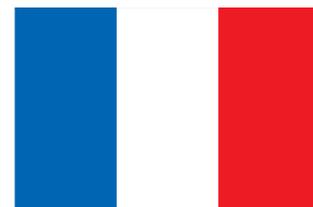


FRANCE



Country at a glance

- Population: 69.1 million (2010) [1]
- Total area: 513,120 sq. km [2]
- Carbon emissions per capita: 3.59 metric tons (2010) [3]
- Energy consumption per capita: 44.5 MWh (2010) [4]
- Percentage of global carbon emissions: 0.82% (2010) [4]



International Thermonuclear Experimental Reactor, France.

Nuclear fusion power is hoped to be the next generation means of clean, safe, economic electricity.

The picture shows a cross-sectional model of the toroidal magnetic chamber which will contain the ultra high temperature plasma needed for the fusion electricity generation process. The toroid will be approximately 20 meters in diameter. The reactor has been designed to produce 500 megawatts of power for around 10 minutes, from 50 megawatts of input power.

ITER by Rama. Permission under CC BY-SA 2.0 FR License
commons.wikimedia.org/wiki/File:ITER-img_0239.jpg

Table 1 Breakdown of energy use, electricity and heat generation, 2010

	Primary energy sourced within country		Energy imports minus exports	Primary energy used within the country ^(a)			Electricity Generation ^(b)		Heat Generation ^(c)		
	unit	ktoe		%	ktoe	GWh	%	GWh	%	GWh	%
Coal, including brown coal & peat		162	0	12,155	12,040	140,021	5	26,315	5	3,314	8
Oil fuels		1,080	1	82,872	76,525	889,984	29	5,821	1	9,659	23
Natural gas		646	0	39,542	42,528	494,597	16	23,758	4	23,406	55
Nuclear		111,675	82	0	111,675	1,298,782	42	428,521	76	0	0
Hydroelectric		5,333	4	0	5,333	62,024	2	62,013	11	0	0
Biofuels and waste		15,571	11	163	15,730	182,945	6	6,800	1	6,256	15
Solar photovoltaics		49	0	0	49	564	0	564	0	0	0
Solar thermal		59	0	0	59	689	0	0	0	0	0
Tide, wave and ocean		46	0	0	46	530	0	530	0	0	0
Wind		857	1	0	857	9,971	0	9,969	2	0	0
Geothermal		91	0	0	91	1,058	0	0	0	0	0
Electricity (imported)		0	0	-2,644	0	0	0	0	0	0	0
Sub total Renewables		22,006	16	163	22,165	257,782	8	79,876	14	6,256	15
Totals		135,569	100	132,087	264,933	3,081,166	100	564,291	100	42,634	100

Source: Based on World Energy Statistics and Balances Database 2012, "World Energy Balances." © OECD/IEA, 2012.

Notes:

Standard conversion used is 1 ktoe = 11.63 GWh

(a) Sum of energy sourced within country, energy imports minus exports, international marine and aviation bunkers and stock change flows.

(b) Includes all electricity generation, including any exported.

(c) Does not include electrical heating. Includes waste heat recovery from electricity generation plants.

Table 2 Breakdown of transport fuel use, 2010

(in ktoe)	Total transport mix	%	Domestic aviation	Road	%	Rail	Pipeline transport	Domestic navigation	Non-specified (transport)
Oil products	40,496	91	1,173	38,840	94	174	0	308	0
Natural gas	278	1	0	246	1	0	2	0	30
Biofuels and waste	2,420	5	0	2,420	6	0	0	0	0
Electricity	1,078	2	0	0	0	757	0	0	321
Sub total Renewables	2,420	5	0	2,420	6	0	0	0	0
Total	44,272	100	1,173	41,507	100	931	2	308	351

Source: Based on World Energy Statistics and Balances Database 2012, "World Energy Balances." © OECD/IEA, 2012.

Stand on climate change

France signed the Kyoto Protocol on 29 April 1998 and ratified it on 31 May 2002. However, its entry into force did not take place until 16 February 2005.

