

BELGIUM



Country at a glance

- Population: 10.71 million (2010) [1]
- Total area: 30,528 sq. km [2]
- Carbon emissions per capita: 9.94 metric tons (2010) [3]
- Energy consumption per capita: 70 MWh (2010) [4]
- Percentage of global carbon emissions: 0.35% (2010) [3]



Nuclear Power Plant, Doel, Belgium

The Doel Power Plant, built in 1997, is one of two nuclear power stations in Belgium. It has four Pressurized Water Reactors, generating 2929 MW.

Its two 176m high cooling towers are landmarks which can be seen from many miles around.

The Doel nuclear power plant (Doel, Belgium). Permission Under CC BY-NC-ND 2.0 License Photo Credit IAEA. www.flickr.com/photos/iaea_imagebank/8134337647/

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	3,137	3,190	37,094	5	5,948	6	0	0
Oil fuels		733	5	33,733	24,796	288,373	41	406	0	144	1
Natural gas		0	0	16,786	16,955	197,187	28	31,420	34	8,734	88
Nuclear		12,494	78	0	12,494	145,311	21	47,944	51	0	0
Hydroelectric		27	0	0	27	312	0	312	0	0	0
Biofuels and waste		2,545	16	571	3,110	36,164	5	5,627	6	980	10
Solar photovoltaics		48	0	0	48	560	0	560	1	0	0
Solar thermal		12	0	0	12	141	0	0	0	0	0
Tide, wave and ocean		0	0	0	0	0	0	0	0	0	0
Wind		111	1	0	111	1,292	0	1,292	1	0	0
Geothermal		4	0	0	4	50	0	0	0	25	0
Electricity (imported)		0	0	47	47	551	0	0	0	65	1
Sub total Renewables		2,747	17	571	15,807	38,519	5	7,791	8	1,005	10
Totals		15,975	100	54,275	60,794	707,035	100	93,509	100	9,949	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	8,178	94	2	7,984	96	34	0	158	0
Biofuels and waste	362	4	0	362	4	0	0	0	0
Electricity	149	2	0	0	0	143	6	0	0
Sub total Renewables	362	4	0	362	4	0	0	0	0
Total	8,689	100	2	8,347	100	177	6	158	0

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

Stand on climate change

Belgium signed the Kyoto Protocol on 29 April 1998 and ratified it in 31 May 2002. The Protocol later was entered into force on 16 February 2005.

National climate change programmes

According to the "EU Burden Sharing Agreement", Belgium pledged to decrease its greenhouse gas emissions by 7.5% between 2008 and 2012 [5].

Climate change efforts are being executed at both the federal and regional levels. In 2002, the federal and regional governments adopted the National Climate Plan which lasted from 2002 to 2012. The National Climate Commission was set up for its implementation. A cooperative agreement was also adopted for the follow-up to the climate change plan. The National Climate Commission developed the internal burden sharing agreement for the different regions. It was put into place in 2004. The Flemish and Walloon regions were required to reduce their GHG emissions from 2008 to 2012 by 5.2% and 7.5% respectively, while the Brussels-Capital region was allowed to increase their emissions by 3.47%. Each region is allowed to implement its own allocation plan after approval from the National Climate Commission.

The National Climate Change Plan aims to reduce emissions through six measures, as follows:

- The Thornton-project: Construction of an offshore windmill farm in the North Sea. The farm is designed to produce around 1000 GWh of electricity per year. This is sufficient to meet the needs of 600,000 people and avoid CO₂ emissions by around 450,000 metric tons per year as compared with fossil fuel electricity generation [6].
- Transformation from carbon power to biomass in electricity stations.
- Introduction of biofuels in the transport sector by reducing the excise duties for petrol and diesel fuels which have some biofuel content, typically 10%.
- Tax reductions for expenditures on energy saving measures for houses and for the purchase of cars with lower carbon dioxide emissions.
- A fund, "Fedesco" has been set up to provide low interest loans for energy efficiency improvement projects in buildings and for low income persons making energy-saving investments in their houses.
- Use of flexible mechanisms: Government acquired emission credits equivalent to 2.46 million metric tons of CO₂ per year from 2008 to 2012. They also contributed 2.5 million Euros to the World Bank Community Development Carbon Fund.

