

## BELGIUM

### The energy sector

Belgium is the third most densely populated country in the OECD. In recent years, Belgium has enjoyed steady economic growth, with the per-capita GDP, measured using current purchasing power parities, being about 10% higher than OECD or EU averages. Other macro-economic indicators show healthy development. Inflation has remained low, the current account surplus has widened and employment has increased.

Energy balances in Belgium (Source: Energy Policies of IEA Countries, 2001)

		1999	%			1999	%
<b>Population (millions)</b>		<b>10.22</b>		<b>Total final consumption</b>		<b>41.3</b>	
<b>Energy consumption/capita</b>		<b>4.04</b>		<b>Coal</b>		2.5	6.1
<b>Total energy production (Mtoe)</b>		<b>13.8</b>		<b>Oil</b>		22.0	53.3
<b>Coal</b>		0.2	1.4	<b>Gas</b>		9.7	23.5
<b>Oil</b>		-	-	<b>Biomass &amp; Wastes</b>		0.3	0.7
<b>Gas</b>		-	-	<b>Geothermal</b>		-	-
<b>Biomass &amp; Wastes</b>		0.8	5.8	<b>Solar/Wind/Other</b>		-	-
<b>Nuclear</b>		12.8	92.8	<b>Electricity</b>		6.4	15.5
<b>Hydro</b>		0.0	0.0	<b>Heat</b>		0.4	1.0
<b>Geothermal</b>		0.0	0.0	<b>Total industry consumption</b>		<b>17.2</b>	
<b>Solar/Wind/Other</b>		0.0	0.0	<b>Coal</b>		2.3	13.4
<b>Net energy imports (Mtoe)</b>		<b>44.1</b>		<b>Oil</b>		6.3	36.6
<b>Coal</b>		7.4	16.8	<b>Gas</b>		4.9	28.5
<b>Oil</b>		23.2	52.6	<b>Biomass &amp; Wastes</b>		0.1	0.6
<b>Gas</b>		13.5	30.6	<b>Geothermal</b>		-	-
<b>Electricity</b>		0.1	0.2	<b>Solar/Wind/Other</b>		-	-
<b>Total supply - TPES (Mtoe)</b>		<b>58.6</b>		<b>Electricity</b>		3.2	18.6
<b>Coal</b>		7.5	12.8	<b>Heat</b>		0.3	1.7
<b>Oil</b>		24.2	41.3	<b>Transport consumption</b>		<b>9.8</b>	
<b>Gas</b>		13.3	22.7	<b>Total other sectors consumption</b>		<b>14.3</b>	
<b>Biomass &amp; Wastes</b>		0.8	1.4	<b>Coal</b>		0.2	1.4
<b>Nuclear</b>		12.8	21.8	<b>Oil</b>		6.0	42.0
<b>Hydro</b>		0.0	0.0	<b>Gas</b>		4.8	33.6
<b>Geothermal</b>		0.0	0.0	<b>Biomass &amp; Wastes</b>		0.2	1.4
<b>Solar/Wind/Other</b>		0.0	0.0	<b>Geothermal</b>		-	-
<b>Electricity Trade</b>		0.1	0.2	<b>Solar/Wind/Other</b>		-	-
<b>Electricity generation</b>		<b>7.2</b>		<b>Electricity</b>		3.1	21.7
<b>Electricity generation (TWh)</b>		<b>83.4</b>		<b>Heat</b>		0.1	0.7

Belgium's only indigenous energy resource is coal but the last mines were closed in 1993 due to the high cost of domestic production. Belgium has no oil or natural gas resources, and the use of renewables is still limited. So the only significant source of energy produced in Belgium is nuclear power. Belgium is a net importer of all fuels, but electricity imports have been decreasing and are currently marginal. The proportion of oil decreased significantly from 60.5% in 1973 to 38.7% in 1990, but grew in the 1990s because of a significant increase in consumption in the transport sector. Nuclear power was first introduced in 1975. Natural gas was a major fuel in the 1970s, but was partly replaced in the 1980s by nuclear energy and oil. Since the 1990s, it has regained importance.

While total final consumption decreased from the 1970s to the early 1980s, in the wake of two international “oil shocks”, it has grown since then, except for the early 1990s when there was a recession. Oil is still dominant in final energy consumption. In addition to its importance in the transport sector, it is as important a fuel in space heating as natural gas. In 1999, the industrial sector (including non-energy use) had the biggest share of total final energy consumption, 41.6%, a level reached in the early 1990s. The residential and commercial sectors’ share in final energy consumption was 34.5%. Energy consumption in the transport sector has shown the most rapid long-term growth, increasing its share from 14.6% in 1973 to 23.8% in 1999.

Energy demand is growing in both absolute and relative terms. Energy intensity in 1998 was about the same as in 1990. However, electricity consumption per GDP grew by 9.9% between 1990 and 1998. Electricity demand has increased rapidly in the 1990s. During 1990-1998, average annual growth has been 5% in the service sector, 3% in the residential sector, and 2.6% in the industrial sector.

### **Policy for renewables and CHP**

The federal and regional governments consider that increased use of CHP would be effective in meeting the CO<sub>2</sub> reduction targets as well as enhance energy efficiency. They promoted CHP with various supportive measures, namely tax abatement and subsidies for feasibility studies and investment costs, which did increase the number of installations. If CHP units use biomass as fuel, they are eligible for direct subsidies, the so-called green francs. However, their average efficiency performance so far has not been satisfactory and, to address the problem, the federal and regional governments have targeted their support only to “high-quality” CHP installations.

