Deployment of Renewable Electricity in a liberalised energy market in the Netherlands

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(본 글은 지난 1월 16일 우리 연구원에서 주최한 "WSSD 후속조치로써 국가 신 · 재생 에너지 전략에 관한 워크숍"에서 발표된 내용입니다.)

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1. Introduction

To achieve a place for renewable energy the Government of the Netherlands has followed a supply oriented policy approach during 90's. In view of the rapidly emerging liberalized energy market government is changing its focus from support to producers to a demand-driven approach in 2000, however in 2002 it was noted that supply was not stimulated by increased demand due to EU market distortions and supply support was added again.

Key elements of the Dutch policy for the promotion of renewable energy over the past decade were:

- the energy tax on the use of electricity and natural gas
- fiscal instruments to lower investment costs
- voluntary agreements with the energy sector and industry
- various subsidy schemes to increase the attractiveness of new initiatives.

In view of the upcoming, liberalized energy market 2 major instruments were added in 2001:

(i) a fully liberalized market for green electricity with free consumer choice;

(ii) a tradable certificate for renewable energy. The lay-out of the Dutch policy for renewable energy, with its focus on the demand side, has a rather unique position within Europe. Firstly, because of its focus on the demand side, and, secondly, because of its emphasis on voluntary action.

In view of the slow domestic growth in production a new support mechanism was introduced called the environmental quality of power production (MEP) for renewable electricity in the Netherlands

This paper evaluates the market development over the last years with the green certificate system and the rapid growing market of green electricity. In 2004 the green certificate is EU-wide replaced by the Certificate of Origin.

2. Objectives

Europe

To achieve the EU climate target of 7% CO_2 reduction in 2008 – 2012, doubling the share of renewable energy (12% of gross inland energy production 2010); and an increase of 18% by 2010 compared to 1995 in energy efficiency, the European Commission has developed policies in the form of White and Green papers and a number of Directives (the White Paper on Energy Policy, the White Paper on RES, and the Green Paper on Security of Supply). The White Paper on Energy Policy invites national governments and local authorities to adopt policies mobilising significant resources of RES. The White Paper on RES acknowledges that RES constitutes in the long term the main sustainable energy source and calls for a strategy on RES development. It sets out the community strategy and action plan to double the share of renewable energy. The Green Paper on the Security of Energy Supply addresses the securing of the EU's energy supply. The Directives on the Promotion of Electricity from Renewable Energy Resources sets obligations for each member country to establish national targets for future consumption of RES. It also provides an indication of these national targets and the possibilities for Member States to have access to renewable energy in the internal market. The Directive on Liquid Biofuels mandates for a minimum use of biofuels in 2005 and 2010 with indicative targets and taxation. In the area of waste management, the EU has set the landfill directive and directives for emissions.

Netherlands

Renewable energy policies are driven by the well-recognised need for a sustainable society. Within Dutch government policies, targets for renewable energy are addressed in environmental programmes, white papers on energy and on climate change.

The Dutch government aims in its Third White Paper on Energy (1995) at 2 major goals for 2020
– 33% improvement of the efficiency with which energy is used by continuing energy savings and

use of more efficient technologies (with this efficiency target total energy consumption should remain effectively at the 1990 level despite economic growth)

- 10% of all energy used should be provided from renewable sources.

Currently, the total domestic production of electricity is 48 PJ, or 1.5% of the domestic use of primary energy sources. The total domestic consumption of renewable energy, (including the imported renewable energy) is 4.2% of the domestic use of primary energy sources. The renewable electricity consumption is 13% of the total domestic consumption. For 2020, the target of 10% renewable energy represents a supply of 380 PJ based on the most recent projections of long-term economic growth and energy consumption.

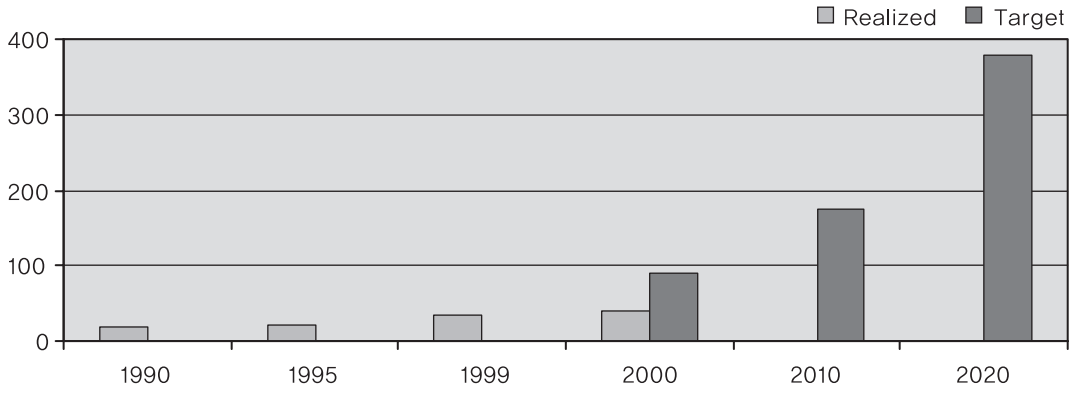
In the Energy Report from 1999 the governments presents its policies in view of a liberalised market:

- A consumer driven approach in the renewable energy market
- Voluntary agreements with specific sectors in the market
- Greening the fiscal system by increasing the energy tax
- Encouraging research and development through specific programs.

