# Renewable Energy Policy Review

# France

# May 2004

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# 1. General information

### Population and Geography- Political System

Largest country in Western Europe (almost one fifth of the total area of the European Union), with a vast maritime zone (exclusive economic zone extending over 11 million sq. km) France has a territory of 550,000 sq. km. Bordered by four seas (North Sea, Channel, Atlantic Ocean and Mediterranean), France has 5,500 km of coastline. Some 26% of French territory is covered by forests, ranking France third in the European Union in forest land, behind Sweden and Finland.

With 60.7 million inhabitants (2001), France ranks third in the European Union after Germany and the United Kingdom. Its density reaches 107 inhabitants per sq. km

| City | Population |
|---|---|
| Paris | 9.8 m |
| Lyon | 1.4 m |
| Marseille-Aix-en-Provence | 1.4 m |
| Lille | 1.1 m |
| Toulouse | 0.9 m |
| **France total** | **60.7 m** |

France is a republic (member of the EU since 1957). France has a highly centralised goverment, and all regulations are national and implemented and enforced regionally by “Prefecture”. A 1982 law called decentralisation aimed at extending the powers of regional and local authorities was introduced. But in practice, the regional authority still has limited powers. The administrative organisation includes 22 regions subdivided into 96 departments. France has also four overseas departments (DOM) - Guadeloupe, Martinique, Guyane (French Guiana) and Réunion, and four overseas territories (TOM) - French Polynesia, New Caledonia, Wallis and Futuna and the French Southern and Antarctic Territories,

France is the world’s fourth largest economic power in terms of GDP. The country’s assets are varied and include its transport and telecommunications sectors, agri-foodstuffs and pharmaceutical industries, along with banking, insurance, tourism and the traditional luxury products (leather goods, ready-to-wear fashion, perfumes, fine wines and spirits, etc.). In 2000 France had a trade surplus of 14.03 billion euros; it is the world’s fourth largest exporter of goods (mainly durables) and ranks second in services and agriculture (cereals and agri-foodstuffs in particular). It is the leading producer and exporter of farm products in Europe. France carries out 63% of its trade with its European Union partners (50% within the euro area).

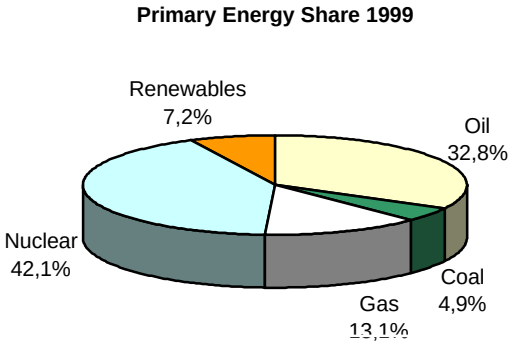
## 2. Renewable Energy Policy

**Energy and Renewable Energy country profile**

**Country Profile**

| | | | |
|---|---|---|---|
| **Population** | | 59.55 | Millions |
| **Area** | | 547,030 | $km^2$ |
| **Total Primary Energy Supply** | | 266.31 | Mtoe |
| **Electricity Production** | | 549.581 | TWh |
| **Electricity Prod. by source** | Fossil Fuel | 8.24 | % |
| | Hydro | 14.41 | % |
| | Nuclear | 76.67 | % |
| | Other Renew | 0.68 | % |

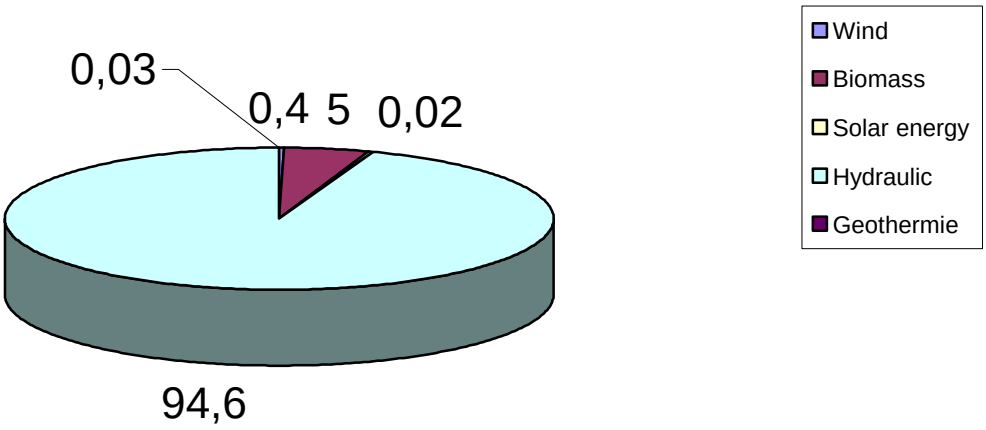
Source: EUROSTAT 2003




France has few indigenous sources, only of small amounts of coal, oil and gas. The exploitation of these resources has steadily decreased over the last two decades and nuclear power has dominated the energy supply market in France. Nuclear energy supplied over 77% of France's electricity and 40% of its primary energy needs in 2003. France also exports electric power to most European countries.

