NOTE FROM THE FRENCH AUTHORITIES

Subject: Report assessing the meeting of the national targets relating to the consumption of electricity produced from renewable energy sources, pursuant to Article 3 of Directive 2001/77/EC

Introduction

This report sets out the French results on the national consumption of electricity produced from renewable sources between 1997 and 2008 and analyses the extent to which they meet the indicative targets set by Article 3(4) of Directive No 2001/77/EC, taking account of 'climatic factors likely to affect the achievement of those targets'.

1. National targets

In accordance with Article 3 of Directive No 2009/28/EC, France has introduced an energy policy which aims to meet the target of a 23% share of energy from renewable sources in gross final consumption of energy by 2020. This target is included in Article 2 of Programming Law No 2009-967 of 3 August 2009 on the implementation of the Grenelle Environment Forum.

The Grenelle Environment Forum and multiannual investment programming

A national consultation (the 'Grenelle Environment Forum') took place between the end of 2007 and the beginning of 2008, aimed at meeting the challenges of climate change, preservation of biodiversity and prevention of the effects of pollution on health. At the end of this consultation, an operational committee on renewable energy brought together all players to define targets for the production of renewable energy by sector. The overall target included in the programming law on the implementation of the Grenelle Environment Forum is to increase the production of renewable energy by 20 million tonnes of oil equivalent (Mtoe) by 2020. This increase, together with the target of reducing the energy consumption of buildings by 38% by 2020, should mean that the target of a 23% share of energy from renewable sources in gross final consumption of energy by 2020 can be met.

The production targets by sector defined during the Grenelle Environment Forum were confirmed in the multiannual investment programming (PPI) report for electricity production, submitted to parliament in June 2009. The programming relates both to equipment for the production of electricity (PPI electricity) and equipment for the production of heat (PPI heat). It sets targets for the deployment of renewable energy by sector for the period 2009-2020. These objectives aim to ensure the development of renewable energy at a rate which is compatible with the target of a 23% share of energy from renewable sources in gross final consumption of energy by 2020.

Thus, the electricity PPI includes the following development objectives for 2020:

- 25 000 MW of wind power (19 000 MW onshore and 6 000 MW offshore);
- 5 000 MW of solar power;
- 2 300 MW of biomass;
- 3 TWh/year and 3 000 MW of peak capacity for hydropower.

Production of renewable energy (excluding biofuel), en Mtoe

	2006	2020	2020-2006
Electricity	**5.6**	**12.5**	**6.9**
Hydropower	**5.2**	**5.5**	**0.3**
Wind power (onshore)	**0.2**	**3.6**	**3.4**
Wind power (offshore)	**0**	**1.4**	**1.4**
Biomass	**0.2**	**1.4**	**1.2**
Photovoltaic solar power and thermodynamic	**0**	**0.5**	**0.5**
Others (geothermal, sea energy)	**0**	**0.1**	**0.1**
Heat	**9.7**	**19.7**	**10**
Biomass	**8.8**	**15**	**6.2**
Geothermal	**0.4**	**2.3**	**1.9**
Solar	**0**	**0.9**	**0.9**
Waste	**0.4**	**0.9**	**0.5**
Biogas	**0**	**0.6**	**0.6**

Fig. 1: Targets included in the 2009 multiannual investment programming

2. Instruments to support the development of renewable energy

In November 2008, the Ministre d'État, Minister for Ecology, Energy, Sustainable Development and Marine Affairs presented a national plan to develop renewable energy in France. This plan includes 50 operational measures which should bring the share of energy from renewable sources in the consumption of energy in 2020 to at least 23%. All renewable sectors are affected and the increase in the annual production of renewable energy should be 20 million tonnes of oil equivalent (Mtoe).

Under this plan, the government has introduced several measures aimed at rapidly developing renewable energy. This report includes only those mechanisms which are in addition to the mechanisms already described in the report submitted in 2007 to the European Commission, namely the 'Report on the French targets for the consumption of electricity produced from renewable energy sources and the extent to which they have been achieved'.

Purchase tariffs

In order to ensure the dynamic nature of the sector, the purchase tariffs for electricity from wind sources were revised upwards in 2008: For onshore wind, the tariff is 8.2 c€/kWh for 10 years, and then between 2.8 and 8.2 c€/kWh for five years depending on the site. For offshore wind, the tariff is 13 c€/kWh for 10 years, and then between 3 and 13 c€/kWh for five years depending on the site. These tariffs are indexed annually for inflation.
In addition, the tariffs for the production of electricity from photovoltaic, geothermal and biomass sources (wood, crop and animal residues) are in the process of being revised upwards.
With regard to biomass, the tariff has been revalued at 4.5 c€/kWh, to which is added an additional bonus of between 8 and 13 c€/kWh granted according to the capacity, resources used and overall efficiency of the installation.
With regard to the production of electricity from geothermal sources, the tariff has been revalued at

20 c€/kWh in mainland France, to which is added a bonus of between 0 and 8 c€/kWh for energy efficiency. In the French overseas departments (FOD), which are better endowed with geothermal resources, the tariff has been fixed at 13 c€/kWh and the bonus for energy efficiency is between 0 and 3 c€/kWh.
With regard to photovoltaic electricity, the revision of the tariff decree provides for a tariff of 32 823 c€/kWh (43 764 c€/kWh in the FOD), to which a bonus can be added for structural integration or for simplified structural integration. The bonus for structural integration brings the purchase tariff to 60 172 c€/kWh and the simplified structural integration bonus brings it to 45 c€/kWh (47 c€/kWh). These bonuses are testament to the government's desire to promote roof installations which are integrated as best as possible from an architectural and landscaping point of view.