The 1995-2005 National Equipment Programme for the electricity sector calls for decentralised power generation of 1,000 MWe, mainly with industrial CHP, by 2005, a target almost achieved. The programme introduced partnership agreements between large co-generators and Electrabel or electricity distributors with price opportunities to promote CHP based on a recommended model by CCEG. In these standardised contracts, Electrabel or distributors agreed to buy electricity from “high-quality” CHP with favourable tariffs. Electrabel also agreed that if co-generators needed more power than they could produce, it would be supplied at competitive prices. The Equipment Programme will be replaced by the Indicative Programme for Electricity Generation in 2002. The role of the federal government is limited to setting prices for electricity and heat generated by CHP.

The Flemish objective is to install an additional 1,800 MWe of CHP capacity by 2005. The other two regions have not set numeric targets. A wide range of regional measures exists for the promotion of CHP. Flanders and Wallonia have each established an organisation to promote CHP, and subsidies are available for CHP installation and R&D.

A list of the various federal and regional measures existing for the promotion of CHP and renewables is given below:

- **Feed-in tariffs**

**Contact organization:** Electrabel

**Short description:** Three different kinds of rates exist for the purchase of renewable electricity fed into the national grid.

- **Renewable energy envelopes**

**Contact organization:** Ministerie van financiën

**Short description:** Production of electricity from water-, wind-, solar-, or biomass energy is subsidized.

- **Déduction fiscale pour investissements économiseurs d'énergie**

**Contact organization:** ERBE, Equipe Régionale Biomass-Energie

**Short description:** Deduction of a percentage of investments in RE from taxable profits.

- **Politique spécifique en matière d' énergie renouvelable et alternative**

**Contact organization:** Ministère de la Région wallonne

**Short description:** Investment subsidy for projects which improve production and use of RE.

- **Ecologische Expansiesteun**

**Contact organization:** ERBE, Equipe Régionale Biomass-Energie

**Short description:** Investment subsidies up to 15% of the investment are available for investment in Renewable Energy and energy-efficiency projects.

- **VLIET**

**Contact organization:** IWT

**Short description:** The Flemish impulse programme for energy technologies stimulates energy saving technologies.

- **Renewable energy subsidies**

**Contact organization:** Ministry of Economy

**Short description:** In the Flanders region, a range of RE projects can be subsidized by ANRE (Ministry of Economy)

- **Primes à l'investissement et aides fiscales complémentaires**

**Contact organization:** Ministère de la Région wallonne

**Short description:** Investment subsidies and fiscal incentives to stimulate sustainable development and to create new jobs.

- **Prime à l'investissement pour recours à un tiers investisseur**

**Contact organization:** Ministère de la Région wallonne

**Short description:** Subsidy to stimulate third-party financiers in the Walloon Region.

- **ECHOP**

**Contact organization:** Ministère de la Région wallonne

**Short description:** Subsidy for schools and hospitals investing in energy efficiency and RE projects.

- **Subvention pour une meilleure maîtrise de la consommation d'énergie**

**Contact organization:** Ministère de la Région wallonne

**Short description:** Subsidy for energy efficiency projects, development of renewable energy and procedures of approval

- **Programme R&D en technologies environnementales**

**Contact organization:** Ministère de la Région wallonne

**Short description:** This subsidy is meant for R&D projects in the domain of environmental technology

- **Les programmes de R&D: Aide à l'innovation technologique**

**Contact organization:** Ministère de la Région wallonne

**Short description:** These programmes include support to RE, however RE are not the exclusive aim of the programmes.

- **Subvention pour contrat d'insertion**

**Contact organization:** FOREM Charleroi

**Short description:** Subsidy to stimulate the creation of new jobs. Jobs in the RE sector are included.

- **La SIBS (Société d'investissement de la Province de Namur)**

**Contact organization:** SIBS

**Short description:** Financial support regulation for the creation of more jobs. Jobs in the RE sector are included.

- **Walloon support programmes**

**Contact organization:** ERBE, Equipe Régionale Biomass-Energie

**Short description:** The creation of jobs, including jobs in the RE sector, is financially supported by the different regional authorities in the Walloon Region.

- **FODEP (Fonds de Développement Pouvinal de Entreprises)**

**Contact organization:** Bureau Economique de la Province de Namur

**Short description:** Interest-free loans for R&D projectst in La Province de Namur. RE projectsmay fit in the conditions.

- **Garantie**

**Contact organization:** Ministère de la Région wallonne

**Short description:** Subsidy to support agricultural enterprises in the Walloon Region to meet governmental measures on agricultural, environmental and forrestrial terrain.

## **CHP and biomass-CHP**

In the last decade, the number of CHP units in Belgium increased from 72 in 1991 to 216 in 1998. These include large CHP plants built by power companies and many small units of 0.5-2 MWe installed in the industrial and commercial sectors, mainly in chemical industries. Electrabel and SPE operate 22 units, corresponding to 648 MWe capacity in 1999. Even with that increase their share of total electricity production remains low, only some 3.5% compared to the average 8.7% in IEA Member countries.

Total CHP capacity was almost 900 MW of electricity and 3,200 MW of heat in 1998. Gross electricity production by CHP plants was 3,600 GWh (3.5% of total generation) and net heat production was 38,030 TJ. The AMPERE Commission estimated in its report of October 2000 that the total potential for CHP in Belgium could reach 1,500-2,300 MWe in 2020.

CHP plants are economically competitive compared to separate electricity and heat production only if they operate with high fuel efficiency and if the heat and electricity loads are balanced. In practice, the limiting factor is the adequacy of the heat load. Today, the most efficient industrial CHP unit in Belgium operates at 89% fuel efficiency, which is a very good efficiency level achieved with balanced loads.

There are no comprehensive statistics to estimate the average fuel efficiency of Belgian CHP plants; some typical CHP plants in chemical, food product and tobacco industries operate at 74-83% fuel efficiency.

No data on CHP or biomass fuelled CHP units were retrieved from an internet search.