3 ENERGY

Energy plays a major role in our society. Whether it is for heating, transport, powering electrical appliances and industrial machines or digital technologies, everyone in society needs it on a daily basis. However, the provision and consumption of energy generate environmental pressures, albeit to varying degrees depending on the energy sources and technologies used. The pressures directly linked to energy consumption are the subject of specific focus in the territories where they occur, including Wallonia. These may be, for example, emissions into the air during combustion (thermal power plants, engines, boilers, etc.) or the generation of high-level radioactive waste. There are also pressures at the early stages of the supply chain (extraction, processing, transport). There is less of a focus on these as most of the energy consumed in Wallonia is generated abroad. In the context of tackling all these pressures, and more specifically the development of renewable energies, the planned closure of nuclear power plants and the pursuit of a carbon neutrality objective by 2050, there are numerous challenges in the field of energy and the policy levers that are implemented require coordination between the different levels of power, with competences shared between the federal state and the Regions.

The Walloon environment in 10 infographics

ENERGY

SUPPLIES

Total quantity of energy imported or produced on the Walloon territory

170 TWh in 2018

105 toe/M€

126 toe/M€

148 toe/M€

Energy intensity

Oil products
(oil, gasoline, diesel, etc.)

56 TWh in 2018

Imported resource
Pressures during extraction, transport, refining
Emissions during combustion

Uses

63 % Transport
34 % Buildings
3 % Industries

Nuclear fuel

46 TWh in 2018

Imported resource
Risk of accidents and waste management
Planned closure of reactors (2023 - 2025)

Uses

100 % Thermal power plant

Energies from renewable energy sources

19 TWh in 2018

76 % from Wallonia
Landscape impact, competition between crops, emissions of particulate matter

Objective
Share of renewables in final energy consumption

12 % 2018 → 23,5 % 2030 (objective)

Uses

53 % End consumers
47 % Thermal power plants

CONVERSION
into a thermal power plant

Natural gas

42 TWh in 2018

Imported resource
Methane leaks during transport
Emissions during combustion

Uses

36 % Thermal power plants
33 % Industries
31 % Buildings

Lost heat
≈ 2/3 of losses

Electricity

27 TWh en 2018

Sources

89 % thermal power plants
6 % wind power
4 % photovoltaic panels
1 % hydroelectric power plants

CHALLENGES
Make demand more flexible as supply is more variable and decentralised

Uses

55 % Buildings
43 % Industries
2 % Transport

Steam heat

recovered in cogeneration

6 TWh in 2018

181 plants, more than **50 %** of fuel from renewable sources

Waste from non-renewable sources

3 TWh in 2018

77 % from Wallonia
Replaces fossil fuels
Emissions during combustion

Uses

54 % Thermal power plants
46 % Industries

Coal

5 TWh in 2018

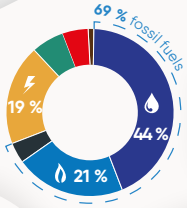
Imported resource
Emissions during combustion

Uses

96 % Industries
4 % Buildings

FINAL CONSUMPTION
126 TWh in 2018

Energy mix

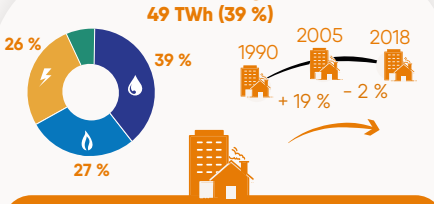


Challenges to overcome
- Decarbonisation of the energy mix
- Reduced consumption

1990 → 2005 → 2018 → 2030 (objective) **Evolution**

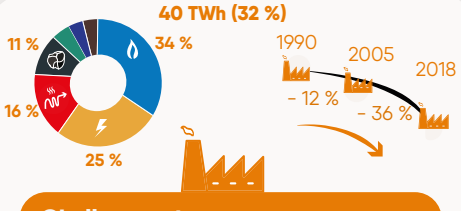
- 23 %

Buildings
49 TWh (39 %)



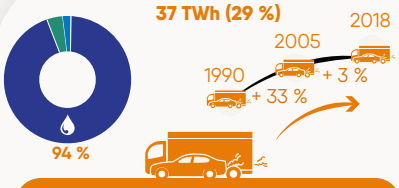
Challenges to overcome
- Building improvements
- Behavioural change
- Development of renewable energies (heat pumps, etc.)

