project. This is a declaration issued by the Ministry of Housing, Spatial Planning and the Environment stating that the project fulfils the conditions for green financing. Green Investment is one type of socially responsible investment and makes a major contribution to sustainable development in the Netherlands. Since the start of the scheme in 1995 green certificates have been awarded to over 2800 projects in the Netherlands, which have been lent almost €5 billion.

3.4 Lessons learned and good practices

Lessons from the transition projects

Dutch energy and innovation policy is presently in a state of flux. It is still too early to draw any conclusions about the outcome. International comparisons suggest that the Netherlands has performed relatively poorly at innovation. Because of this poor performance, a public debate was held to discuss what the causes might be. Research, development and demonstration programmes in the energy sector appear to have been too wide in scope, resulting in an unproductive lack of focus. Also coming in for criticism were the large number of different schemes and initiatives, the lack of cooperation and coordination between the different actors, the lack of clear objectives and targets and an excessive focus on the Netherlands.

The review of energy research policy and the transition approach offer new opportunities to Dutch industry. See also the case study described in the box below.

Case study: Transition to sustainable mobility

The transition to sustainable mobility is one of the seven 'energy transitions'. Existing automotive fuels emit excessive amounts of CO₂ and other harmful pollutants. Furthermore, the Netherlands is dependent on oil-producing countries for these fuels. The *Sustainable Mobility Platform* is working for a transition to sustainable mobility so that we can retain mobility at an affordable cost, without dependency.

The present technologies and fuels for road transport can be greatly improved. The auto industry is working to make these improvements. There are also various options for future new propulsion systems, fuels and energy sources for the transport sector. We need to make an economically viable selection of the most promising options, based on criteria such as emissions characteristics, energy diversification, innovation, economic prospects and cost-effectiveness. Some options are already ready for market launch if grants or tax concessions are offered, while others are still in the research, development and demonstration phase.

The Platform is concentrating on accelerating the market introduction of sustainable fuels and vehicle technologies, particularly projects which may be commercially feasible for the Netherlands in the next two to four years. This rapid development has three advantages:

- Future problems with the present fuels will be avoided.
- Dutch businesses will have an opportunity to become market leaders.
- The most promising routes to sustainable mobility will quickly become clear.

The Platform's activities are directed towards facilitating concrete experiments, developing transition pathways, setting up international joint ventures and policy advice on the removal of barriers and further promotion of experiments. Various participants are involved, representing the relevant ministries, the oil and transport sectors, regional and local government and interest groups. The Platform is a joint initiative of the Ministry of Economic Affairs, the Ministry of Transport, Public Works and Water Management and the Ministry of Housing, Spatial Planning and the Environment.

Strategic lessons have been learned from the past. How things will work out in practice is not clear, given that changes of this kind are in fact extremely resistant to solution. An important factor will be how the responsible policy departments will set about the necessary policy renewal and institutional change needed to manage the various transitions. The role of government in all this has to be further developed. The same is true for the development of instruments to remove obstacles and ensure the right economic conditions for marketing new technologies. Possible measures might include a structural greening of the tax system, progressively more stringent standards for energy consumption in buildings, or the removal of obstacles in the present establishment-oriented environmental policy instruments. It is a hopeful sign that the market is taking the lead in paving the way forward, with the concrete involvement of *pace-setting companies*. These pace-setters are developing a shared perception of the problem and creating a vision of a sustainable energy future.

3.5 Trends and emerging issues

Use of cost-benefit analysis

There is a clear trend towards the use of social cost-benefit analysis (CBA) in energy policy. CBA is increasingly regarded as a useful tool for assessing the effectiveness and efficiency of policy. This technique was used in the Netherlands, for example, to estimate the societal costs and benefits of offshore wind energy (6000 MW). This led to the conclusion that this was too ambitious an objective to yield an overall social benefit. It was better to set a more modest goal and to put more effort into cost reduction. CBA was also applied to evaluate different options for energy supply security. These analyses showed that the benefits of policy measures in monetary terms are often outweighed by the costs. As a result there has been political debate on whether, for example, the present plans for offshore wind farms are justified. *Ex post* cost-effectiveness analysis is also increasingly being used in climate policy.