Recently, our government published its Action Plan on Climate Policy. This plan contains the actions which are required to comply with the reduction targets of the Kyoto Protocol. By the end of the Kyoto budget period, the emissions of greenhouse gases should be 6% lower than in 1990 (according to the EU agreement on the burden sharing of the Kyoto target over its member states). [4]

Based on projections of greenhouse emissions a reduction of about 50 million tons of CO_2 is required. Domestic measures should cover 25 million tons of the total reduction (the remaining 25 million tons will come from Joint Implementation, CDM-projects and emission trading). Renewable energy forms part of the domestic measures to reduce CO_2. To implement this reduction, a firm target has been set at a share by renewables of 5% to the total energy consumption (180 PJ). In terms of CO_2 reduction, this target should reduce 4 million tons of CO_2.

Figure 1 Use of renewable energy [in PJ]



3. Policy design

Following the publication of the Third White Paper on Energy Policy in 1995, Government recognized that its subsidy schemes and fiscal instruments to decrease investment costs of renewables were insufficient to achieve its intermediate target for 2000. Also, the level of investment and subsidies from the energy distribution sector up to 1995 would be inadequate to reach this target. The actions of the energy sector formed part of a voluntary agreement with the Minister of Economic Affairs on the implementation of an environmental action plan (Milieu Actie Plan, MAP). This agreement was up for renewal in 1996. Considering the intermediate target for renewables in 2000, government and the energy sector agreed on including a specific goal for renewable energy as part of the new voluntary agreement. During the negotiations this goal was finally set at 1.700 GWh of renewable electricity which the distributors would supply to their customers in 2000. Mid 1997 the energy sector concluded that a tradable certificate system for renewable energy would be the best option to realise a burden sharing system.and a tradable certificate for renewable energy, the so-called Greenlabel was introduced. The system was fully implemented and operational by January 1998. [2]

Following the introduction of the energy tax in 1996, one distribution company (PNEM, now part of Essent) started with selling green electricity ("Groene Stroom") to its customers. The exemption of the energy tax for green electricity helped to lower the higher price of such a product. Although still more expensive than "regular" electricity, a niche market appeared to exist with customers willing to pay extra for a green product. Given the success of the first product, other distributors followed with

their own products.

In 1999 the Minister of Economic Affairs evaluated the position of renewable energy in a liberalized market. The energy sector had made it clear, in a position paper called Energy and Enviroment in the 21st Century, that it wasn't prepared to renew any voluntary agreement after 2000. The sector feared that if they would take on voluntary agreements, new entrants in the market would not follow this example, but instead go for market share and lower price. According to the position paper, energy saving and renewable energy are considered important, but only at the specific request of customers. The further introduction of renewable energy should, in the opinion of the energy sector, be based on selling products like green electricity.

Government recognized the implications of the liberalized energy market. In the Energy Report of 1999, the Minister of Economic Affairs lays down the approach for the coming years. The most crucial step was opening a fully competitive green market in 2001. This market opening with free consumer choice is ahead of the market opening for mid-sized and small consumers (in 2002 and 2004 respectively). To facilitate the market, a legally based certificate system was put in place. These certificates are issued for renewable production and receive their value on the market place as they are eligible for tax exemption when used to sell green electricity to consumers. As a third step, the tariffs of the energy tax are increased substantially, while the exemption for green electricity remains in tact. With the tax levels of 2001, green products can become cheaper in price than regular electricity despite the extra costs of renewable energy, however the European Commission, with the law on free trading does not allow for sales of green electricity at a lower price than normal electricity.

4. POLICY MECHANISMS

The shift to a sustainable and prosperous society can be supported by ecologising (or greening) the fiscal system. Within this context, in the Netherlands the Regulated Energy Tax was introduced since 1996. The energy tax encourages energy conservation and the use of renewable energy by making fossil energy much more expensive. The reduction in the energy tax and the zero tariff for 'green' electricity, provide a further strong incentive to use renewable energy. Further the system, with specific fiscal instruments, focuses on supporting investments.