Industries
40 TWh (32 %)



Challenges to overcome
- Heat production from renewable energy sources
- Energy efficiency

Transports
37 TWh (29 %)



Challenges to overcome
- Modal shift
- Controlling demand
- Technical improvements (alternative power sources, etc.)

MAIN SOURCES OF ENERGY: OIL PRODUCTS, NUCLEAR FUEL AND NATURAL GAS

Energy supplies, i.e. the total quantity of energy, in its various forms, imported or generated within Walloon territory, amounted to approximately 170 TWh[1] in 2018. These supplies were made up of the following energy sources: petroleum products (56 TWh), nuclear fuel (46 TWh), natural gas (42 TWh), energy from renewable sources (19 TWh), coal (5 TWh) and waste from non-renewable sources (3 TWh). These energy sources are either processed in Wallonia (e.g. nuclear fuel into electricity) or consumed directly by end-users (e.g. petroleum products in transport). The energy sources that make up the Walloon supply and their respective quantities are therefore both a function of practices (economic and social) and of the energy generation and processing facilities in Wallonia. The supplies are also indicative of our current dependence on certain energy sources: petroleum products, nuclear fuel and natural gas.

To measure the overall energy efficiency of a region and compare it with other territories, an energy intensity indicator can be calculated, which reflects the amount of energy needed to create one unit of wealth. Wallonia's energy intensity was estimated at 148 toe/€M[2] in 2018, a value higher than that of Belgium (126 toe/€M) or the European Union (105 toe/€M for the EU-28), reflecting lower energy efficiency and the still significant presence of energy-intensive industries within the territory.

Wallonia still too dependent on petroleum products

Petroleum products (fuel oil, petrol, diesel, etc.) accounted for nearly one-third of energy supplies in Wallonia in 2018 (56 TWh). These are exclusively imported, mainly from Russia, Saudi Arabia and Nigeria (respectively 32 %, 15 % and 11 % in 2019, Belgian data[(a)]). No petroleum products are extracted, transported or refined in Wallonia. They are a source of environmental pressure (e.g. drilling sludge or noise pollution linked to underwater exploration), which in some cases may be the result of large-scale accidents (e.g. oil spills). In Wallonia, the main pressures from the use of these fossil fuels are, on the one hand, greenhouse gas emissions, which are responsible for climate change, and, on the other hand, emissions of air pollutants: sulphur oxides, nitrogen oxides, particles, volatile organic compounds, metallic trace elements (zinc, chromium, etc.). These emissions result from the combustion of petroleum products. Since the 1990s, the technologies used have been improved (e.g. catalytic converters for cars, more efficient boilers) as have the composition of fuels (banning of leaded petrol and desulphurisation), which has led to an overall reduction in Walloon emissions of acidifying substances, ozone precursors and trace metals. But the combustion of petroleum products is still a major source of greenhouse gas emissions. And yet, in its 2019-2024 Regional Policy Declaration, the Walloon Government aims for carbon neutrality[3] by 2050 at the latest, with an intermediate step in 2030 of reducing greenhouse gas emissions by 55 % compared to 1990. A significant reduction in the consumption of petroleum products is therefore necessary.

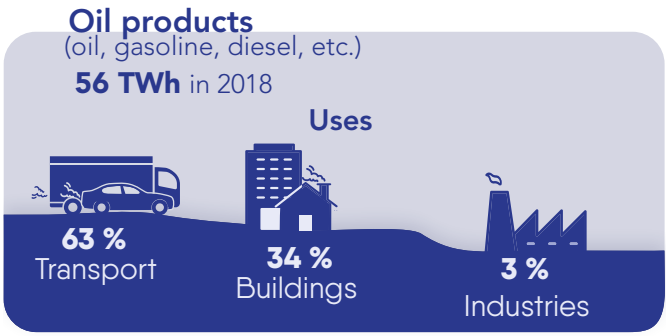
[1] Data on energy generation, conversion and consumption in Wallonia are taken from energy balances. These resources are published on the energy website of the Public Service of Wallonia (http://www.energie.wallonie.be). .

