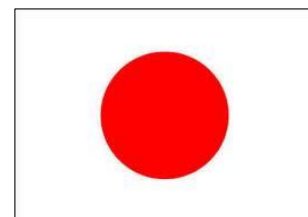


JAPAN

Country at a glance

- Population: 126.5 million (2010) [1]
- Total area: 377,915 sq. km [2]
- Carbon emissions per capita: 9.03 metric tons (2010) [3]
- Energy consumption per capita: 45.6 MWh (2010) [4]
- Percentage of global carbon emissions: 3.78% (2010) [3]



The Solar Ark in Japan

Built in 2002, the Solar Ark located in the Sanyo Electric facility in Anpachi, Gifu Prefecture, is a photovoltaic power generation facility benefitting both ecology and science. With over 5000 panels, it produces over 530,000 KWh/year.

The Solar Ark at Gifu Prefecture. Permission Under CC BY-NC 3.0 License
en.wikipedia.org/wiki/File:Solar_Ark.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		0	0	114,857	114,951	1,336,877	23	304,495	27	0	0
Oil fuels		695	1	211,578	203,013	2,361,037	41	97,452	9	202	4
Natural gas		3,209	3	82,788	86,014	1,000,349	17	304,515	27	4,148	72
Nuclear		75,114	78	0	75,114	873,581	15	288,230	26	0	0
Hydroelectric		7,070	7	0	7,070	82,227	1	82,212	7	0	0
Biofuels and waste		7,161	7	0	7,144	83,087	1	23,454	2	1,412	24
Solar photovoltaics		327	0	0	327	3,800	0	3,799	0	0	0
Solar thermal		410	0	0	410	4,770	0	0	0	0	0
Tide, wave and ocean		0	0	0	0	0	0	0	0	0	0
Wind		341	0	0	341	3,963	0	3,962	0	0	0
Geothermal		2,465	3	0	2,465	28,665	0	2,632	0	0	0
Electricity (imported)		0	0	0	0	0	0	0	0	0	0
Sub total Renewables		17,773	18	0	92,871	206,511	4	116,059	10	1,412	24
Totals		96,791	100	409,223	496,849	5,778,355	100	1,110,751	100	5,762	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

	Total transport mix	%	Domestic aviation	Road	%	Rail	Pipeline transport	Domestic navigation	Non-specified (transport)
(in ktoe)									
Oil products	75,288	98	3,107	68,631	100	197	0	3,353	0
Natural gas	0	0	0	0	0	0	0	0	0
Biofuels and waste	0	0	0	0	0	0	0	0	0
Electricity	1,659	2	0	0	0	1,659	0	0	0
Sub total									
Renewables	0	0	0	0	0	0	0	0	0
Total	76,947	100	3,107	68,631	100	1,857	0	3,353	0

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

Stand on climate change

Japan ratified the UNFCCC in 1994. In 2005, upon ratification of the Kyoto Protocol, Japan announced a Kyoto Protocol Target Achievement Plan. [5] Under this target, Japan committed to ensure a 6% reduction of greenhouse gas emissions, and to implement a continuous, long term reduction plan through low carbon policies. At the 2010 UN climate change conference, Japan committed to reducing its emissions by 25% (relative to 1990 levels) by 2020 and 80 per cent by 2050. [6]. While these reductions were, in part, to be achieved through an emphasis on clean energy, the lynchpin of the programme was to be its reliance on nuclear energy and the introduction of a price on carbon at the national level. However, the triple disasters in March 2011 not only saw the closure of the country's nuclear reactors but the difficult economic conditions that followed made it impossible for the government to contemplate introducing a carbon price. On 10 December 2011, Japan indicated that it did not have any intention to be under obligation of the second commitment period of the Kyoto Protocol after 2012.

Nevertheless, the Tokyo Metropolitan Government (TMG) has developed a cap-and-trade programme that many advanced nations and regions are also moving to implement since the first introduction of such a scheme by the European Union in 2005. The implementation of Japan's first mandatory emissions trading scheme highlights the country's commitment to reducing greenhouse gas emissions through the use of market-based mechanisms.

Japan is also home to the East Asia Low Carbon Growth Partnership Dialogue, which it hosts as part of the regional cooperation that Japan is pursuing based on the recognition that in order to address climate change effectively, in addition to the promotion of climate change negotiations it will also be vital to promote practical efforts toward low carbon growth worldwide.

National climate change programmes

Japan's Global Warming Law and the Kyoto Protocol Target Achievement Plan mandates that all 47 prefectural and 1,800 municipal governments must introduce programmes to address greenhouse gas emissions. [7] the June 2010 Basic Energy Plan, Japan aims to increase renewable energy, in particular solar power, from 9% to 20% in 2030. [8]

- Energy conservation plays a pivotal role in the EEDP, where energy conservation is mainly achieved through reducing expendable use of energy and improving energy efficiency. The target of this plan is to reduce final energy consumption by 20% in 2030 compared to 2005 levels [6]. Some cross-sector measures include:
 - Enforcing the Energy Conservation Promotion Act (ENCON Act)
 - Enforcing Minimum Energy Performance Standards (MEPS) for equipment and appliances
 - Financial support to subsidize energy savings achieved in the various sectors
 - Supporting the operation of energy services companies (ESCO)
- The 10-year Alternative Energy Development Plan sets to increase the share of renewable and alternative energy to 25% by 2021. This would be mainly achieved by reducing oil import dependence, strengthening domestic energy security and promoting integrated green energy utilization in communities [7].