4.1. Support for Investments

Investment support in the Netherlands is entirely based on fiscal measures. The following schemes to improve the profitability of renewable energy are available:

a) *Green Funds*: Investors in "green projects" (such as renewable energy) can obtain loans at a lower interest rate (about 1 percentage point) from Green Funds. These Funds are created by savings by private persons, who are exempted from paying income tax on the interest received. About 2,000 million Dutch guilders are available in green funds.

b) *Accelerated Depreciation*: The VAMIL scheme offers entrepreneurs a financial advantage because accelerated depreciation is permitted on equipment which is included in the VAMIL list. The accelerated depreciation reduces tax payments on company profit

c) *Tax Credit*: The EIA scheme makes it possible that investments in technologies on the EIA list may be offset against taxable profit. The tax credit offered varies from 52.5% to 40% (depending on the size of the investment).

From these three instruments EIA provides the strongest investment support. The combination of Green funds, Vamil and EIA equals a subsidy on the investment of about 25 – 35 %, depending on the profit and fiscal situation of the company. Banks now offer lease constructions on renewable energy equipment where these fiscal measures are incorporated, making financing easy and also available to parties who are not fully able to use these instruments.

4.2. Higher payment for electricity from renewables

Households and Enterprises pay an energy tax on electricity and natural gas. These consumers pay their energy tax –as part of the energy bill– to their supplier, who in turn pass the revenues on to the taxation authorities (Ministry of Finance).

The Environmental Taxes Law which forms the basis of the energy tax includes two special provisions on renewable energy:

- producers from renewable energy which is delivered to the public grid are eligible for a support payment from the proceeds of the energy tax.
- consumers who buy "green energy" under a contract with a supplier are exempted from paying the energy tax.

The following sources qualify as "renewable" according to the energy tax: wind energy, small hydro, biomass[1], biogas and PV. Other sources (in particular energy from municipal waste incineration) does not qualify as renewable or green energy according to the definitions of the energy tax.

Since the introduction in 1996, the energy tax has been increased substantially for small consumers (see Table 2). Due to the tax exemption for green energy, this has created a strong incentive to buy green for this group of end-users. The level of support payment to renewable producers follows the tariff for mid-sized end-users.

Table 2 Tariffs of the Energy Tax in the Netherlands(in Euro cents per kWh or m^3)

Year	1996	1997	1998	1999	2000	2001	2002	2003
Electricity use (EU cents)								
0 – 10.000 kWh	1.34	1.34	1.34	2.25	3.72	5.83	6.02	6.18
10.000 – 50.000 kWh (*)	1.34	1.34	1.34	1,47	1.61	1.94	2.00	2.05
50.000 – 10.000.000 kWh	–	–	–	0.22	0.22	0.59	0.61	0.63
Above 10.000.000 kWh	–	–	–	–	–	–	0	
Natural gas (EU cts)								
0 – 5.000 m^3	1.45	2.90	4.32	7.25	9.45	12.03	12.2	12.3
5.000 – 170.000 m^3 (*)	1.45	2.90	4.32	4.74	5.19	5.62	5.6	5.7
170.000 – 1.000.000 m^3	–	–	–	0.32	0.70	1.04	1.1	1.1
Above 1.000.000 m3	–	–	–	–	–	–		

(*) Producers of renewable energy receive a support payment from the proceeds of the Energy Tax according to this tariff rate

4.3. Agreement with utilities on a mandated share for renewables

In the Netherlands the government has made an agreement with the energy sector in 1996 concerning CO_2 reduction and market introduction of renewable energy, with a specific target for the end of the year 2000 (Environmental Action Plan 2000). Within this agreement the energy distribution companies will have to sell a quantified amount renewable electricity of 1.700 GWhe by the end of year 2000.

4.4 Free consumers of green energy

In addition to the supply based approach, another part of the Dutch energy policy focuses on

1) Only energy from 100% biomass qualifies as renewable. Mixtures with plastics or other materials from fossil resources do not qualify.

increasing the demand side. Consumers can choose for the green electricity programme of their energy supplier. They pay an additional tariff when they buy "green electricity", but in return are exempted from paying the energy tax. Depending on the supplier, green electricity is a bit more expensive or about as expensive as regular electricity (for which the tariff includes the energy tax). On average, green electricity is sold at a premium rate of about 7 EUcents (excl. VAT) above the normal price. The additional tariff is used to pay the producers of renewable electricity about 1 – 3 EU cents, and the other 4 – 6 EUcents is used for administration, marketing and profit. The exemption was reduced in 2003 to 2.9 EUcts and will even be lowered in 2004, and in 2005 the ecotax on green electricity will be equal to normal electricity.

The major power companies have all begun individual programmes for the development and marketing of green products that are intended to win new customers and retain existing customers. [7]

The first is the NUON power company. NUON now has customers for its Natuurstroom ('Natural Power', July 2001). NUON presents itself as the green-energy company of the Netherlands. The company is making a great deal of effort in general advertising and sponsoring designed to achieve NOUN's recognition as a green company. Large amounts of funds are also devoted to the marketing of their renewable products – in NUON's instance their Zonnestroom ('Solar power', solely from the Sun) and Natuurstroom (solar, wind and water power, but not biomass power).