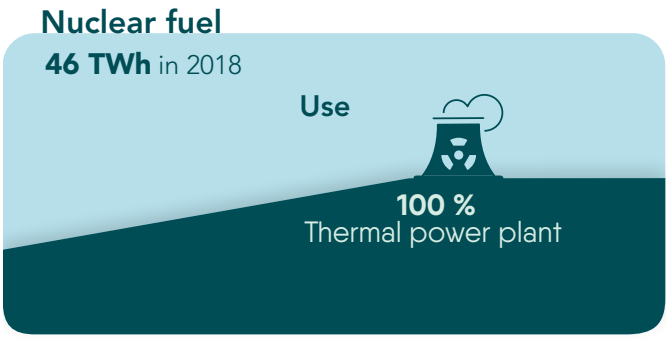
[2] The data presented here is the gross energy intensity, i.e. the ratio between gross domestic energy consumption and gross domestic product in volume (in constant euros, reference year 2015). It is expressed in tons of oil equivalent per million euros.

[3] Carbon neutrality implies a radical reduction in anthropogenic greenhouse gas emissions and the offsetting of residual emissions by absorptions, in particular by developing storage solutions.

Towards the end of nuclear energy

Nuclear fuel accounted for just over a quarter of Walloon energy supplies in 2018 (46 TWh). In Belgium, the Synatom agency manages the contracts for the various stages of fuel preparation before it arrives in the country, including the extraction, processing and enrichment of uranium ores. The main environmental impact of nuclear fuel is its radioactivity, which can cause considerable damage. Controlling this risk is therefore essential. In Belgium, the Federal Agency for Nuclear Control (FANC) is responsible for the control of nuclear installations[4] while the National Agency for Radioactive Waste and Enriched Fissile Materials (ONDRAF/NIRAS) manages nuclear waste. This matter, which falls under federal jurisdiction, remains a major issue today. Currently, most of the radioactive waste is conditioned and stored at Dessel (Flanders) after treatment. For high-level radioactive and/or long-lived waste, which must be isolated from humans and the environment for hundreds of thousands of years, the draft Long-Term Radioactive Waste Management Plan provides for geological disposal on Belgian territory. It was submitted for public consultation in 2020. The Walloon Government issued a negative opinion on the project, judging it incomplete in view of the likely and significant impacts on the environment and human health. By mid-2021, no decision had been taken.





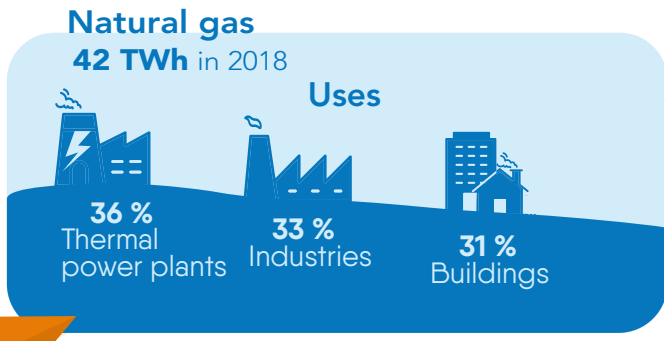
[4] In addition to the Tihange nuclear power plant, Wallonia has various other sites where radioactive substances or devices capable of emitting ionizing radiation are used (hospitals, research centres, industries).

In Wallonia, nuclear fuel is used exclusively for conversion into electricity, in the three reactors of the Tihange nuclear power plant. While it was relatively stable during the 1990s and 2000s, its consumption has been more variable since the early 2010s. The ageing of the reactors, built in the 1970s and 1980s for an estimated lifespan of around 40 years, comes on top of the emergence of problems that have required the plants to be shut down on several occasions. 2018 was particularly problematic in this regard, with the shutdown of Reactor 3 from April to December following the discovery of damage to the concrete in the buildings annexed to the reactor during an inspection. The federal government has scheduled the shutdown of the Walloon reactors between 2023 (Tihange 1) and 2025 (Tihange 2 and 3). Nevertheless, the law provides for the possibility of an extension in the event of an unexpected problem with the security of electricity supply. A decision on this was to be taken by the end of 2021.

Natural gas: an increase in consumption in the future

Natural gas, primarily composed of methane, accounted for nearly a quarter of Walloon energy supplies in 2018 (42 TWh). It is only imported and arrives in Belgium mainly via pipelines from the Netherlands (42% of the gas consumed in Belgium) and Norway (37 %)[5]. Like petroleum products or coal, it is a non-renewable fossil energy source, the combustion of which emits CO_2, albeit to a lesser extent (0.203 tons of CO_2 equivalent per MWh for natural gas compared to 0.268 for petrol or 0.343 for coal). The use of natural gas also leads to greenhouse gas emissions further upstream, during the various stages of the supply chain, and in particular during long-distance pipeline transport, where there are methane leaks (a greenhouse gas 25 times more potent than CO_2).