France has a national target of reducing carbon dioxide emissions by 20 per cent by 2005, compared with their 1988 levels. In the context of the EU's burden sharing arrangements Under the Burden-Sharing Agreement, France is committed to have its annual average greenhouse gas emissions at 1990 levels for 2008-2012.

**Share of RES in the electricity production (%) 2003**



**Renewable Energy Sources**
Renewable energy country profile
Renewable energy technology in 2003 in capacity

| RET | France |
|---|---|
| SPV (MWc) | |
| Grid connected | 4.39 |
| Off grid | 17.32 |
| Total | 21.71 |
| STH (square meter installed) | **475.650 m2** |
| Average surface for 1000 (2001 figure) | 8.0 m2 |
| SHP (2001 figure) | **7617GWh** |
| Biogaz (Mtep) (2002 figure) | **310** |
| Wood (Mtep) (2002 figure) | **8.48** |
| Wind (MW) | **253** |

*Source Eurobserv'ER 2003/ Sun in Action 2/EWEA/ESHA*

Renewable energy contributed 7% of France's total energy supply and 15% of total electricity supply in 2001 compared to EU averages of 5,8% and 15.5% respectively. (IEA Renewables Information 2003)The majority of non-hydro renewable energy use was solid biomass (particularly wood), almost all of which is used for residential heating. Municipal and industrial wastes are also being used to generate increasing quantities of electricity and heat. Small amounts of geothermal heat, solar energy and, increasingly, wind is also used.

Primary energy production from renewable energy resources was over 18.64 Mtoe in 2001(EU energy and transport in figures 2003 page2.9.7). The bulk of this was supplied by hydropower and biomass. Combined large- and small-scale hydropower provide about 15% of France's electricity supply. Biomass has traditionally been used in France in the domestic sector for heating, almost 85% of wood and wood wastes are used in this way. Although France's electricity supply mix is expected to become slightly more dependent on fossil fuels in the medium term, the majority of electricity is currently generated by non-fossil sources: 78% of electricity was generated by nuclear power and 13% by hydropower in 1996 even though this was a dry year (normal hydro contribution is nearer 15%). Combined large and small-scale hydropower provides about 15% of France's electricity supply. Biomass has traditionally been used in France in the domestic sector for heating; almost 85% of wood and wood wastes are used in this way[1]. .

**Hydro**
From 1990-2001, Small Hydropower installed capacity grew at a higher rate (+12.9%) than the total electrical installed capacity (+11.7%) in France. Although SHP contribution to the total installed capacity has remained quite stable during that period, at around 2%, this figure is one of the highest in the EU-15. SHP electricity generation in France increased by 41% from 5392 GWh in 1990 to 7617 GWh in 2001. SHP contributed 10% of the country's hydroelectricity generation and 1% of the country's total electricity generation. (source Report on Small Hydropower Statistics: General Overview of the last Decade 1990-2001 ESHA). Limits on the development of small hydro sites are generally due to flow requirements under water use regulations. Independent small hydro producers benefit from a purchase price guarantee for 15 years.

**Biomass**
Biomass was and continues to be supported under the following programmes:
•1995- 1999: le Programme Bois Energie et Développement Local (PBEDL) It was restricted to 11 selected regions and concentrated on the promotion of collective/ industrial heating purposes, support wood supply companies
•2000- 2006: le Programme Bois Energie (PBE) saw the scope extend from just 11 regions to all areas.
1) reinforcement of promotion of collective/ industrial heating purposes -Quantitative aims: 1000 wood plants
2) New: integration of a domestic wood heating -Qualitative aims: certification, raising awareness, promotion of best practices, communication.

[1] INTERNATIONAL ENERGY AGENCY: Energy Policies of IEA Countries, (s.l.e), 1999, p. 138.