Essent is another company devoting a great deal of effort to presenting itself as a green company. Essent (formerly known as PNEM) is one of the first companies to have registered its own brand name: Groene Stroom ('Green Power'), for which it enlisted the support of the WNF. Essent's Groene Stroom has exhibited a growth of customers. In contrast to NUON, Essent has chosen a regional approach to green energy – i.e. Essent is convinced that the use of the local media and a focus on individual target groups will ultimately prove to be a more successful approach to the marketing of green energy.

Eneco is a power company that now has its green product, known as Ecostroom ('Eco current'). Since the green electricity market was liberalised in 2001 a number of new providers of green energy emerged.

The liberalisation of green energy enables consumers to choose where they purchase their green energy. This renders green energy even more interesting to power companies, since operations in this segment of the market offer them an opportunity to win customers in areas serviced by other power companies. The variety of approaches adopted by the power companies indicates that they aim to

evoke different emotions, and that they may even target different segments of the market.

In analogy with their approach to marketing, the power companies have also adopted different strategies for the procurement of renewable energy. For example Essent, commensurate with its more regional approach, has decided not to import green energy. This restricts the definition of Groene Stroom even further, i.e. to green energy generated in the Netherlands.

As a result of this decision Essent is compelled to generate a large quantity of green energy in the Netherlands. Essent had already always been traditionally involved in many biomass projects.

NUON markets its special Zonnestroom product, which is more expensive than "ordinary" green energy. Alongside its Zonnestroom it also markets Natuurstroom, which does not include energy from biomass. Consequently NUON is responsible for a large number of photo-voltaic solar projects, vigorously promotes wind-power projects, and imports 20% of its green energy. The company states that, for the time being, these imports will ensure that it has sufficient supplies of green energy at its disposal. NUON's imports include the purchase of power generated from land-fill gas in New Jersey, and hydropower from Switzerland. NUON is also involved in the construction of a wind-turbine park in China.

Eneco is the first power company to have purchased RECS certificates. The RECS is a collaborative arrangement between market players that has for some time been engaged in the design of a system of European trade in renewable energy. To this end Eneco has concluded a contract with the Swedish Vattenfall company for the supply of power generated in small-scale hydroelectric power stations. The EU is very interested in the system. In its latest directive the EU has incorporated a stipulation whereby all Member States are required to have established a green-energy trading system within a period of 5 years.

4.5. The Green Certificate system

The government has introduced production certificates to enable a distinction to be made between electricity produced in an ecologically sound manner and 'standard' electricity. These certificates constitute a 'guarantee of origin' and serve as proof that electricity was produced in an ecologically sound manner. CertiQ is the organisation managing the certificate issue system. The certificate system enables registration and hence monitoring of the entire path from production of renewable electricity or electricity generated by combined heat and power (CHP) units all the way to ultimate use by the final consumer. This is done by means of certificates representing the green value or CHP value

of the electricity. The system distinguishes between three types of certificates, viz. green certificates, RECS certificates and CHP certificates. To qualify for a certificate, the electricity must be generated in a plant designated as renewable or by a CHP unit.

Generating units are eligible for production certificates only if the grid administrator can unequivocally meter the amount of electricity generated. Only units generating electricity based on wind, solar, biomass or hydropower are eligible for both green and RECS certificates.

As of 1 January 2002, it has been possible for production sites outside the Netherlands to qualify for certificates as well, but only if the electricity was physically imported into the Netherlands by a trader.

The green certificate process

A producer registered in the certificate system produces renewable electricity. The regional grid administrator (or foreign metering body) meters net supply to the power grid. The metering results are dispatched to CertiQ each month. The metering data are automatically received in the certificate system. On the basis of these metering data, certificates are produced and put on the account of the trader specified by the producer.

Certificates based on foreign production are not produced until evidence has been submitted of physical electricity import. If the producer has specified an aggregator (an intermediary between producer and trader), the aggregator may specify the distribution of the metering data over the different traders on behalf of the producer.

For biomass additional information is required to be able to produce the certificates. An aggregator should specify the percentages of production that are renewable. Subsequently, he should specify the amounts of the different types of biomass used in the relative period.

The certificates are produced after all required data have been provided by the authorised parties. The trader owns the certificates. He may sell them to other traders or supply renewable electricity direct to the consumer. In the latter instance, he redeems the certificates and thereby becomes eligible for the tax cut. This type of trader is called a supplier.