In Wallonia, natural gas is either used to generate electricity in thermal power plants (36 % of natural gas consumption) or consumed directly by industries (33 %) or in buildings (31 %). The Walloon objective of a carbon-neutral society by 2050 de facto limits natural gas consumption in the long term. However, in the medium term, in a context of the gradual mothballing of nuclear power plants and pending the large-scale exploitation of renewable energy sources, the construction of new gas-fired power plants is envisaged. During a transitional period, these would ensure continuity in the generation of electricity. Natural gas consumption, which has been relatively stable since the 2000s, will therefore likely rise in the coming years.



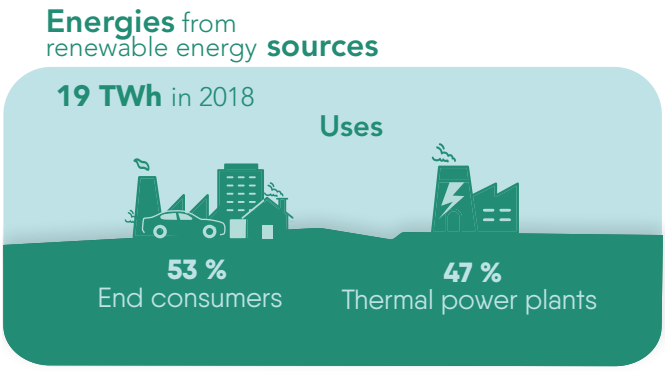
Renewable energies: significant development over the last 20 years

Renewable energies accounted for just over 10 % of energy supplies in 2018 (19 TWh). They have a diverse range of sources: solar, wind, tidal, natural heat from the subsoil, wood and other biomass... What they have in common is that there is an endless supply of them, or they are renewed at a faster rate than other energies. In this sense, they offer a sustainable solution compared to other energies, especially fossil fuels, which are finite. Moreover, using renewables entails less risk and generates less environmental pressure overall than other energy sources, especially in terms of air emissions. As such, in the context of climate change, developing renewable energies is one of the measures promoted to reduce greenhouse gas emissions. It should be noted, nonetheless, that burning biomass, and in particular firewood in homes, is a significant source of particu-late matter: 45 % of $PM_{2.5}$ emissions were attributed to the residential sector in 2019. It is also a source of CO_2 emissions, although these are not taken into account for achieving greenhouse gas reduction targets.

[5] The data provide information on the last country of origin before entering Belgium[(a)]. The gas from Norway is entirely produced in Norway. On the other hand, gas imported from the Netherlands contains gas from other countries.

International methodologies (Kyoto, Paris Agreements, etc.) consider that, over the whole cycle, the storage of carbon during the renewal of biomass offsets the CO2 emitted when it is burned. Moreover, renewable energies are mainly produced or exploited locally. In 2018, 76 % of supplies came from Wallonia. This specific fea-ture makes it a lever for creating wealth and jobs and enhancing the Region's energy independence, but it also makes certain pressures and nuisances related to "extracting" these energies more visible, a stage that takes place abroad in the case of other energy sources. In particular, the construction of wind farms (or in the future of possible photovoltaic farms) raises questions in terms of the impact on the landscape and the effects on wildlife (e.g. on bats from wind turbines). The planting of crops intended to feed the biofuel industry competes with crops intended for human or animal consumption.

The generation of renewable energies has grown strongly over the last two decades in Wallonia. The evolution relates to both quantity (increased by a factor of 3.8 between 2000 and 2018) and the development of new sectors, in particular photovoltaic and wind energy, which were still non-existent in Wallonia 20 years ago. In 2018, Walloon renewable energy supplies were either directly used by final consumers (53 %: households, industries, etc.) or converted into electricity in thermal power plants[6] (47 %).



Also in 2018, renewable energy represented 12 % of gross final energy consumption. The Walloon objective, as stated in the Walloon contribution to the National Climate Energy Plan 2021 - 2030, is to reach 23.5 % by 2030. This concerns three areas of use: heat generation, electricity generation and transport[7]:

- generating heat from renewable sources is currently mainly based on the combustion of biomass: logs, pellets, wood waste in industry, etc. To reach the 2030 target, all renewable heat generation technologies will have to be deployed: heat pumps[8], solar thermal energy and deep geothermal energy;
- electricity generation from renewable sources in 2018 depended on four sources in Wallonia: wind (36 %), solar photovoltaic (23 %), biomass (35 %) and, to a lesser extent, hydroelectric (6 %). Estimates for 2030 envisage that 37 % of the electricity generated in Wallonia will be of renewable origin. The wind and photovoltaic sectors would then account for nearly 80 % of generation. Depending on the wind and the sun, the generation from these energy sources is variable, which will have impacts on the electricity market as discussed below;
- for transport, the share of renewable energy is essentially due to biodiesel and bioethanol, which are systematically incorporated into fuels at the pump. The level of biofuels incorporated into fuels is set by the Federal Government (8.95 % in 2018) and will be gradually increased to 10.45 % in 2030. The use of electricity from renewable sources in transport was still marginal in 2018, but the availability of vehicles with electric or hybrid engines has grown significantly since then.

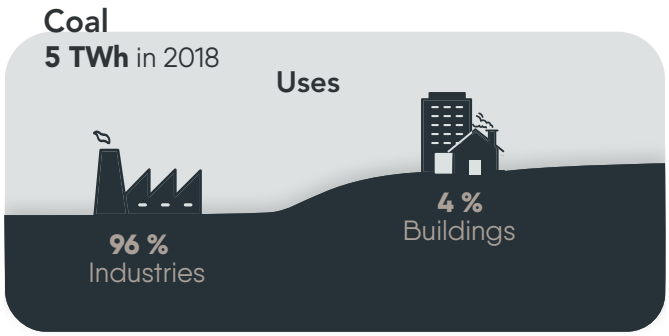
[6] Including the Awirs thermal power plant (Flémalle), which was shut down in September 2020 and operated on biomass, and for which state aid (via the green certificate system) ended on the same date.

[7] It should be noted that this objective can be achieved by increasing renewable energies but also by decreasing gross final energy consumption.

[8] The heat recovered by heat pumps from the ambient air (or ground or water) is indirectly derived from solar radiation and is therefore considered a renewable energy source, even though this technology requires electricity to run.

Coal consumption reduced fivefold in 20

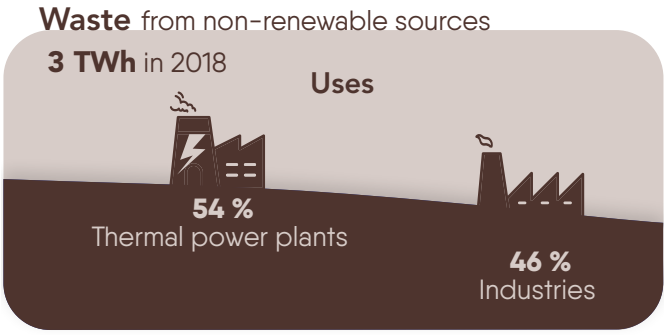
Coal (including lignite and coke) accounted for less than 3 % of Walloon energy supplies in 2018 (5 TWh). Coal was long produced and used in huge quantities in Wallonia, in particular by heavy industry and, until 2010, to generate electricity. It is now imported. Coal is the fossil fuel that emits the most greenhouse gases per unit of energy when burned, which makes its large-scale use incompatible with the greenhouse gas emission reduction targets. Walloon coal consumption had already been declining sharply for several decades, following the closure of mines and the decline of large energy-intensive industries. In the space of 20 years, the quantities of coal consumed in Wallonia reduced fivefold. In 2018, the use of coal was limited almost exclusively (96 %) to certain specific industry sectors (metallurgy in particular).



Waste from non-renewable sources, a predominantly local resource

Waste from non-renewable sources (non-organic fraction of household waste, impregnated sawdust, textile waste, etc.) can be incinerated to generate energy. These represented less than 2 % of Walloon energy supplies in 2018 (3 TWh). It is a predominantly local energy source: 77 % was of Walloon origin in 2018. While incinerating waste, like the use of nuclear fuel or renewable sources, is an alternative to the use of fossil fuels, it is not without pressures, such as air emissions and the generation of ash. It should be noted that in terms of waste management, while incineration with energy recovery is preferable to incineration without energy recovery, or to dumping in landfill sites, reuse or recycling should be prioritised, as these allow for better recovery of resources.

In 2018, just over half (54 %) of the waste from non-renewable sources was used in thermal power plants, and the remainder directly within industries. The specificities of certain industrial furnaces, which can reach very high temperatures, mean that certain forms of toxic waste (tyres, etc.) can be incinerated, while guaranteeing that the organic molecules completely decompose.