Financial support for Collective/Industrial plants:

• Investment subsidy
  - ADEME (selection on energetic efficiency by euro/ tep ratio)
    Collective/ industrial : max 30 % of investment cost
    Wood supply: max 30 % of investment cost
    Industrial: max 15% of investment cost
  - Others publics subsidies: région, département, Europe (FEDER, FEOGA)
  - FOGIME : garanty fund for loans concerning investment in rational use of energy,
  - FIDEME : investment fund to support companies involved in rational use of energy projects,
  - FCPR 3E (Emertec Energie Environnement) : risk capital fund for innovative companies in energy/ environment fields

**Wind**

Wind capacity is small, but has been expanding over the last few years, and will continue to do so at a rapid rate due to the commissioning of the plants under the EOLE programme. The year 2002 saw a a doubling in the production of wind energy to 264 GWh from 123 GWh in 2001 . An indication of the growth in the sector is the amount of certificates the DRIRE has given out to the producers requiring an obligation of purchase, even if not all the corresponding installations have been completed. The certificates for the period 10 February 2000 and 31 August 2003 represent an installed power estimated at 956 MW pour renewable energy sources, of which 603 MW are from wind, whereas the wind sector had an actual capacity of 150 MW in 2002 and 230 MW mid 2003

**Solar thermal**

In 1999,for the metropolitan France ,ADEME (French agency for the environment and energy management)has launched “Helios 2006 ” or “Plan Soleil ”.This medium-term solar thermal development plan (six years),envisions the installation of 50.000 domestic solar thermal systems by 2006. The ADEME subsidies are available everywhere in metropolitan France and are sometimes complemented by regional or local funding (30 to 100%).The ADEME subsidies vary for a SDHW system from 690 to 1.150 Euro,depending on the size of the system. In metropolitan France,100 SDHW systems were installed in 1999,800 in 2000 and 2.600 in 2001.The area of newly installed collectors rose from 3.600 in 2000 to 12.000 in 2001.The industry target for 2010 is more than 100.000 newly installed systems, equalling 480.000 m 2 .
Besides DHW,a promising market for solar thermal in metropolitan France is active solar space heating (Combined system).Until now,only one company (Clipsol)sold their combi-systems with ADEME funding in 5 regions.250 systems were sold in 2001 (~4.500m 2 of collector area).The incentive scheme changed in 2002,and the market for combined systems is increasing:At least 5 companies offer combined systems in metropolitan France.The industry target for combined systems in 2010 is more than 12.000 systems installed in that year,equivalent to 180.000m 2 of collector area. Another growing market segment is that of collective systems for DHW.It has not benefited enough from the Plan Soleil and growth has therefore been slow.

**Solar photovoltaic**

The main stream of photovoltaic (PV) activity in France is that of off-grid power systems. During the year 2002, 3,4 MW of photovoltaic power systems were installed in France and its overseas departments. The annual off-grid PV power system market remains stable at around 2,4 MW per year and that of grid-connected distributed power systems reached almost 1 MW in 2002.

Due to a Governmental decision taken in 1998, the ADEME increased its annual public budget for the promotion of PV in France to reach around 10 MEUR per year. This new measure allowed

a. to reactivate the ADEME's research and technological development programme on PV components, PV systems and applications in collaboration with industry and public research laboratories and

b. to grant new demonstration and market deployment projects in both sectors of off-grid PV power systems and grid-connected distributed applications.

To implement its PV market deployment programme ADEME makes use of complementary sources of funding such as that of the European Commission, the Regional Councils or the electricity utility EDF.
All together the annual public intervention budget (ADEME, CEA, CNRS, Regional Councils, FACÉ fund) including RTD and market deployment incentives amounted to 20 MEUR in 2002.
The year 2002 was the last budgeted year of the 4-year ADEME PV RTD programme.
The ADEME's market stimulation programme consists of maintaining the granted volume of 1,2 MW per year for off-grid power systems (installed cost target: 15 EUR per watt) and implementing the new initiative of grid-connected distributed building integrated photovoltaic systems (BIPV). The initiative was launched at the beginning of 2002 with the objective to grant the installation of 20 MW in 5 years. The new BIPV initiative was founded on two favourable measures: a) official publication by the Ministry of Industry of new buy-back rates for photovoltaic electricity: 0,15 euros per kilowatt-hour in continental France and 0,30 euros per kilowatt-hour in overseas departments and b) decision by ADEME, Regional Councils and other partners like the European Commission to grant up to 80 % of the PV system investment. A joint group including EDF and SER (a professional syndicate representative of the PV industry) developed both feed-in contracts and technical terms for grid connection of PV power systems. Nevertheless the precise terms of these contracts were not finalized by 2002 but officially released in 2003 after agreement of French Energy Regulation Commission (CRE).