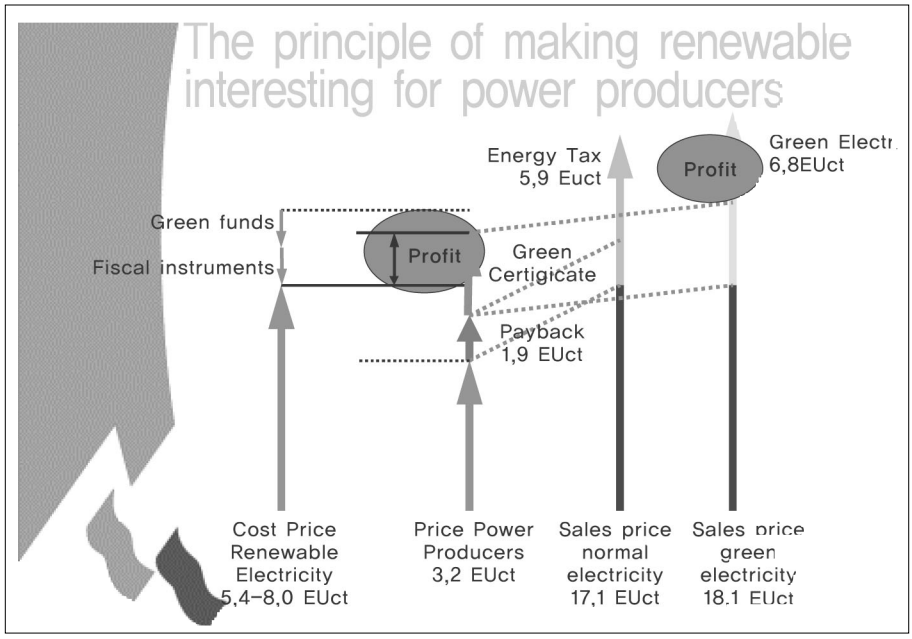
The system started on 1 July 2001 and issued its first batch of certificates on 19 July 2001. As of 1 January 2002, it has become possible to have certificates produced for renewable electricity generated outside the Netherlands as well. From that moment on, the production of certificates has increased substantially, providing the energy companies with a sufficient number of certificates to

meet the needs of the market. Moreover, on 1 January 2002 CertiQ (then still Green Certificate Management) became the executive organisation for RECS (Renewable Energy Certificate System).

4.6. Reducing cost price and increasing green payment

The mixture of Dutch policy instruments to strengthen the competitiveness of renewables works in two directions: (i) reducing the cost price of producers and (ii) increasing the ability to pay for renewables by end-users. A schematic representation how all instruments work together is given in fig. x.

Figure 2 A schematic diagram how Dutch policy instruments achieve competing prices for renewable energy between 2001 and 2003. On the supply side, instruments help to lower the cost price of renewables and allow competitive prices for electricity. The tradable certificate a producer receives can be sold on a separate market. Fair prices are possible through the demand side instrument of green tariffs and the energy tax.



Money flows in the following way in the system:

– cost price reduction by 2.5 – 4 Eurocents per kWh
  - all fiscal instruments relating to the investment lower the production costs of an installation with about 1 – 2 Eurocents per kWh
  - the support payment from the energy tax for each renewable kWh produced lowers the cost price with 1.5 – 2 Eurocents per kWh

– competitive prices on electricity and certificate markets
  - the producer can now offer his electricity for regular prices on the "fossil" electricity market
  - in addition, he receives a tradable certificate which can be sold on a separate market

– increase the ability to pay for green by 6 Eurocents per kWh
  - the exemption of the energy tax for small consumers allows a tariff of around 6 EUcents per kWh till 2003 for "green electricity" which is competitive with "regular" electricity
  - with these revenues suppliers can buy green certificates on the market from producers or traders.

5 Production support by the Environmental support scheme (MEP)

The favourable fiscal support for renewable electricity through an ecotax exemption on final electricity consumption and a production subsidy from the ecotax revenues, in combination with the opening of the retail market for renewable electricity led to a dramatic increase of the demand as of July 2001. As domestic supply was limited in the short run the majority of the demand growth was met through imports of renewable electricity. These imports, however, created several adverse effects, which recently led to changes in the renewable electricity policy framework.

The surge of renewable electricity imports primarily led to considerable tax revenue losses to the Dutch government. Furthermore, the fiscal incentives provided by the ecotax regulations in the Netherlands hardly stimulated additional capacity investments abroad. As imports principally came from existing installations, the additionality of the policy was very questionable.

Moreover, competition from low-cost imports weakened the position of domestic producers and investors. Considering the above complications, the market anticipated changes of the policy framework. Thus the ecotax regulations no longer provided an effective long-term incentive for investment in renewable generating capacity in the Netherlands.

In November 2002 the anticipated policy changes came in the form of a proposal for an amendment to the Electricity Law of 1998, called 'environmental quality of electricity production' (MEP). The MEP aims to increase certainty to investors and improve the costeffectiveness of renewable electricity support. The MEP provides for operating support through a combination of feed-in tariffs and a reduced ecotax exemption. The feed-in tariffs are financed through an annual levy on electricity connections. They are the primary means to increasing certainty for investors. The reduction of the ecotax exemption seeks to reduce the level of imports, while maintaining the dynamics of the renewable electricity market and associated green certificate trade.

