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Renewable energy in The Netherlands: policy and instruments

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Abstract

To achieve a place for renewables and energy from waste in a liberalized energy market the government has to focus on a more demand-driven approach, and for specific technologies, a more supply-driven policy will be required. The available financial and fiscal instruments, regulations and voluntary agreements provide new opportunities. The Dutch government has supported renewables with fiscal instruments (green funds, tax credits and an energy tax) since 1996. As a follow-up of the green energy market and the mandated share set by the Energy Companies, the government introduced in 2001 a system for tradable green certificates. On 1 July 2001 the market for green electricity became liberalized and the consumers of green electricity were free to chose their own supplier, the number of green consumers went up to 700,000 at the end of 2001. © 2002 Published by Elsevier Science Ltd.

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1. Policies

Renewable energy policies are driven by the well-recognised need for a sustainable society. Environmental programs and a white paper on energy have been formulated as a consequence of international agreements on climate change.

The Dutch government goals in its white paper on energy (1995) call for a simultaneous approach of continuous energy savings, efficiency improvement (33% in 2020) and the further development of renewable energy (10% in 2020). This target for renewable energy is almost a five-fold of the present 53-270 PJ in 2020. From this target 40% (120 PJ) could be realised with energy from waste and biomass.

Following European discussions since 1999 bioenergy is defined as the energy from the organic

content from waste and biomass. Thus the energy from the fossil part of the waste (plastics, etc.) no longer contributes to renewable energy.

In the Energy Report from 1999 the government presents the policies associated with the liberalised market:

1. consumer-driven approach in the renewable energy market,
2. voluntary agreements with specific sectors in the market,
3. greening the fiscal system by increasing the energy tax,
4. encouraging research and development through specific programs.

These general lines can be made more specific for bioenergy:

1. New technologies with higher efficiencies have to be developed to improve the price:performance ratio.

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Table 1
Prognosis of bioenergy potential (PJ)

Technology	1995	2000	2010	2020
Waste incineration	5.6	11.6	15	20
Wood combustion in households and industry	6.4	7.4	8	8
Co-firing	0.1	1.8	39	42
Stand alone combined heat and power	—	1.5	10	40
Landfillgas/digestion	5.0	5.5	8	10
Total bioenergy	17.1	27.8	80	120
Wind, solar and others	3.9	9.2	70	180
Total renewables	21.0	37.0	150	300
% of total energy	0.7	1.2	5	10

- 1 2. Biomass resources have to be available in large quantities at a reasonable price.
- 3 3. Public acceptance of bioenergy as a renewable energy source is needed.
- 5 4. Administrative bottlenecks (permissions, vague regulations) have to be removed.

2. Strategy

9 Prior to 2000, waste incineration with energy recovery generated the majority of bioenergy (Table 1). The next major market is expected in the area of *co-firing* of waste and wood in (coal fired) power stations (2000–2010). The government has proposed an agreement with the coal sector in The Netherlands to reduce CO₂ emissions by 6 Mton. Co-firing of biomass could be a major contribution (3 Mton) to realise this target. Market penetration of small-scale systems (gasifiers, anaerobic digestion) is foreseen in new, green, CO₂ neutral, sustainable dwelling or industrial areas. After 15 2010 large-scale conversion with imported biomass is required to achieve the goals. Gasification technology could play an important role both for co-firing and small-scale systems.

3. Financial support

25 The shift to a sustainable and prosperous society can be supported by making the financial system more ecological friendly or green. 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 derived 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. Furthermore the system, with specific fiscal instruments, focuses on supporting investments.

3.1. Support for investments

The following different schemes to improve the profitability of renewable energy options have been available: *green funds*, *accelerated depreciation*, *tax credit*. From these three instruments tax credit appears to be the strongest. The combination of them equals a subsidy on the investment of about 25–35%, depending on the profit and fiscal status of the company. Banks offer lease arrangements with renewable energy equipment where these fiscal measures are incorporated, making financing easy and attractive for all parties.

3.2. Higher payment for electricity from renewables

Households and small and middle-sized enterprises (SMEs) pay an energy tax on electricity and natural gas. This tax is paid to the utility companies, who in turn pass this on to the taxation authorities (Ministry of Finance). However, utility companies are *exempted from paying tax* on energy generated from renewable sources if this energy is accompanied by a specific ‘green’ contract between the energy company and the consumer (Environmental Tax Law, Article 36-i, the so-called zero-tariff). This means that this green energy becomes less expensive.

Besides that, producers of renewable energy get an allowance (feedback) from these revenues. (Article 36-o). In Article 36-o renewable biomass is described as any organic material, *not* containing plastics or other material originating from fossil resources.

Table 2 presents the increase of the energy tax and allowance to producers over the last years.

4. Free consumers of green energy

Since 1 January 1999 the consumers of green electricity no longer have to pay an energy tax. Green

Table 2
Energy tax Netherlands on electricity € cts

Year	1996	1997	1998	1999	2000	2001	2002
Energy tax	1.34	1.34	1.34	2.25	3.72	5.83	6.02
Feedback			1.34	1.47	1.61	1.94	2.00

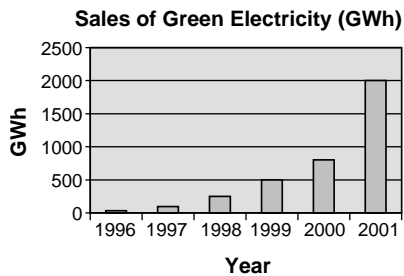


Fig. 1. Sales of green electricity.

1 electricity is a commercial way of selling renewable
2 energy. Some utility providers start selling *green elec-*
3 *tricity at a price almost equal to the normal price.*

4 The additional fund, generated through the zero tar-
5 iff (6 € cents) is used to pay the producers of renew-
6 able electricity about 3 cents, and the other 3 cents is
7 used for administration and advertisements. The num-
8 ber of consumers has increased considerably over the
9 last years (Fig. 1).

10 There is debate on the green picture of bioenergy.
11 There is even a difference among the utilities. Some

consider only biomass from energy crops and thin- 13
nings from forestry as green, and others include the 15
biological part of waste as a source.

The Electricity Act contains a resolution on re- 17
newables stating that the Minister may declare that a 19
certain percentage of energy should be sold as renew- 21
able energy (the mandated share). In the 1999 Energy 23
Report [1], the Minister decided, with approval by 25
Parliament, that the government did not intend to
imply an obligation to buy renewable energy.

5. Conclusion

In general, it can be concluded that the new mar- 27
kets, either created through the certificates system, the 29
fiscal incentives from the government, or the green 31
consumer, have the potential to function well in the 33
liberalised energy market. All instruments have shown 35
rapid positive response and support the market forces
in an efficient way. Harmonisation at a European level
is required to allow for trading in a European market
of renewable energy.

References

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