To conclude, the year 2002 showed a significant increase (around 20 %) of the level of production of crystalline silicon cells and turnover of main companies. (source IEA Photovoltaic Power Systems Programme, National Status Report 2002, Summary http://www.oja-services.nl/iea-pvps/nsr02/fra.htm)

**Geothermal**

In 2002 geothermal installed capacity in France was 4.3 MWe. There were 36, 500 geothermal heat pumps installed at the end of 2002 with a capacity of 541 MWth.(source EurObserv'ER 2003) France is the second largest geothermal country in Europe. In a recent report, ADEME assessed France's primary energy production using geothermal energy at nearly 128 000 toe (including 103 200 toe from the Ile-de-France region alone) for a capacity in the region of 330 MWth.. For very low temperature applications (geothermal heat pumps), the classification according to installed capacities is totally different from that for direct uses. France comes in at third place (541 MWth) after Sweden and Germany. According to the AFPAC (French Heat Pump Association), the 2002 market represented 8 000 units (with average capacity included between 10 kW and 12 kW) for a cumulated installed total of 36 500 units (396 MWth). France is seeking to increase their installed high temperature geothermal capacities (for electrical production) in the years to come, projecting a total of 21 Mwe by 2010. (source EU Commission website Geothermal energy Objectives – Technology http://europa.eu.int/comm/energy/res/sectors/geothermal_energy_en.htm)

**Tidal**

A large scale tidal installation at La Rance (240 MW) delivers approximately 550 GWh/y. No expansion of tidal power is planned.

## RE Policy Outlook Targets/Strategy/Climate change

France is still behind most other European countries in terms of RES utilisation, particularly so given that it is not fully exploiting its considerable potential in some RES areas (especially biogas and wood) and the low level of take-up of RES such as PV and wind applications. The most under-exploited primary source of renewable energy comes from wood. Nevertheless, France is the principal European biogas producer (47 % of EMHV – methyl ester from vegetable oil) and it is still the leader in terms of installed mini-hydro capacity.

Despite a new legislative and financial framework encouraging RES applications, the French policy towards the use of RES has not always been very clear and effective. More recently though, the European initiative "Campaign for Take-Off" for RES has clearly enhanced the French Commitment to achieving a situation where 21% of its energy needs are supplied by RES by 2010. In the meantime, medium terms plans are being designed and adopted for each RES technology, between the State and its 26 regions, on the initiative of the ADEME (the French Energy and Environment Agency).

On 7 November 2003, the Minister in charge of the Industry has presented the White Book on Energies (www.industrie.gouv.fr). The conclusions and the proposals put forward are in favour of energy management and renewable energies. Two parliamentary reports by MPs J. Besson (www.debat-energie.gouv.fr/site/pdf/rapport-besson1.pdf) and S. Poignant (www.assemblee-nat.fr/12/rap-info/i1153.asp) have taken an in-depth look into the renewable energies policy. The energy guidelines Act should be passed by the Parliament in 2004. It is at this stage that the requirements in connection with renewable energies will materialize through regulatory and tax measures. (source France Photovoltaic technology status and prospects

The state owned electricity utility, EdF, is currently required to purchase all independently produced electricity at avoided cost. This also applies to renewable sources of electricity, however, the electricity buy-back rates are not currently at a high enough level that would particularly encourage investment in new renewable generating capacity. More recently the government has set targets for specific renewable resources including wind and biomass.

Some of the ongoing initiatives which have been designed and carried out are:

- The "Bois energie" programme, launched by ADEME with a view to developing industrial and district heating by encouraging the rational utilisation of wood wastes.
- The "Plan Soleil" programme, aimed at bolstering solar-thermal installations with the ambitious, but not impossible, objective of reaching 1,000,000 m2 of solar collectors installed by 2010.
- The "Eole 2005" programme, specifically focused on wind farm investments, and which has promoted the setting up of several wind farms in particularly favourable areas (i.e. the north coast and Mediterranean coast).
- The more recent "Batiment Bleus" programme, aimed at promoting grid-connected PV installations.

Taken as a whole, these initiatives, together with research activities, efforts to simplify administrative procedures and adapt current legislation and the considerable financial sources (€136 m from ADEME, plus €446 m of regional funds and €276 m of EU SF funds for the 26 regions over the period 2000-2006) clearly demonstrate a change in attitude and a likely shift in trends over the coming years.

