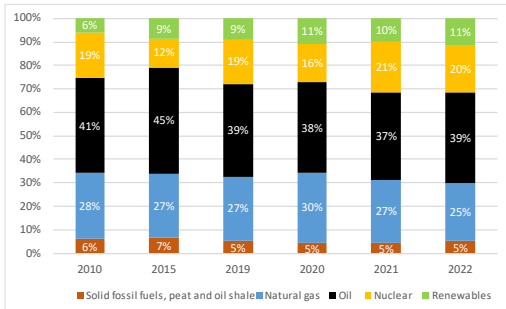




State of the Energy Union 2024: Belgium

Key energy figures

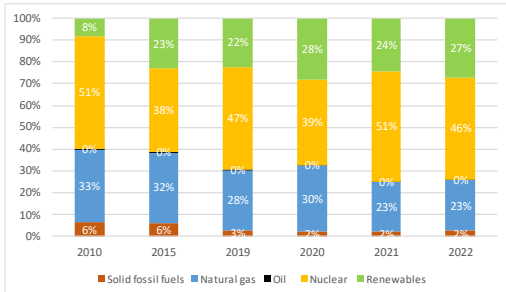
Graph 1: **Energy mix**



(1) The 2022 gross inland energy consumption was 22.3 million TJ. (3.9% of the total EU consumption).

Source: Eurostat

Graph 2: **Electricity mix**



(1) The 2022 gross electricity production was 95 TWh. (3.4% of the total EU production).

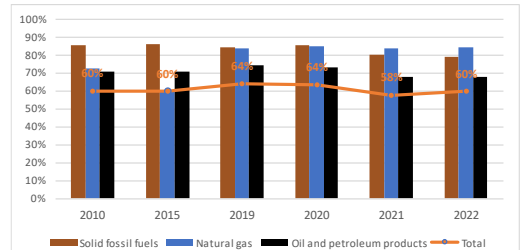
Source: Eurostat

- Fossil fuels account for almost two thirds (68.4%) of Belgium's **energy mix** (similarly to the EU level of 69%). The share of nuclear was 20.3% and renewables 11.2%.
- The **electricity mix** of Belgium is dominated by nuclear energy (46.4%). Renewable energy accounts for more than a quarter (27.2%) of the electricity mix (compared to 39.4% at EU level) and the fossil fuels for 26% (compared to 38.6% at EU level).

Security, solidarity and trust

1. DIVERSIFICATION OF ENERGY SOURCES AND REDUCTION OF IMPORT DEPENDENCY

Graph 3: **Import dependency on fossil fuels**



(1) The graph shows the Member States' import dependency on third countries by fuel type.

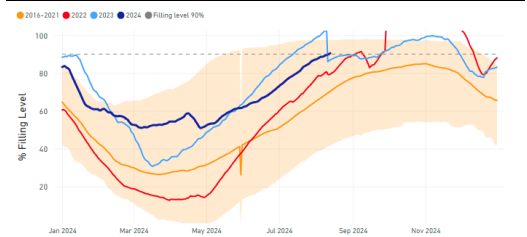
(2) Combustible renewables and electricity are excluded.

(3) The total amount takes into consideration the energy mix of the country.

Source: Eurostat

2. FLEXIBILITY OF THE ENERGY SYSTEM

Graph 4: **Storage levels in Belgium**



Source: JRC calculation based on AGSI+ Transparency Platform, 2024

- Belgium has **one underground gas storage facility** with a total capacity of **0.8 bcm**, representing 5% of its annual gas consumption in 2022.
- On 17 August 2024, the country's storage capacity was filled to 91.68%.

3. NUCLEAR FUEL DIVERSIFICATION

- Nuclear capacity (6 GW in 2021) was initially set to be phased out completely by 2025. However, in April 2022 the Belgium government decided to continue operating 2 GW until 2035. In 2023, Belgian authorities agreed with the plants' owner on 10-year extension of two nuclear reactors – Doel-4 and Tihange-3. The European Commission has opened an in-depth investigation to assess whether the public support that Belgium plans to grant for the lifetime extension of these two reactors is in line with the EU State aid rules. Tihange-2 was shut down in January 2024. In collaboration with international partners, Belgium is also active in research field seeking innovative solutions for the management of high-level radioactive waste. The country has decided to build a new major nuclear research infrastructure, MYRRHA (Multipurpose Hybrid Research Reactor for High Tech Applications), with an ambition to maintain a world-class R&D and reinforce its position as innovation player in numerous related fields.