ELECTRICITY GENERATION IN WALLONIA

Electricity is a part of everyday life for households and businesses. It is widely used in buildings (lighting, electrical equipment, etc.) and in industry (engines, ovens, etc.), and it will likely be used more in transport (electric vehicles). It is a "secondary" energy source produced from a "primary" energy source. As mentioned in the following paragraphs, in Wallonia, electricity is mainly converted in thermal power plants that use the fuels or the heat of combustion (or nuclear reaction) to drive a machine (turbine or engine) which, coupled with an alternator, generates electricity. This process is not without environmental pressures, which depend on both the technologies and the fuels used. It is also a source of heat loss (known as "waste heat"), a small part of which can nevertheless be recovered in cogeneration installations. In addition to thermal power plants, there are other facilities that generate electricity without using fuel and by exploiting renewable energy sources: wind turbines, photovoltaic panels and hydroelectric plants. These processes do not generate heat and consequently no waste heat.

Conversion in thermal power plants

The main fuels used for conversion in thermal power plants in Wallonia are nuclear fuel (64 % in 2018), natural gas (21 %), renewable energy sources (13 %, mainly biomass in the form of wood and derivatives) and waste from non-renewable sources (2 %). The environmental pressures resulting from this conversion depend largely on the fuels used. If we look at the main local pressures (see above), nuclear fuel requires risk control and generates high-level radioactive waste, while the use of natural gas, biomass or waste generates air emissions. In addition, thermal power plants withdraw and discharge large quantities of cooling water into watercourses. In 2018, 86 % of the volumes withdrew from surface water were used for cooling thermal power plants in Wallonia. The water used is then returned to the environment at a higher temperature than at the point of withdrawal. These thermal discharges are subject to standards to ensure that they do not disrupt ecosystems, which could lead to a reduction or shutdown of production in power plants if the temperature of waterways are too high or flows are too low. The risk of this happening increases as droughts and heat waves become more severe and frequent due to climate change.

Waste heat and cogeneration: recovering heat to increase efficiency

Losses from waste heat vary depending on the fuels and technology used in power plants[9]. The average efficiency of Walloon thermal power plants was estimated at 34 % in 2018 (about 2/3 losses). This means that, on average, to generate one unit of electrical energy "output", three units of energy (nuclear, natural gas, etc.) are required as "input", the remainder being lost during the conversion. Cogeneration recovers part of these heat losses by generating heat and electricity (or motive power) simultaneously in a single process. The amount of heat that can be recovered depends on the possibilities of local use. In effect, heat cannot be transported without expending energy or thermal losses, and therefore cannot travel long distances. As

[9] For example, the efficiency is 34% for nuclear power plants and 53% for gas-steam turbine plants, which combine gas and steam turbines to achieve higher efficiencies.

such, setting up cogeneration facilities is mainly done by self-producers, i.e. companies that have heat needs (processes, building heating, etc.) near their electricity generation unit. In 2018, more than 6 TWh of heat was generated via this process from 181 cogeneration facilities. The overall efficiency of these facilities, which takes into account both heat and electricity generation, was estimated at 72 % for that year. This means that, on average, for every 10 units of energy as "input", 7 units of energy (heat or electricity) are usable as "output", the remainder being lost during the conversion. As such, cogeneration reduces the overall amount of energy resources required (and especially the amount of greenhouse gases and air pollutants emitted) compared to facilities generating the same amount of electricity and heat separately. Moreover, encouraged by the green certificate policy, the consumption of fuels from renewable sources in cogeneration plants has increased significantly over the past 20 years. Since 2006, they have accounted for more than half of the fuels used.

From generation to consumption of electricity

Total electricity generation in Wallonia amounted to 27 TWh in 2018. Most of this electricity (89 %) comes from conversion in thermal power plants, with the remainder generated without combustion via wind turbines (6 %), photovoltaic panels (4 %), and hydroelectric plants (1 %). The electricity generated in Wallonia supplies the Walloon electricity grid, which is itself connected to neighbouring grids. On a daily basis, the source of the electricity (Walloon or otherwise) consumed in Wallonia depends on the resources available on the grid.