French policy is to promote renewable energies when they are competitive, or close to being competitive. Until recently, this led to emphasis on the direct use of biomass rather than on increased renewable electricity generation. The production of biofuels for transport is far from being competitive but has nevertheless been launched for long term research purposes as well as to provide some subsidies to the agricultural sector. In 1996 the government launched its "EOLE" programme (Following the recommendations from this "Souviron Report"), which aims to increase the supply of large-scale grid-connected wind electricity to at least 250 MW by 2005. Electricity generation from other renewables and wastes is supported by a purchase obligation on the state electricity company (EDF), although these renewable buy-back rates are relatively low.

France has a significant population (mainly in its overseas departments and territories) that are not connected to the main electricity grid. The higher cost of electricity supply to these areas would in theory make renewable electricity supply an economically attractive option, particularly as these sites have significant solar and wind resources. However, EDF is legally obliged to supply low-voltage electricity at equal rates to consumers wherever they are located in metropolitan France or in overseas departments and whatever the cost to EDF. The resulting sale of some electricity at prices lower than its production cost effectively removes a niche market for (independent) renewable electricity production, and is therefore at

odds with the aim to promote renewables where they are competitive. However, it also provides an incentive for EDF to promote renewables in remote locations where such use would either provide electricity, or reduce demand for electricity (and therefore financial losses from electricity production, e.g. via solar hot water heaters).

Renewable energy policy is formulated by the Ministry of Industry and implemented through the Agence de l'Environnement et de la Maîtrise de l'Energie (ADEME). Government supports renewable energy in several ways, including direct funding of local and regional projects, joint EDF/ADEME agreements, financial incentives (such as favourable tax treatment for renewable energy investments, reduced VAT on renewable energy equipment, and information/education programmes.

The national body in charge of energy saving programs and renewable energy promotion in France, is ADEME (Agency for the Environment and Energy Resources)

**Electricity**

The RES-E Directive sets the national indicative target (21%) for the share of gross electricity consumption to be met from renewable energy sources. The production of electricity from renewable energy sources was 70.62 TWh in 2002, which represents 15.7% of the total electricity consumed in that year. This is actually a decrease of 2.7% from the 2001 total of 83.25 TWH. Such fluctuations are largely due to climatic variations affecting the production of hydro electricity, which makes estimating the growth in renewables production less easy

**Electricity Market**

France took its first steps towards opening its energy markets in 1992, with passage of the oil law on December 31, 1992 (Law n° 92- 1443) and continued this process in 1995 with regard to coal, and in 2000 with the electricity law of February 10. The process is expected to be completed in 2002 (has it been?)with a law relating to gas, although in this latter case liberalization has in major respects already been implemented through direct application of a European directive. In the wake of this successive legislation, public authorities have seen their role change, but have continued to maintain their prerogatives, which have often been transformed and sometimes complicated or even enhanced. Public authorities remain responsible for defining and enforcing adherence to the rules within which the various market players must act.

In France, despite recent changes, the State retains an important role as trustee or majority shareholder in several energy companies, from which it acquires the ability to implement a part of its energy policy by means of contracts that stipulate multiyear objectives without interference in company management.In France the electricity produced from renewable energy sources is developed under a compensation system, and is based on the purchase obligation and the contract between the producer and the distribution company. In June 2001 the purchase tariffs for electricity produced from wind installations and SHP have been established. Electricity produced from photovoltaic installations have been established in March 2002.

In order to translate the energy policy in the electricity field, the article 6 of the law of February 2000 concerning the modernisation and development of the electricty public service has foreseen a multiannual programming of the investments of production (PPI). This parliamentary report has been published in January 2002 and gives a privileged place to electricity produced from renewable energy sources.

France is governed by a legislative framework, in the energy field which put the emphasis on the electricity market, the basic rules being adopted after the second world war and still in force, even if many legislative peaces have been issued since this period. The transposition of the European directive in the electricity market has been approved by the French Parliament. EDF will still play a key role on the energy market, especially in the distribution activities (for individuals). The key features of the legislative scheme, at French level, focus on the duties / obligations of EDF (national utility) as its position of monopoly, have to be balanced by specific obligations (investment level, price fixation on the whole territory, rural electrification through grid extension).