More attention to air quality and security of supply, boost for climate

CO₂ emissions and the associated climate problem are not the only environmental problems associated with energy. There has recently been increasing attention to air quality. Measures to make the energy system more sustainable benefit not only climate, but also air quality. This could provide opportunities for more ambitious climate measures. In greater Rotterdam, for example, concern about deteriorating air quality contributed to the acceptance of a plan to use waste heat on a large scale in the city. Concerns for an constant and independent energy supply are also expected to boost the prospects for energy conservation and renewable energy.

At the same time there is renewed interest in coal in the Netherlands, given the large reserves and wide geographical distribution, for power stations, as seen by the investment being made by Dutch energy companies in new coal-fired plant. The rapidly rising demand for electricity will lead to extra demand for new capacity in 2008. Coal gasification with CO₂ storage is being seen as a serious option to reduce CO₂ emissions. A demonstration CO₂ storage project has been launched, and there are various other demonstration projects in the pipeline. The climate problem has started a new debate about nuclear energy, initiated by the Ministry of Housing, Spatial Planning and the Environment. Nuclear energy is seen as an intermediate solution, which bides more time fore a transition to a truly sustainable energy system.

3.6 Constraints and challenges

Post-Kyoto climate policy

As already indicated, energy use is continuing to increase, both in the Netherlands and worldwide. The reductions in greenhouse gases up to 2012 agreed in the Kyoto Protocol are insufficient to halt the harmful effects of global warming. The Netherlands is looking to the 'transitions' approach to help it achieve substantial reductions after 2012.

Climate change is however a global problem, which requires a global approach. It is also considerably cheaper to tackle the problem at global level rather than more locally, for example at national level.

The emissions of greenhouse gases will have to be cut further after 2012 to control climate effects. If developing countries are left free for the time being to increase their emissions, we can assume the developed countries will have to reduce theirs by 15-30% by 2020 and 60-80% by 2050 relative to the reference years in the Kyoto Protocol. Major efforts will be needed, and these can only be achieved if an international regime is developed with the widest possible coverage (major countries, sectors and gases) and if all possible reduction options and instruments are deployed. The EU emissions trading scheme will continue beyond 2012. This offers investors a mid to long term perspective.

Environment in the context of liberalisation and privatisation

In the Netherlands a gradual liberalisation of energy markets is taking place. This liberalisation is intended to promote competition in energy markets, thereby bringing about efficiency improvements for end users. Since 2004 all users, including small users, have been able to choose their energy supplier (for both gas and electricity). This introduction of competition in the gas and electricity sector will be accompanied by gradual privatisation. The assets of the present distribution companies may then pass into private ownership. The House of Representatives is expected to enact a new law shortly, requiring energy companies in the Netherlands which are still integrated to split into two separate companies: an independent company which operates the distribution network and a commercial company responsible for production, trading or supply of electricity and gas. This split will be effected to provide easier access for new entrants to the energy networks; there is broad political consensus that the networks – a naturally monopoly – should remain in public ownership.

Since 2002 there has been increasing concern in the Netherlands about safeguards for the public interest in a free energy market. An important challenge will be to create, in this liberalised market, the right incentives to ensure that energy production and consumption emit less CO₂ and other pollutants. More experience will certainly need to be gained with market-based policy instruments (CO₂ tax, emissions trading, green taxes) in a free energy market.

Is biomass sustainable?

At present, biomass constitutes the largest component of renewable energy production in the Netherlands. A further increase in this contribution will be needed to ensure that biomass is playing a really appreciable role. And the Netherlands is not the only country with such objectives for electricity and transport fuels. The European Union has a Biofuel Directive devoted to the use of biofuels for transport, and in Europe generally, biomass accounts for a large proportion of renewable energy in the power generation sector. The Netherlands does not have enough land for large-scale energy crops and will have to import much of its biomass. The large-scale imports of biomass which will be involved and their impact on socioeconomic and ecological development in producer countries raise some fundamental questions (land-use, biodiversity, dislocation of the local economy and way of life).

Producing energy from imported biomass could lead to a possible conflict between Dutch sustainable energy policy and the Millennium Development Goals. 'Green fuel' is seen in the Netherlands and other Western countries as a desirable means of achieving sustainability, but in Brazil it is regarded, particularly by NGOs, as a threat and a source of social and environmental problems. The use of palm oil from Indonesia is another example. Dutch environmental policy views its use to generate energy in coal-fired power stations as sustainable and actually subsidises it. In the producing countries, however, people are protesting about the danger of the encroachment of palm oil plantations into tropical rainforest. The challenge for the Netherlands will be to attach sound sustainability criteria (planet and people) to the import of biomass.