In Wallonia, annual final electricity consumption has been fairly stable since the early 2000s. It is mainly used in buildings (55 %) and by the industry sector (43 %), with the remainder being used in transport (2 %). The trend towards electrifying industrial processes and vehicles will lead to higher electricity consumption in the coming years. This makes it all the more important to analyse and monitor the environmental pressures associated with electricity, both in terms of the energy sources used for generating it and the infrastructure required for transmitting it (including high-voltage lines) or storage solutions. As explained above, several important changes are expected in the electricity generation sector, including the closure of nuclear reactors (which have accounted for around 60 % of the electricity generated in Wallonia in recent years), the replacement of these, in part and initially, by natural gas, and the development of renewable energies. These evolutions imply a transition from an essentially centralised (large thermal power plants) and stable or even programmable generation, to an increasingly decentralised (wind turbines, photovoltaic installations) and variable (as it depends on the wind and sunshine) generation. There are therefore no shortages of challenges in the sector. The issue of demand flexibility, for example, is paramount. This will involve adapting consumer behaviour (households, industries, etc.) to a certain extent, strengthening interconnection capacities with neighbouring countries and ultimately developing storage solutions. Currently, only the pumped storage sites in Coo and Plate-Taille (Eau d'Heure lakes) allow for large-scale storage of electricity. Other solutions, which may be a source of environmental pressure, will have to be considered: storage in batteries, by conversion into hydrogen or synthetic methane, etc

FINAL ENERGY CONSUMPTION

Final energy consumption means the energy consumed on a daily basis by the end users (households, companies, local authorities, etc.): fuel for transport, natural gas or fuel oil for heating, electricity to power machines or electrical equipment, etc. This was 126 TWh in 2018, 15 % lower than in 2005. In line with the European objectives of energy efficiency and lower energy consumption, Wallonia aims to reduce its final consumption by 23 % in 2030 compared to its 2005 level. The efforts to be made are divided among three major end uses of energy: buildings, industries and transport. In addition to controlling consumption, another major challenge lies in changing the sources of energy to be used (developing renewable energies to replace fossil fuels), in particular in order to achieve the objectives of reducing greenhouse gas emissions. In 2018, 69 % of final energy consumption was from fossil fuels (44 % petroleum products, 21 % natural gas and 4 % coal). This figure does not take into account the fossil energy (natural gas in particular) needed to generate the electricity consumed by Walloons.

Buildings: improving energy performance is the priority

Buildings include household dwellings and infrastructure in the tertiary sector (offices, shops, hospitals, etc.) [10]. In 2018, the energy consumption of the latter amounted to 49 TWh (39 % of final consumption), a level slightly down from 2005 (-2 %). The main measures for controlling energy demand include improving buildings via the energy renovation of old buildings and by gradually making the energy performance standards for new buildings (PEB) more stringent. Another major lever is behavioural change. Indeed, how we function, linked to our domestic and professional activities, is directly linked to energy consumption. Depending on the type of behaviour, the energy intensity of a service can be very different, e.g., the same journey can require more or less energy depending on the mode of transport used. Moreover, some investments can have adverse effects. For example, in the case of renovation work, rebound effects can be observed: as the dwelling is renovated, households may tend to raise the thermostat in their homes since it costs them less.

In terms of the energy mix, the choice is often constrained by the availability of the resource. In 2018, fossil fuels (primarily oil and natural gas) accounted for 67 % of energy consumption in buildings. In densely populated areas, buildings are more often connected to the natural gas network and pooled solutions may be developed, such as heating networks. In rural areas, the choice has long been to use oil and wood for supplementary heating. For several years, new technologies based on renewable energies have been developed for heating (pellet boilers, thermal solar panels, heat pumps, etc.). These accounted for 7 % of the energy mix in 2018.

[10] The data in this category also include the agriculture sector, whose energy consumption is nevertheless very small compared to the housing and tertiary sectors (less than 3% of total consumption of "buildings").

Industries: lower consumption

Industries consumed 40 TWh in 2018[11] (32 % of final energy consumption). This sector has seen a significant drop in energy consumption compared to its 2005 level (-36 %). This evolution is the result, on the one hand, of the decline of energy-intensive industries (including the steel industry) and, on the other hand, of an improvement in the energy efficiency of industrial processes. The energy mix has also changed considerably and in 2018 was primarily made up of natural gas (34 % of final consumption) and electricity (25 %), whereas as recently as 2000, solid fuels (coke, coal and lignite) were the most used energy source in industry. These positive trends are expected to continue with the new targets set by the European carbon market[12], which brings together the industries and facilities that emit the most CO_2, as well as with the implementation of the 2030 Air Climate and Energy Plan, which is currently being drafted and which will promote the generation of heat from renewable energy sources (solar thermal, heat pumps, biomass), more frequent use of electricity (whose impact on the climate and the environment depends on the energy sources used for generating it) and the continued improvement of energy efficiency. Various tools are envisaged in this regard, including a new generation of sectoral agreements starting in 2023 (voluntary partnerships between Wallonia and various federations in the industrial sector to improve energy performance and reduce CO_2 emissions).