Calls for tenders

In 2008-09, the French Government launched calls for proposals on the production of electricity and heat from biomass, biogas and photovoltaic energy in order to contribute to the achievement of the national targets.

- A third call for proposals was launched for the construction of power stations supplied by biomass, for a cumulative power of 250 MW. Part of the power demand will be reserved for geographic areas which the government considers to be priority areas from the point of view of land-use planning.

- A call for proposals was launched in April 2009 for the construction by 2011 of at least one solar power station in each French region, for a cumulative power of 300 MW. The aim is to disseminate photovoltaic technology throughout France.

- A fund with EUR 400 million managed by the Environment and Energy Conservation Agency (l'agence de l'environnement et de la maîtrise de l'énergie – Ademe) has been set up to subsidise pre-industrial demonstrators in all renewable sectors as well as to improve electricity networks. Calls for expressions of interest have been launched to construct demonstrators in the fields of marine energy, production of second generation biofuels and improving electricity networks. Two others will be launched in 2010 in the sectors of photovoltaic energy and thermodynamic solar energy.

Tax credit

The rate of tax credit on devices to generate renewable electricity has been confirmed until 2012 at its current rate of 50%. Moreover, photovoltaic installations of less than 3kWc are exempt from any tax.

3. Production of electricity from renewable sources until 2008

The share of renewable energy has increased markedly since 2005. The sectors which are contributing most to this increase are biofuels, wind power and the production of heat from the incineration of waste (cf. fig. 2).

With regard to the production of renewable electricity, it increased by 1019 ktoe/year (11.8 TWh/year) between 2006 and 2008, namely an increase of 18.6% over two years.

The majority of the increase in the production of renewable electricity between 2006 and 2008 came from the increase in the capacity of wind power (250% increase over two years) and the increase in the hydropower production capacity (+13% over two years), the latter being partly due to the fact that hydropower production was relatively low in 2006. The dynamic nature of the photovoltaic sector should also be noted (300% increase over two years), which, although its

contribution to total production is low, is expected to represent a significant source of renewable energy in 2020. Finally, the production of electricity from biomass has increased moderately (+16% over two years) which confirms its important share in the renewable mix for 2020.

4. Future trends for the production of electricity from renewable sources for the period up to 2020

Wind power should be the main contributor to achieving the target, with a forecast growth in annual production of 1744 ktoe (20.2 TWh) by 2012. The photovoltaic sector continues its expansion with a total installed capacity which should more than double between 2008 and 2009, to achieve approximately 200 MW (cf. fig. 3). A big effort still needs to be made in terms of electricity production using biomass.

It should be noted that whilst 38% of the target for increasing production from renewable sources set for 2012 at the Grenelle Environment Forum has been achieved for electricity, only 13% of the target has been achieved for the production of heat. The main efforts to be made for the period 2009-2012 should therefore focus on the production of heat, in particular from wood energy and geothermal energy.

Fig. 2: Primary production of renewable energy by sector (actual data, in Mtoe)

[See original French document for Figure 2].

Index:
Autres = Others
Agrocarburants = Agrofuels
Déchets renouvelables = Renewable waste
Eolien = Wind power
Hydraulique = Hydropower
Bois-énergie = Wood energy

Fig.3: Development of wind power and photovoltaic capacities connected to the electricity network

[See original French document for Figure 3].

Puissances éolienne et photovoltaíque raccordées = Connected wind power and photovoltaic power capacities

Puissance photovoltaique installée = Installed photovoltaic power capacity

Production of renewable electricity and heat in ktoe
Mainland France + FOD

	Revised 2006 situation (SOeS)	Provisional 2008 situation (SOeS)	Additional 2006-2008 achieved (A)	2012 Target	Additional 2006-2012 to achieve (B)	Share of additional achieved (A/B)
Electricity						
	4971	5635	664	5300	329	target achieved
Hydropower**						
Wind power	192	496	304	2240	2048	15%
Photovoltaic	2	5	3	95	93	3%
Geothermal	67	77	10	20	-	target achieved
Biomass	290	338	48	510	220	22%
Total electricity excluding hydropower	551	916	365	2865	2361	15%
Total electricity	5455	6474	1019	8195	2690	38%

** Hydropower (except pumping) is counted here in actual data. The 2008 production is very near an average year, contrary to 2006 which was very low (due to the low rainfall), hence the strong increase between 2006 and 2008.

Fig. 4: Renewable energy in France in 2008 and the Grenelle intermediary targets for 2012