Under the MEP the total level of operating support is determined by the sum of the MEP feed-in tariff and the value ecotax exemption. However, the law does contain a maximum feed-in tariff, which is set at 7 EUct/kWh (Article 72p). The government guarantees this total level of support for a period of 10 years after entering into operation. The table below gives an overview of the MEP feed-in tariffs, the ecotax exemption, and thus the total level of operating support per renewable electricity category.

On 3 June 2003, the Dutch Upper House gave its approval to the Bill on environmental quality of electricity production (Dutch acronym: MEP). This act took effect as from 1 July 2003. In september 2003 it was announced that the ecotax reduction for green electricity would be reduced over the next years. This would allow for an additional revenu for the Ministry of Finance.

Table xx : Feed in tariffs support Renewable Electricity after juli 2003. [EUct/kWh]

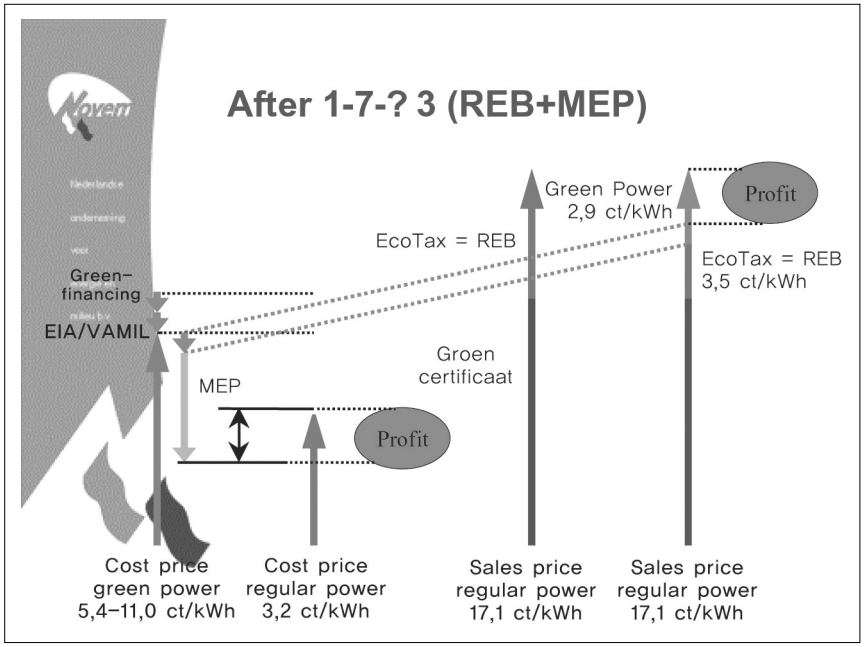
Change after	Juli 2003	Jan 2004	Juli 2004	Jan 2005
Ecotax reduction green electricity	2.9	2.9	1.5	0
Biomass > 50MW (3yr)	4.8	4.0	5.5	7.0
Mixed waste/biomass	2.9	2.9	2.9	2.9
Biomass <50 MW	6.8	6.7	8.2	9.7
Wind at sea/solar	6.8	6.7	8.2	9.7
Wind at land	4.9	4.9	6.4	7.8

The general architecture of the new support framework is best explained by first considering the position of the producer. The producer derives its income from three main sources of revenue: the electricity market, the green certificate market and the MEP feed-in tariff. The producer sells its electricity on the electricity market like any other electricity producer. In addition, based on its pro-

duction the producer receives green certificates (GC) from the Green Certificate Body: Certiq [9] and sells these green certificates on the green certificate market at a market price. Finally, based on its metered output the producer receives a MEP feed-in tariff from the national transmission system operator, EnerQ.

In accordance with the MEP, producers of electricity from renewable energy sources can apply for a feed-in tariff. The MEP feed-in tariff is disbursed by the national transmission system operator, EnerQ. Once EnerQ has approved the application from a producer, the producer receives a contract under which it receives the MEP feed-in tariff. The level of the MEP feed-in tariff is fixed at the level of the tariff in the first year that the MEP tariff was requested for a duration of maximum 10 years following the start of operation of an installation.

The MEP feed-in tariffs are financed through an annual MEP levy on all connections to the electricity grid in the Netherlands. The MEP levy is essentially a type of system benefits charge that is collected by the distribution network operators and consequently passed on to the national transmission system operator. The levy amounts to Euro 34 per connection in 2003 and is increased to Euro 40 in 2006.