Transport: rising consumption and based on petroleum products

Transport entails different modes (road, rail, air and river) and categories of users: transport of people (for work, leisure, etc.) and transport of goods (raw materials, consumer goods, etc.). Final energy consumption for transport was 37 TWh in 2018 (or 29 % of final consumption), a level that increased by 3 % compared to 2005. Although its share in final energy consumption is lower than that of buildings or industry, it increased steadily over the period 1990 - 2018. Transport accounted for 20 % of final consumption in 1990, 25 % in 2005 and 29 % in 2018. The rise in energy consumption in the transport sector can be explained in particular by ever-increasing travel needs. Moreover, transport is still largely dependent on petroleum products, which accounted for 94 % of final consumption for transport in 2018. This figure is largely explained by the importance of road transport, the preference in Wallonia due to the density of road infrastructure.

[11] This data, like the others presented in this document, only takes into account the energy used for energy purposes. A particularity of industry is to use energy for "non-energy" uses, as raw material in its processes (4 TWh in 2018): petroleum products for bitumen or natural gas for nitrogen fertilizers.

[12] This system guarantees a reduction in the cumulative emissions of the companies concerned by setting an overall emissions cap at the European level that gradually decreases over time. Emission allowances are allocated to companies, which can trade them for a fee based on their ability to reduce their emissions, but without changing the overall cap.

The challenges in this sector are therefore substantial and large-scale changes will be necessary in order to meet the energy and climate objectives for 2030. It is in this context that ambitious objectives and measures have been laid down for transport by this deadline. These objectives are currently reflected in the FAST Vision and the Regional Mobility Strategy in which they are operationalised. Various measures are envisaged in this regard, the main one being the modal shift from road transport to less environmentally damaging modes of transport (e.g. walking, cycling, public transport and car sharing for passenger transport; river and rail transport for freight transport). Other measures aim to control demand, in particular through territorial development (e.g., choosing to build public facilities and housing in or near existing residential areas), or to improve the environmental performance of vehicles, for example by modulating taxes according to the climate and environmental efficiency of vehicles and their mass, or by encouraging the development and use of certain technologies (hybrid, electric, hydrogen).

THE ENERGY TRANSITION, A MAJOR THEME OF FUTURE POLICIES

Energy competencies are shared between the federal and regional levels, and a consultation mechanism has been set up in this regard. Although the federal government is responsible for key decisions (nuclear energy, excise duties, international climate commitments, etc.), Wallonia has its own policy levers, including the development of renewable energy and the rational use of energy (e.g., through support and promotion of energy savings). It is in this institutional context that the National Climate Energy Plan 2021 - 2030 was drawn up in 2019, in response to a European obligation[13]. It includes both objectives and ambitions, some of which have already been mentioned: a transition to the use of energy sources that emit less greenhouse gas, closing down ageing nuclear reactors, technological improvements, promoting more energy-efficient behaviour, etc. Energy and climate also play an important role in the European Green Deal and in the Walloon Recovery Plan. The latter includes measures and budgets concerning the development of a Walloon "hydrogen" industry, the energy renovation of public and private buildings, the promotion of renewable energies and the decarbonisation of energy sources used in transport. Beyond the environment and climate, the question of the energy transition also relates to other aspects such as fuel poverty, business competitiveness, research and independence vis-à-vis energy exporting countries. There will be many energy challenges in the coming decades and these will require significant commitments and concrete changes in technology and behaviour throughout the supply chain and for all stakeholders, from producers to consumers.

References

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Main data sources

IWEPS ; SPW - AwAC ; SPW Énergie - DEBD (including energy balances) ; SPW Environnement - DEE ; Statbel (SPF Économie - DG Statistique)

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[13] The National Climate and Energy Plan 2021 - 2030 (and the regional contributions that make it up) addresses energy and climate issues (decarbonisation, energy efficiency, the energy market, research, innovation and competitiveness). The Air Climate Energy Plan for 2030, mentioned earlier, is the result of a Walloon decree. In addition to the "energy" and "climate" themes, whose objectives and measures are consistent with the National Energy-Climate Plan, it addresses the "air" component (mainly reduction of air pollutant emissions) given the many interactions between these three aspects (source sectors and similar levers of action in particular).