The **Flemish region** put in place five measures to help reduce GHG emissions by the 5.2% required according the internal burden agreement. These measures are as follows:

- The first Flemish climate policy plan was to reduce GHG emissions between 2002 and 2005 by a set target. However, the target was not achieved.

- A promotion of the Rational Energy Use (REU) decree, which also includes the use of renewable energy sources.
- The Flemish first climate policy plan was reviewed and re-implemented as the second Flemish climate policy plan for the period 2006 to 2012. It aimed to achieve the Flemish Kyoto target, continue with the Flemish vision and strategy and create the bases for emission reductions after 2012 as well as the development of climate policy instruments. It identified a number of priorities and measures:
 1. Road traffic in Flanders is to become more climate friendly and sustainable by limiting the volume of traffic, making cars more environment friendly, improving road management and stimulating green driving behavior.
 2. Setting of energy efficiency requirements for buildings, also including owners of all buildings to submit energy usage certificates to the government.
 3. Electricity suppliers to submit Renewable Energy Certificates (REC) showing that they are providing a minimum amount of electricity generated from renewable sources.
- Under a “benchmarking covenant”, more than 170 of the most energy-intensive companies have committed to become the most energy efficient in the world by 2012. The Flemish government guaranteed that these companies would not be subjected to any additional measures concerning energy efficiency or CO₂ emissions until after 2012.
- A “mobility plan” contains policy recommendations aimed at reducing and stabilizing traffic emissions.

The **Walloon region** introduced the following nine measures:

- The 2001 climate change action plan of 89 measures affecting all the sectors emitting GHG - but at the same time retaining the competitiveness of Walloon’s enterprises. These measures aim at short, medium and long term reduction actions with domestic GHG reductions as top priority.
- The 2007 air climate plan integrates elements of the 2001 climate plan and aims to bring remedies to the global problem of atmospheric pollution. There are a total of 82 priority measures affecting transport infrastructure, industry & commerce, households, agriculture and energy provision.
- Contribution of USD 5 million to the World Bank Community Development Carbon Fund on December 2004.
- The regional implementation of the EU Emissions Trading System (ETS) was passed into Walloon law on 10 November 2004 and modified on 22 June 2006. Complying with this legislation, the Walloon government adopted a regional allocation plan on 27 January 2005. 128 corporations received proposals for the maximum permitted amount of GHG emissions based on audits carried out at their sites. However, the European Commission did not accept this allocation plan and the regions had to renegotiate the redistribution. An agreement was eventually reached on 1 February 2008 where each operator affected by the regional allocation plan must submit a GHG emissions declaration at the end of each year. These declarations have to be verified by an official certification agency.
- The regional renewable energy and cogeneration aid scheme for electricity production is strengthened via a “green certificate scheme”. This is additional to the ETS provisions.
- The main industry sectors took steps to improve their energy efficiencies. These agreements are characterized by: [7]
 1. Signing of a declaration of intent
 2. Carrying out of energy audits within the companies in preparation for GHG emission reduction planning
 3. Documentation of the agreements for setting out precise targets figures
 4. Arrangements to carry out the required work and yearly reporting

- A plan for the sustainable management of energy proposes specific ways to achieve and improve the energy efficiency of developing renewable energy sources, as well as cogeneration from fossil fuels. Investments in these are promoted by various financial grants or tax deductions.
- The transport and mobility plan, adopted on 1 April 2004 aims to achieve sustainable transport targets [8].
- A framework decree has been introduced in accordance with the European Directive 2002/91/EC on the energy efficiency of buildings [9].

Walloon's government also provides assistance and the necessary tools to enable the funding of renewable energy costs.