6. Monitoring and evaluation of policy instruments

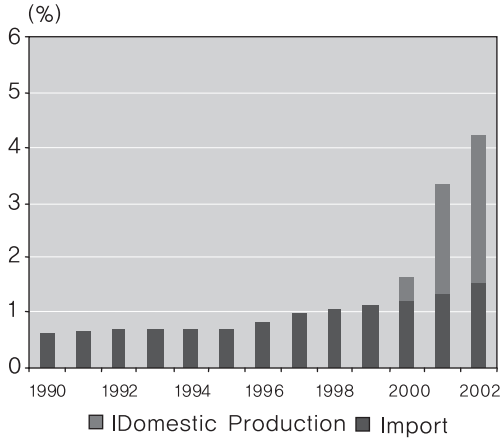
In 2002 the Renewable Energy consumption was 4.2 percent with a domestic production of 1,5 %. About 13 % of the domestic consumption of electricity is from renewable sources. Import of renewable electricity is for 60% produced from biomass and 40% from hydro electricity. The total import was 10 350 GWh in 2002. The import is driven by the fiscal support of renewable electricity in the Netherlands and as a result reduced in 2003.

In 2002 the domestic production increased by 24 %, mainly cofiring biomass in coal fired power plants. Electricity from biomass produces 2,3 % of the domestic power consumption. The domestic production from windenergy increased by 10% and now produces 0,8 % of the domestic power consumption. This was caused by installing an additional 132 windmills in 2002, increasing the windcapacity by 40%.

Hydro electricity produces 0.1% of the domestic consumption.

Due to the large quantity of imported renewable electricity and the domestic production the supply is 4 times larger than the demand. The demand for green electricity increased from 800.000 to 1.400.000 consumers, with a demand of 3700 GWh. The surplus of greencertificates is stored and can be used in the future or sold as grey power.

Domestic consumption of Renewable Energy.



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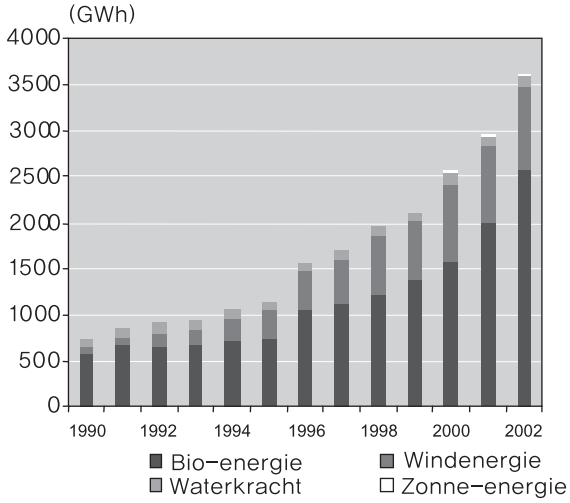
Domestic production of Renewable Electricity



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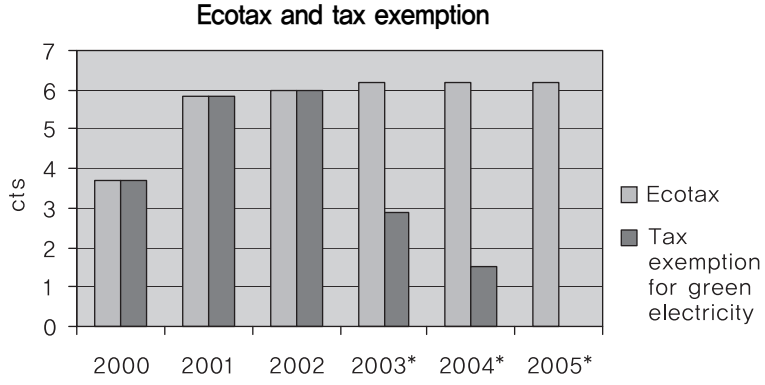
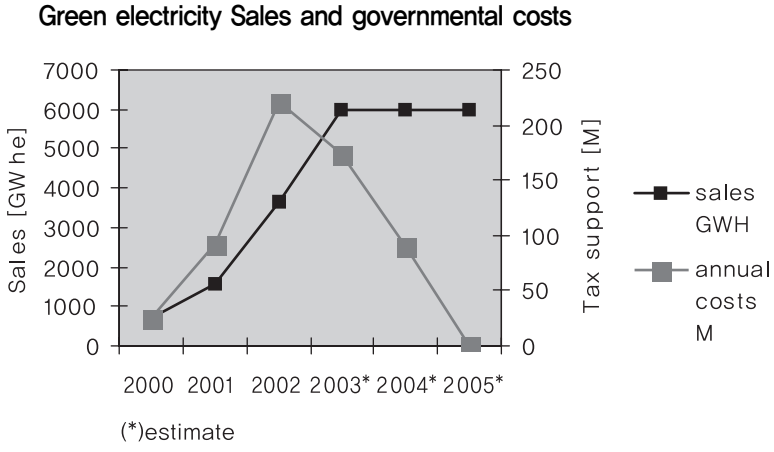
Fiscal support for the green electricity market

The fiscal support fort the green electricity market was increased in 2001 to an exemption of almost 6 EUcts and after 2003 decreased till 0 in 2005.