Integrated internal energy market

1. ELECTRICITY INTERCONNECTIVITY

Table 1: Electricity interconnectivity

2024	2030 target
15.9 %	At least 15%

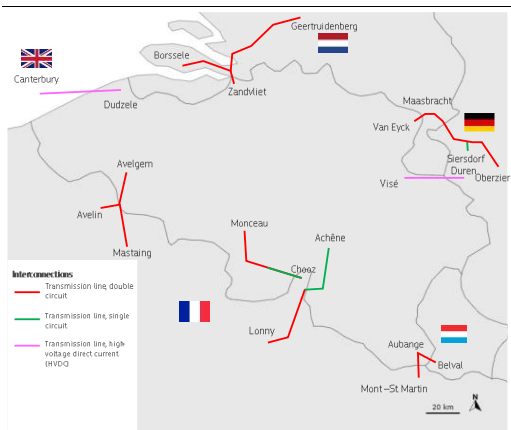
1) The electricity interconnectivity is a ratio of electricity import capacity of a given Member State (sum of net transfer capacities of interconnectors with neighbouring Member States) and its total power generation capacity. The 2030 level represents the general interconnectivity target of 15%.

Source: European Commission's own calculations based on the ENTSO-E Winter Outlook 2023-2024 data

(1) ACER, 2024 Retail Market Monitoring Report, Energy retail and decarbonisation (forthcoming).

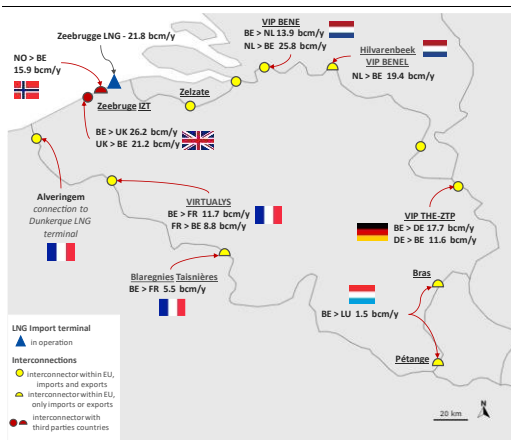
2. ENERGY TRANSMISSION INFRASTRUCTURE

Map 1: Cross-border electricity infrastructure



Source: DG ENER map recreation (based on ENTSO- E)

Map 2: Cross-border gas infrastructure



(1) The capacities are based on ENTSO-G 2024 capacity dataset (as of 11 January 2024) and the ENTSO-G Transparency Platform.

Source: DG ENER map recreation (based on ENTSO- G)

3. MARKET INTEGRATION

Rollout of electricity smart meters

- Belgium has reached 35% coverage for the roll-out of smart meters based on a 15-minute interval by the end of 2023⁽¹⁾.

Diversification of gas supplies

- In 2023, Belgium and Luxembourg had 10 natural gas supply sources, the same as in 2021. Its three largest suppliers accounted for 75%, with Norway being the main supplier, holding a share of 33%. In 2021, Norway with 37%, the Netherlands with 31%, and Russia

(14%) were Belgium and Luxembourg's biggest natural gas supply sources.⁽²⁾

4. ENERGY POVERTY, SOCIAL CLIMATE PLAN AND JUST TRANSITION

Table 2: Energy poverty

Indicator	%	Evolution compared to		EU average
EED NECPs four main indicators	2022/23	2021	2017	
Inability to keep home adequately warm	6.0	+2.5 pp	+ 0,2 pp	10.6
Arrears on utility bills	3.7	+0.8	-0.4 pp	6.9
Share of pop. With leak, damp or rot in dwelling	14.5	-1.2 pp (2020)	-4.1 pp	15.5
AROP (At risk of poverty)	12.3	-0.4 pp	-3.6 pp	16.2

Source: Eurostat

Social Climate Plan

- Member States need to submit these plans to the European Commission by June 2025.
- Maximum financial allocation for Belgium: EUR 738 million or 1.02 % of total SCF.

Just Transition Plan

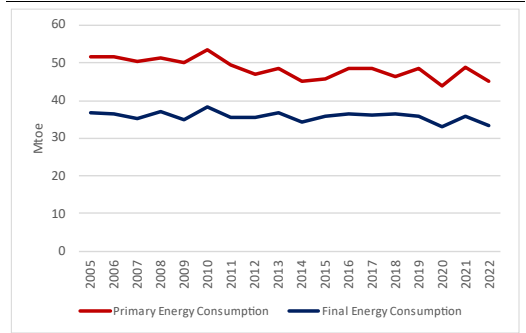
- The Belgian Territorial Just Transition Plans (TJTP) outline the transition away from fossil fuels and heavy industry in three carbon intensive regions of Tournai, Mons, and Charleroi. The plans set out how the Just transition fund, with a national allocation of EUR 182.6 million, will support decentralised green energy production, economic diversification, and modernisation of industries. The Just Transition Fund (JTF) priorities are programmed under the cohesion policy European Regional Development Fund programme for Wallonie.