Renewable electricity in France is promoted through a wide array of different promotion schemes. On the one hand, support in the form of feed-in tariffs is given to small hydro (2.5 cents €/kWh) and CHP (3.97 cents €/kWh). On the other hand, within the frame of the national wind power programme "EOLE 2005", a specific bidding process was introduced in 1996. The programme is due to run until the year 2005. Stage 1 is to achieve 15 MW and stage 2.35 MW. Under this program, 5.5 cents €/kWh are given to wind onshore. Under the FACE programme, investment subsidies of up to 70 % of total investment are given to biomass, wind and solar PV (stand alone systems). This programme is a scheme for Auto-producers of electricity from renewable energy sources in remote areas. The money comes from a fund financed by EDF, the national

government, and the power consumers. Finally, a subsidy up to 30% of total investment in local wood-fired biomass plants is awarded under the “Bois-énergie et le developpement local” program.

Other fiscal incentives are also given to all RES-E, such as flexible depreciation for investments in renewable energy production (100% of depreciation in only one year)

**heating and cooling**
The main programmes and legislation in force to optimized energy efficiency and use of renewable energy in buildings are as following:

- Thermal Regulations on new buildings in the residential sector – these have been revised regularly since as early as 1974
- Thermal Regulations on new buildings in new commercial buildings – these have become mjore stringent since 1989.

The aim of both regulations is to reduce energy consaumption by 40% for the commercial and tertiary sector and by 15% for the residential sector.
Policy aimed at houses built before 1975 has been in place since 1975. There are many programmes in place to support retrofitting of housing.

Plans for the future include making energy audits mandatory, strengthening thermal insulation guidelines and increasing the levels of information available to owners, buyers and all categfories of professionals involved in the building sector.

**Transport**
The following energy related policies are in place:

- Safety inspections including CO2 emissions with mandatory repairs required if vehicles fall short of standards
- Aim of reaching an average level of CO2 emissions for new cars sold in the European Union of 120 g CO2 per kilometre to be reached by 2005 or, at the latest, in 2010. Renault and PSA Peugeot Citroën have voluntarily undertaken to lower CO2 emissions of new vehicles sold within the European Union to less than 150 g CO2/km in 2005.
- The *Law on Air and Rational Energy Use* of 30 December 1996, made it mandatory for all cities with populations of over 100 000 to draft urban travel plans.
  The *Law on Air and Rational Energy Use* of 30 December 1996 introduced a number of measures aimed at fostering the development of electric vehicles and other alternative vehicles powered by liquefied petroleum gas or natural gas.
- Traffic estimates by the SNCF (French National Rail Company) concluded that
  the opening of the Mediterranean and Eastern TGV, which came into operation in 2001 would divert from air travel 1.8 and 0.7 billion passenger/km per year respectively. Diversion from road travel would reach 0.7 and 0.3 billion passengers/km per year.
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**Research and Development**

| TIME | | | 1985 | 1990 | 1995 | 1999 | 2000 | 2001 | 2002 |
|---|---|---|---|---|---|---|---|---|---|
| COUNTRY | PRODUCT | FLOW | | | | | | | |
| France | Million US$ (2002 prices and exchange rates) | Solar Heating & Cooling | 1,642 | 0.121 | 0.186 | 1,343 | 0.681 | 1,055 | 1,131 |
| | | Solar Photo-Electric | 7,182 | 1,886 | 1,475 | 2,984 | 7,006 | 7,771 | 11,970 |
| | | Total Solar | 8,822 | 2,006 | 1,662 | 4,327 | 7,688 | 8,826 | 13,101 |
| | | Wind | 1,847 | 0.208 | 0.279 | 2,238 | 1,557 | 2,398 | 3,770 |
| | | Biomass | 13,747 | 3,113 | 1,584 | 3,880 | 2,822 | 2,302 | 3,205 |
| | | Geothermal | 3,467 | 2,404 | 1,196 | 1,194 | 0.681 | 3,646 | 2,168 |
| | | Small Hydro (<10 MW) | 0.144 | 0.277 | 0.077 | 0.597 | 0.029 | 0.096 | 0.094 |
| | | Total Hydro | 0.144 | 0.277 | 0.077 | 0.597 | 0.029 | 0.096 | 0.094 |
| | | TOTAL RENEWABLE ENERGY | 28,028 | 8,008 | 4,800 | 12,235 | 12,777 | 17,269 | 22,337 |
| | | TOTAL OTHER TECH./RESEARCH | | | | | 7,298 | 8,634 | 14,138 |
| | | TOTAL ENERGY R&D | 835,398 | 522,164 | 511,384 | 603,983 | 570,955 | 423,657 | 380,302 |