There has been a considerable growth in the green electricity market, and at the end of 2003, more than 2 milion consumers, (more than 30% of the consumers) buy green electricity. The not received tax money by the government exceeded 200 Million Euro in 2002 and was one of the reasons to



reduce the tax exemption, and the need to increase governmental income made it necessary to reduce it even further to zero in 2005. It is difficult how the market will react in 2004 and 2005 on the change in the fiscal support. Due to the fact that the market will be fully liberalised in 2004, it can be expected that the utilities will try to keep their customers, even when the fiscal profit is much less.



However this remains to be seen.

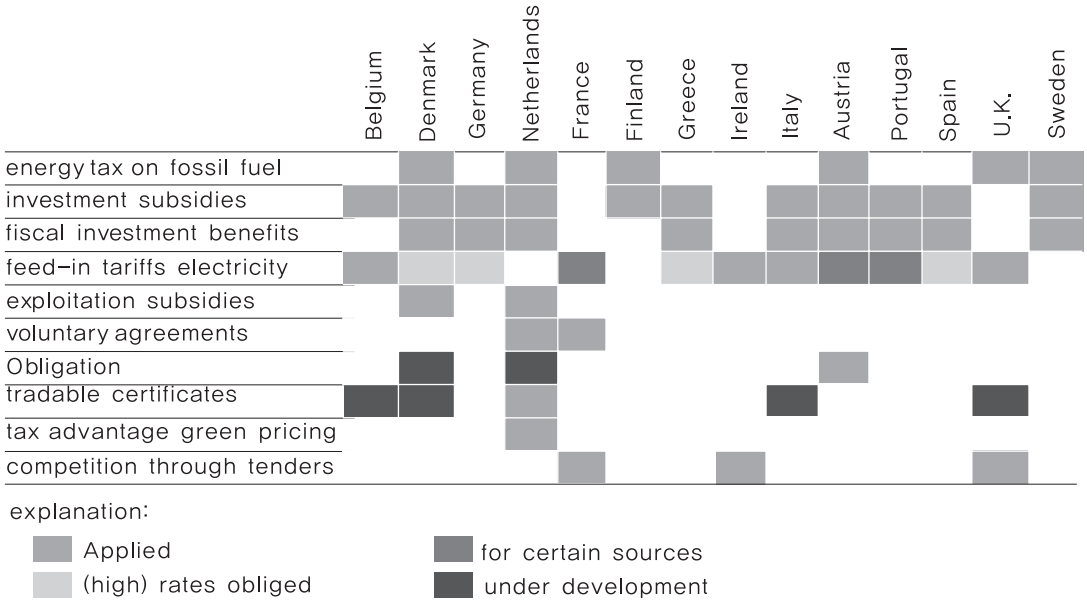
In the period 2000 – 2005 the government has given a total tax support of about 550 million Euro to reach a clientele of about 2 million customers, buying 6000 GWh renewable electricity.

Comparison with other EU member states

In comparison with other European countries, the Netherlands have the broadest and most diverse use of support mechanisms for renewable energy (see Table 4).

The lay-out of the Dutch policy for renewable energy has a rather unique position within Europe: it focuses on strengthening the demand side and places a strong emphasis on voluntary action. The advantages of this approach are a better "fit" with the new setting of the liberalised market with full competition and free consumer choice. On the other hand, the approach is vulnerable. The deployment of renewable energy strongly depends on market conditions and reactions. Having the broadest range of policy instruments does not necessarily mean it creates the most effective approach. For instance, countries as Denmark, Spain and Germany reach faster growing levels of renewables than the Netherlands through their policies of feed-in tariffs[2]. For that reason the Netherlands introduced in 2003 a fixed feed in tariff (MEP), with a guarantee of 10 years.

Table 4 Use of policy instruments for deploying renewable energy in EU member states



7. Conclusions

1. The green energy system in the Netherlands has given the utilities and the consumers a unique possibility to learn about marketing mechanisms in a liberalised market. These lessons are needed because the market for small consumers will be fully liberalised in 2004.
2. The marketing of green energy in all its forms has brought renewable energy to the attention of a wide public and has made the public aware of the need for sustainable energy supply. It also made them aware of the need to take action and buy the green electricity and more than 30% of the consumers have made the change. These consumers could have a strong influence on the market in the future.
3. Energy in the form as green energy has become a commodity that can be traded. In the past electricity was felt as a service, provided by a utility, now it is more a product that can be bought.
4. The Netherlands has introduced the green label and green certificate as the unit to be traded for the green energy product. This has now been implemented as a Certificate of Origin all over Europe and has made power a tradable product with a traceable quality.
5. Because of a lack of a harmonised European market, the demand side support for green electricity in the Netherlands failed and tax money was wrongly used.

2 A feed-in tariff is an obliged, fixed (high) tariff for which grid operators have to buy electricity from specific sources, such as renewable energy or combined heat and power production.