(2) ACER-CEER Annual Report Monitoring: the Internal Gas Market in 2022 and 2023.

Energy efficiency

1. ENERGY EFFICIENCY

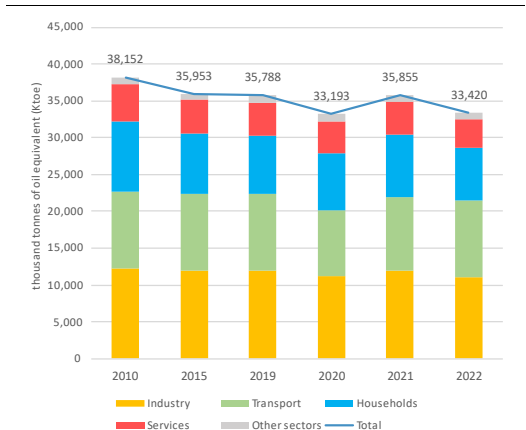
Graph 5: Primary and final energy consumption



Source: Eurostat

- In 2022, Belgium's **Primary Energy Consumption (PEC)** amounted to 45.2 Mtoe, 7.2% lower than in 2021, while its **Final Energy Consumption (FEC)** amounted to 33.4 Mtoe, 6.8% lower than in 2021.

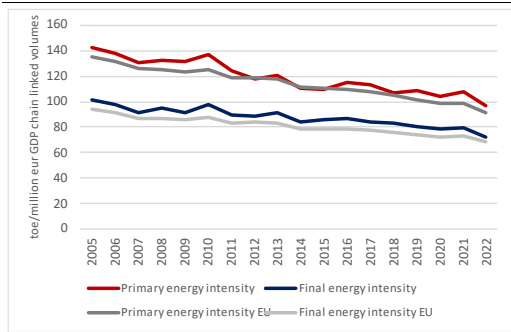
Graph 6: Final energy consumption by sector



(1) Final energy consumption excludes consumption of the energy sector (including transformation and distribution losses) and non-energy use of energy carriers.

Source: Eurostat

Graph 7: **Primary and final energy intensity**



Source: Eurostat

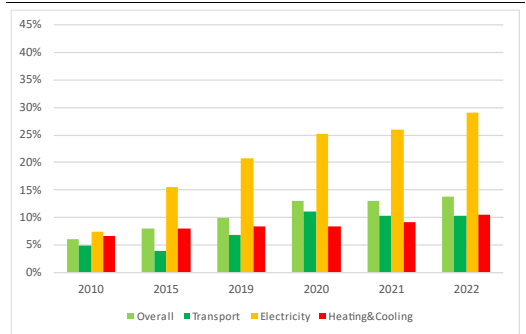
2. ENERGY PERFORMANCE OF BUILDINGS

- In 2022, Final Energy Consumption (FEC) in the Belgian **residential sector** was **7.1 Mtoe**, representing a **reduction of 15.9%** compared to 2021. In the **services sector**, FEC was **4.0 Mtoe**, with an **12.3% decrease** compared to 2021.
- Heating and cooling account for around **86%** of the country's residential final energy consumption, with renewables supplying approximately **10%** of the gross final energy consumption for heating and cooling. Almost 104,000 heat pumps were sold in 2023, representing an increase of more than 70% compared to the sales of the previous year, reaching a total stock of around 313,000 installed heat pumps, as per the European Heat Pump Association (EHPA).
- In 2023, **3.7%** of the total population was experiencing difficulties on paying their utility bills while **6.0%** was not able to keep their home adequately warm over the cold periods of the year (growing from 2021, when such figures were, respectively, 2.9% and 3.5%). This underlines the importance to increase rate and depth of building renovation, specifically of worst-performing buildings.

Decarbonisation and climate action

1. SECTORAL SHARE OF RENEWABLE ENERGY

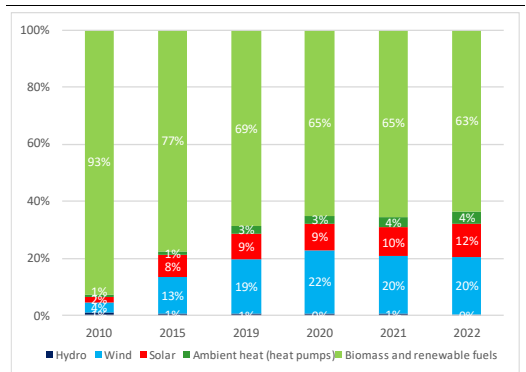
Graph 8: **Share of renewable energy sources**



(1) In % of gross final consumption of energy.