(Source IEA 2003: National Budget RD&D in OECD Countries – France 1980-2002, OECD, IEA)

The equivalent of 8.008 Million US Dollars was spent on renewable energy RD&D in 1995, 4.800$ in 1995 and then12.777$, 17.269$ and 22.337$ in 2000, 2001 and 2002 respectively. (source IEA, R&D Policy 2003)

**Climate Change**

In order to honour its international commitments, particularly those made under the UN Framework Convention on Climate Change (UNFCCC), the French Government began to draw up national measures aimed at greenhouse gas mitigation, in the early 1990s, in accordance with the Kyoto Protocol. These measures were set out in a document published in 1997 Second National Communication.

The current National Programme for Tackling Climate Change (PNLCC), approved in January 2000, builds on the first set of measures in order to stabilise France's greenhouse gas emissions by 2010, on 1990 levels.

The ***Third National Communication*** to the UNFCCC is now available (see section "Background and glossary"). It reproduces part of the two aforementioned publications and sets out national measures adopted in the years 1997-2000.

If France is to honour its commitments, citizens and particularly policy-makers must take action. With this in mind, a ***Guide for Policy-makers*** and a leaflet on ***Cooperation between local authorities in France and developing countries*** have been produced by the MIES in order to help subnational authorities take action to reduce greenhouse gas emissions.

Lastly, the MIES would like to raise public awareness and suggest action that citizens can take on a daily basis to "do their bit" in order to reduce greenhouse gas emissions.
(source Interministerial Taskforce on Climate Change website http://www.effet-de serre.gouv.fr/maine.cfm?page=en/presentation/pres.htm)

## 3. RE Highlights

**National Success story**

**France — Biofuels (biodiesel)**
France is one of the few countries in the world to give a relatively high priority to the development of biofuels, mainly to support the agricultural sector and for research purposes. For example, there are four plants producing biodiesel, a biofuel, in France. Oil companies can use this biodiesel as a substitute for normal fossil diesel, up to a level of 5 % for use in private cars. In professional fleets (company cars, buses, etc.) it can replace up to 30 %.

**Success factors:**
***• Political: The French government supports a biofuels production programme***
The biofuel production programme is a financial scheme, operated at the national level, to develop investments for biofuel production.

***• Fiscal: Biofuels benefit from advantageous fiscal measures***
In France, biofuels receive exemption from excise tax on petroleum products at the rate of FRF 2.30/litre (EUR 0.35/litre) of biodiesel and FRF 3.29/litre (EUR 0.50/litre) of ethanol in 2000. French fiscal aid to biodiesel, for example, was approximately EUR 120 million per year (FRF 0.8 billion), supporting 337 000 tonnes of oil equivalent. The excise tax exemption means that biofuels can compete cost effectively with fossil fuels.

***• Technological development: French companies are world leaders in biodiesel production.***
The European leader for production and marketing of biodiesel is the French company Diester Industrie, with an annual turnover of EUR 200 million in 1997–98.

***• Information, education, training: Biofuels are actively supported by local communities***
There is an information network among the various communities with an interest in biofuels: the oil companies (TOTALFINA, ELF) and vehicle manufacturers (PSA, Peugeot Citroen, Renault), professional and trade associations (Sofiproteol, NOVAOL), and national nonprofit bodies (ADEME, the French Institute of Petroleum — IFT). Over 30 local communities are working together as the association 'Club des villes diester' to promote use of biodiesel. *France is the largest producer of biofuels in Europe, accounting for 40 % of the total European production.*
In 1993: 29.2 ktoe In 1999: 279.3 ktoe Increase 1993–99: 250.1 ktoe, 857 %

**France — Biomass district heating**
A number of examples of biomass heating applications can be seen in various regions around France:
• Dole, in the Jura Mountains in eastern France, has a 3.2-MW biomass-fired boiler delivering hot water and heating to 1 800 dwellings and various larger public and private buildings. This supplies more than one third of the energy required by the area, and uses 12 000 tonnes of wood residues annually.
• In Normandy, a 2-MW wood-fired boiler plant supplies heating to 470 houses, a college, a school and a sports centre. The project involved the construction of a heating network, which was developed by a heating company.
• In Bourgogne, a district heating system due for renovation was refurbished with an 8-MW wood-fuelled boiler. This provides heat for up to 3 500 homes, and also provides a market for waste wood from local sawmills.