National climate change programmes

In 2007, the French government launched an environmental roundtable known as the "Grenelle Environment Project". It is a democratic debate on environmental issues. Implementing the commitments of the Environmental Round Table, France hoped to reduce emissions to 437 million tonnes of carbon dioxide equivalent (tCO₂eq) by 2020, or by 21.8% since 2005 [5]. On 3 August 2009, the government launched the "Grenelle 1" which sets the framework for major upcoming developments for the environment. The "Grenelle 2" Act was implemented on 12 July 2010. It is a law on the national commitment to the environment and helped create measures to implement the objectives adopted by Grenelle 1. It includes measures, such as incentives in French urban planning, that reduce greenhouse gas emissions (Schéma de Cohérence Territoriale) which will be finalized before 2017 [6].

The French Climate Plan spans **2010 to 2020. The policies are grouped into different sectors [5]:**

Residential-Service Sector:

- New energy efficiency regulation: From 2012 onwards, all construction must consume less than an average of 50kWh/m² per year. This requirement will apply to public and service buildings from the end of 2010 onwards.
- Sustainable development tax credit: This covers rental housing as well as labour expenses for energy-efficient and environmentally friendly materials.
- Zero percent ecological loans: The bank will finance up to 30,000 euros for work that helps improve a residence's energy efficiency.
- Renovation of government buildings and social housing to improve energy efficiency.

Transport sector:

- Development of alternative modes of transport: High speed rail lines to be built by 2020 and dedicated mass transit lines outside Île-de-France.
- Private vehicle emission reduction: Implementation of European regulations pertaining to vehicle emissions which had been agreed in December 2008

- Automobile Bonus-Malus: A rebate will be paid to buyers of vehicles that emit less than 130g of CO₂/km. On the other hand, a tax will be imposed on cars that exceed this limit.
- Development of biofuels: A tax exemption on domestic duties levied on petroleum products mixed with bio fuels.
- Kilometre ecotax for heavy vehicles: This was implemented at the beginning of 2011 for the use of main non-concessionary metropolitan road networks.

Agriculture sector:

- Energy performance plan for farms: This encompasses reduction in energy consumption, development of renewable energy and evaluation of energy consumption.

Energy sector:

- Energy saving certificates: Major power suppliers and automotive fuel suppliers are obliged to save energy.
- Developing renewable energy sources: The aim is to increase the share of renewable sources to 23% of total power consumption through a plan presented in 2008. This plan contains 50 measures which encompass bioenergy, wind power, geothermal, hydroelectric power, solar power and wave energy.
- Renewable heat fund: The fund is intended to be used for stepping up development of heat generation in the tertiary sector and industry, and for improving and diversifying heating sources in collective housing, using renewable sources such as wood, geothermal and solar power.
- Tax measures: Development of tax credits that supports the acquisition of renewable energy equipment by private individuals. On top of the tax credit, incentives are given to support energy efficiency renovation for buildings as well as zero percent interest rate for eco-loans.
- Building of power plants fuelled by biomass in 2009, to be completed by 2012.
- Installation of heat pumps in homes to increase geothermal power generation.
- Development of offshore wind farms.
- Call of tender for solar power plants in every region by 2011.
- Setting of tariffs to encourage use of photovoltaic panels on commercial buildings.
- Extension of income from resale tariffs for electricity that is produced from renewable sources.
- Reformation of building codes to allow the installation of systems which produce renewable energy.
- Carbon tax on energy products: This tax will apply to all households and companies except facilities that are under the greenhouse gas emission quota trading system.

Ministries involved in climate change/energy policy making:

Ministries involved	Web links
Ministry of Ecology, Energy, Sustainable Development and the Sea	www.developpement-durable.gouv.fr/
French Ministry of Defense Agency for Environmental and Energy Management	www.defense.gouv.fr/ www2.ademe.fr/servlet/getDoc?id=11433&m=3&cid=96
Ministry of Higher Education and Research Minister of the Economy, Finances and Industry	www.enseignementsup-recherche.gouv.fr/ www.economie.gouv.fr/
Ministry of Agriculture	agriculture.gouv.fr/
Ministry of Foreign Affairs	www.diplomatie.gouv.fr/en/
Office National Forest	www.onf.fr/

Education institutes involved in climate change/energy policy making:

Education Institutes involved	Web links
Interprofessional Technical Centre for Studies on Air Pollution	www.citepa.org/en/the-citepa/about-citepa
Universities of Versailles Saint-Quentin-en-Yvelines	www.uvsq.fr/
French National Institute for Agricultural Research	www.inra.fr/
The French National Research Agency	www.agence-nationale-recherche.fr/en/
Industrial Innovation Agency Centre for Economics and Management, IFP School	www.aii.fr/international www.ifpenergiesnouvelles.com/

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