Some of the key features of a five year (2012 – 2016) Pollution Management Plan include: reducing and controlling pollution emissions from the various sectors, prioritizing pollution problems, applying the "polluter pays principle" (PPP) concept and allowing various agencies to implement a pollution management system that will be governed by law enforcement, regulations and codes of practice [8].

Residential-Commercial Sector

- Energy Conservation Standards were established in 1980 (Year of Showa 55) and sequentially enhanced in 1993 (Year of Heisei 5) and 1999 (Year of Heisei 11). At the time, Japan was sectioned into six regions and standards pertaining to thermal insulation, air tightness and sunlight shielding.
- Citizens today are encouraged to monitor their own energy consumption and greenhouse gas emissions, and choose a CO₂-saving lifestyle. Specifically, campaigns such as “Team Minus 6%”, *Cool Biz* and *Warm Biz* target the residential-commercial sector emissions reductions [9].
- CO₂ reductions in households are likely to be brought on by efforts by the Japan Government to improve energy performance of houses through the dissemination of energy management systems, equipment and devices based on Top Runner Standards [10].
- Under the Energy Conservation Act, buildings with a total floor area of at least 300m² are obligated to submit notification pertaining to energy conservation measures implemented by construction clients in relation to large scale modifications and are required to report the status of overall maintenance [11].
- Under the same Act, housing providers with an annual supply of 150 housing units must observe targets for improving energy conservation performance of supplied ready-built residential housing [11].
- The Energy Conservation Act is also slated to expand the coverage of buildings subject to notification obligation concerning energy-saving measures to include certain small- to medium-sized buildings and reinforce regulations regarding energy-saving measures related to large-scale buildings.
- Specific machinery and equipment are subject to stipulations of the Top Runner Programme under the Energy Conservation Act. These include machinery and equipment used in large quantities in Japan; consume significant amounts of energy when used; and for which improvement of energy consumption efficiency is particularly important. 23 such types are specific and include household items such as air conditioners, television receivers, lighting, computers, refrigerators, heaters, rice cookers and microwave ovens [11].

Industrial Sector

- In 1997, the *Keizai Dantai Rengokai*, or Japan Business Federation (JBF) took the lead in formulating the Voluntary Action Plan on the Environment, and established the target of controlling CO₂ in FY2010 below FY1990 levels. Businesses both affiliated and unaffiliated with the JBF have set up GHG reduction plans which now cover approximately 80% of the emissions from industrial and energy conversion sectors, and 50% of those from all sectors [9].
- Under the Energy Conservation Act, business operators with energy consumption of at least 1,500 kilolitres of crude oil equivalent are obligated to appoint an Energy Management Control Officer and Planning Promoter; periodically report on energy consumption status; and submit medium- and long-term plans for energy consumption. The Energy Conservation Act covers about 90% of the industrial sector. [11].
- The Energy Conservation Act also mandates that each manufacturing plant that consumes more than 3,000 kilolitres of crude oil equivalent of energy is designated a “Type 1” Energy Management Factory, while those that consume between 1,500 – 3,000 KI are considered “Type 2”. Both categories of manufacturing plants are required to appoint an Energy Manager or Energy Management Officer to manage and report on the energy unit consumption at plants and other installations and set targets to reduce the unit consumption. The annual average reduction should be at least 1%.
- In FY2008, Japan set industrial benchmarks for the iron and steel, cement and electric power industries. In FY2009, the benchmarks were expanded to include paper manufacturing, petroleum refining and chemical industrials. Average values and standard deviations of reported benchmark indices are publically disclosed by the Japanese Government, as with the names of business operators whose energy conservation efforts have been particularly advanced.

Transport sector

- Certification Programme for Green Management
- Under the Energy Conservation Act, specified freight and passenger carriers are obligated to submit medium- and long-term plans and to periodically report energy consumption. Specified consigners with an annual transport volume of at least 30 million ton-km are obligated to submit plans and periodically report consumption of energy related to consigned transportation [11].
- Under the Energy Conservation Act, business operators are mandated to make an effort towards public disclosure of judgement standards to improve overall energy efficiency of the transport sector.

- Energy conservation standards, as part of the Top Runner Programme under the Energy Conservation Act, also apply to automobiles in Japan. Overall, 23 items are subject to regulations, including passenger cars and trucks. Business operators who produce or import more than 2,000 units of cars (350 units for vehicles with capacity of 11 persons) and 2,000 units of trucks are required to attain Top Runner Standards.

Ministries involved in climate change/energy policy making:

Ministries involved	Web links
Ministry of Environment	www.env.go.jp/
Ministry of Agriculture, Forestry and Fisheries	www.maff.go.jp/
Ministry of Economy, Trade and Industry	www.meti.go.jp/
Ministry of Foreign Affairs	www.mofa.go.jp/
Ministry of Land, Infrastructure, Transport and Tourism	www.mlit.go.jp/
Ministry of Education, Culture, Sports, Science and Technology,	www.mext.go.jp/
Geospatial Information Authority of Japan	www.gsi.go.jp/
Greenhouse Gas Inventory Office of Japan	www.gio.nies.go.jp/
Japan Forestry Agency	www.rinya.maff.go.jp/

Education institutes involved in climate change/energy policy making:

Education Institutes involved	Web links
Kiko Network	www.kiconet.org/
National Institute for Environmental Studies, Japan	www.nies.go.jp/
Institute for Global Environmental Strategies	www.iges.or.jp/
Keidanren (Japanese Business Federation)	www.eppo.go.th/tank/index.html
Conservation International, Japan	www.conservation.org/global/japan/

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