**Success factors:**
***• Political: Support for biomass energy through the biomass wood and local development plan***
This plan was implemented between 1995 and 1998 by the French state agency for the environment and energy conservation, ADEME. It covers both the development of the biomass wood fuel supply sector and the installation of new automated-feed, wood-fired boilers. The installation of 188 boiler houses in apartments and in the industrial and tertiary sector had been achieved by 1999.

***• Financial: Support provided towards the development of projects***
Support for the development of district heating plants is available in the form of investment subsidies from the local region, while an additional subsidy may be available through EU or national funds.
• In the Dole system, about one third of the funding required was provided from ADEME with further contributions from the regional authority and other regional economic development funds.
• In Bourgogne, support was received from ADEME, the regional council and the EU.

• In Normandy, the heating company received financial support from the regional authority together with an agreed contract to operate the plant over a 24-year period.
*The biomass wood fuel market in France is one of the more successful examples of exploitation of renewable energy sources in the country over the past decade, with biomass used mostly for heating apartment blocks.*
In 1993: 7.9 ktoe In 1998: 16.9 ktoe Increase 1993–98: 9.0 ktoe, 113 %

**Regional best practice**
**Wideheim — Wind energy**
In 1999, near Dunkirk in Wideheim, a new development was started which comprises six 750-Kw turbines, totalling 4.5 MW. In France, wind energy was supported during the period examined through the competitive tendering system Eole, established in 1996. The process was implemented in stages: the first stage to contract 15 MW, the next to contract 35 MW and finally to achieve a total capacity of 250–500 MW by 2005. Eole was a similar system to the Non-Fossil Fuel Obligation used in England and Wales: requests for proposals were invited from developers for a certain amount of capacity and successful tenders received a guaranteed market for 15 years at the bidding price for their wind-generated electricity. Tariffs available for the first stage were FRF 0.38/ kWh (EUR 0.058/kWh), which fell by about 10 % in further bidding stages. Despite this the progress of project implementation was low. Despite acceptance under the Eole system, developers still encountered barriers to project implementation (see below). Until recently there have been few fiscal or financial incentives in support of wind energy developments outside the Eole system..

Wind energy developments in France have been hampered by the difficulties encountered when attempting to obtain connection to the grid. There are no guaranteed access rights for small generators. This case study illustrates how the lack of a guaranteed market through access to the grid and the limited availability of financial support can restrict the more widespread uptake of renewable energy technologies. The success of Dunkirk and Wideheim is mainly attributable to the, the municipality of Dunkirk and the developer working together to stimulate the establishment of the first wind turbine, with the mayor giving his full support to the project. For the second wind project, the municipality of Dunkirk again played a vital role, promoting the project, selecting and making available the site, participating in its financing and encouraging the Regional Council also to participate.

One result of the first two wind power developments in Dunkirk is that the most recent wind farm (1999) in Wideheim has French-constructed innovative turbines. Since June 2001 France has replaced the Eole competitive tendering system with a feed-in tariff system. Wind energy producers receive on average FRF 0.46/kWh (EUR 0.070/kWh) depending on real wind speed on the site.Wind energy use in France expanded 10- fold between 1993 and 1999, but the level of penetration remained low.

## 4. Websites

| Name | Description | Website |
|---|---|---|
| **Ministry of Economy, Finance and Industry** | The Ministry and in particular the general direction of energy and of raw materials (DGEMP) work out and implement government policy on energy. | http://www.finances.gouv.fr/minefi/minefi_ang/ |
| **ADEME** | The French state agency for the environment and energy conservation | http://www.ademe.fr/ |
| **EDF Group** | The State owned electricity utility incorporated under French law with the status of a Public Industrial and Commercial Establishment. | www.edf.fr |
| **Foundation 'Energie pour le Monde'** | | http://www.fondem.org/fondem/accueil.asp |
| **Observ'er** | | http://www.observ-er.org/ |
| **Syndicat des énergies renouvelabes (SER)** | | http://www.ser-fra.com/ |
| **Ministry of Ecology and Sustainable Development** | | http://www1.environnement.gouv.fr/sommaire.php3 |
| **French Interministerial Task Force on Climate Change (MIES)** | Under the authority of the Ministry of Ecology and Sustainable Development it co-ordinates the Ministries on matters of climate change | http://www.effet-de-serre.gouv.fr/ |
| **Europa website** | EU Commission website | http://europa.eu.int |
| **European Commission – Directorate General for Transport and Energy** | | http://europa.eu.int/comm/energy/index_en.html |