The **Brussels-capital region** introduced the following seven measures:

- As most of Brussels' pollutants are GHG emissions, an air climate plan was geared towards the main sources of energy consumption which are buildings, industry & commerce and road transport.
- The EU ETS was brought into force on 3 June 2004 and the first regional allocation plan was adopted for the period of 2005-2007. The plan for 2008-2012 was rejected as was a similar plan for the Walloon region. On 1 February 2008, an agreement between the regions was reached but this did not modify the allocation plan which was initially submitted to the European Commission. One of the consequences of this was that ETS was directly applied to 14 companies.
- The carbon fund: Participated in the World Bank Community Development Fund by contributing USD 9.4 million in November 2004.
- Besides the 2004 regional renewable energy/cogeneration scheme and in addition to the ETS, Brussels also implemented a "Green Certificate Scheme". All electricity providers are obliged to purchase the Green Certificate annually and adhere to their given emission allowances, or be subjected to financial penalties. To complement this scheme, an action plan on "Energy" was launched by the Minister of Environment of the Brussels-Capital region in 2005. This action plan aims to promote energy efficiency in buildings as well as to promote cogeneration. It focuses on three main areas:
 1. Information and public awareness
 2. Persuasion, experiment and demonstration
 3. Investment support for companies and individuals
- An "econ-dynamic company" label has been introduced whereby companies sign a charter undertaking to respect a certain number of principles related to energy, mobility and air quality.
- A Brussels air allowance has been introduced in the form of a public transport subscription or a bicycle allowance which is given to people who scrap their polluting vehicles.
- A framework decree has been introduced in accordance with the European Directive 2002/91/EC on the energy efficiency of buildings [9].

Belgium's climate policy has been outlined until 2012, with no target fixed after this time as yet. A new plan is currently under development for the period up to 2020 [10].

Ministries involved in climate change/energy policy making:

Ministries involved	Web links
Belgian Federal Science Policy Office	www.comnap.ag/Members/BELSPO/SitePages/Home.aspx
Kingdom of Belgium Foreign Affairs, Foreign Trade and Development Cooperation	diplomatie.belgium.be/en/
Ministry of Energy of Walloon region	gouvernement.wallonie.be/competences-du-gouvernement-wallon/energie
Ministry for Research of Brussels-Capital	www.cerexhe.irisnet.be/cerexhe/bienvenue?set_language=fr
Ministry of the Environment of the Brussels-Capital region	evelyne.huytebroeck.be/spip.php?page=sommaire&lang=fr
Ministry for Education and Labour of Flemish	www.vlaanderen.be/nl
Belgian National Climate Commission	wwwb.vito.be/Klimaatplan/database/database.aspx?lang=EN

Education institutes involved in climate change/energy policy making:

Ministries involved	Web links
Abomey Calavi University	www.uac.bj/index.php?id=1&L=1
Royal Belgium institute of sciences	www.academieroyale.be/
Interuniversity Microelectronics Centre	www2.imec.be/
Flemish Institute for Technological	www.vito.be/VITO/EN/HomepageAdmin/Home/Homepage
Institute for the encouragement of Scientific Research and Innovation of Brussels	www.innoviris.be/site/
Brussels Institute for Environmental Management	www.ibgebim.be/index.htm
Bruxelles Environnement	www.bruxellesenvironnement.be/Templates/Home.aspx
Agency for Innovation by Science and Technology Flanders	www.iwt.be/english/welcome
Flemish Environment Agency	en.vmm.be/
Brussels Energy Agency	www.curbain.be/component/content/?lang=fr-FR
Walloon Agency for Air and Climate	airclimat.wallonie.be/spip/spip.php?page=mot-ministre

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<https://www.cia.gov/library/publications/the-world-factbook/geos/fr.html>. [Accessed: 28-Mar-2013].
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<http://www.egmontinstitute.be/paperegm/ep18.pdf>
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<http://www.rwe.com/web/cms/en/248922/rwe-innogy/sites/wind-offshore/in-operation/thornton-bank/>
- [7] Energy undertakings by industry. See the list of the signatories of the agreement available at:
<http://energie.wallonie.be/servlet/Repository/?IDR=5270>.
See also the modalities of such agreements on:
http://energie.wallonie.be/servlet/Repository/Modalités_de_mise_e.PDF?IDR=372
- [8] Decree of 1 April 2004 related to mobility and local accessibility (OJ, 13 May 2004)
- [9] DIRECTIVE 2002/91/EC of the European Parliament and Council on the energy performance of buildings. 16 December 2002. Available at:
<http://eurlex.europa.eu/LexUriServ/LexUriServ.do?uri=OJ:L:2003:001:0065:0065:EN:PDF>
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