Source: Eurostat

Graph 9: **Renewable energy mix**

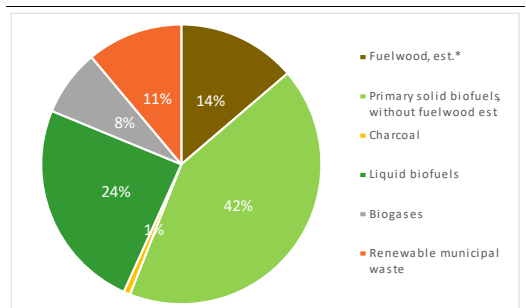


(1) In % of gross final consumption of energy.

Source: Eurostat

2. BIOENERGY MIX

Graph 10: **Bioenergy mix**



(1) In % of gross final consumption of energy (2022).

(2) * Fuelwood estimate, based on the Primary solid biofuels consumption in Other sectors, Eurostat and industry secondary data, DG ENER estimations.

Source: Eurostat and DG ENER

- For more information see the dedicated [website on biomethane country fiches](#).

3. HYDROGEN

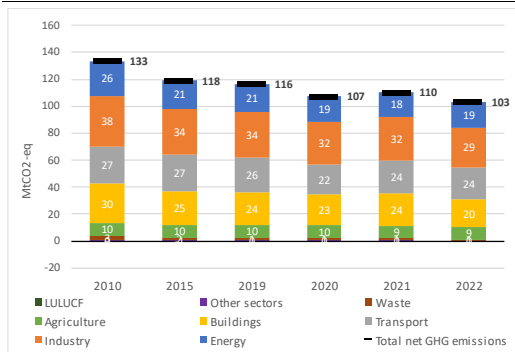
Table 3: **Operational hydrogen projects**

Name	Description
Don Quichote	0.3 MW from onshore wind
HRS CMB Port of Antwerp	1 MW

Source: European Commission based on IEA data

4. GREENHOUSE GAS EMISSIONS

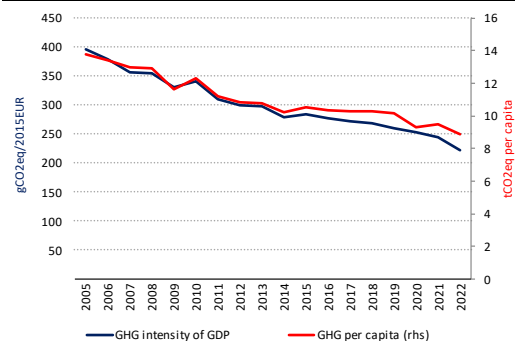
Graph 11: **Greenhouse gas emissions by sector**



Based on UNFCCC GHG Inventory reporting as per the IPCC categories: (1) Energy sector refers to electricity and heat production and petroleum refining. (2) Industry includes fuel combustion in manufacturing and construction and emissions in industrial processes and product use. (3) Buildings include emissions from energy use in residential and tertiary buildings, and energy use in agriculture and fishery sectors. (4) Total net GHG emission including LULUCF and excluding international aviation.

Source: Greenhouse gas inventory 1990-2022 (EEA)

Graph 12: **GHG per capita and GHG intensity of GDP**



(1) Total greenhouse gas emissions, including LULUCF and excluding international aviation.

Source: Greenhouse gas inventory 1990-2022 (EEA). Real GDP in 2015-prices (AMECO, European Commission). Population (Eurostat).

(3) Renewables, smart system, efficient systems, sustainable transport, CCUS and nuclear safety, COM(2015) 80 final ('Energy Union Package').

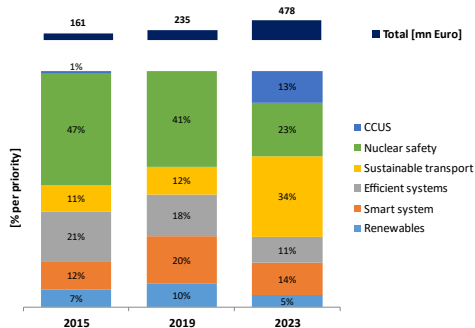
- With 223 gCO2eq/2015EUR, Belgium lies below the EU average in terms of GHG intensity of GDP.
- With 9 tonnes of CO2 equivalent per capita, Belgium is above the EU average in terms of GHG emissions per capita.
- For more detailed information on country profiles see [Progress on climate action \(europa.eu\)](#).

Research, innovation and competitiveness

1. INVESTMENT IN R&I

- Public investment in research and innovation (R&I) in Energy Union priorities⁽³⁾ increased from 0.039% in 2015 to 0.082% in 2023 (share of GDP).⁽⁴⁾

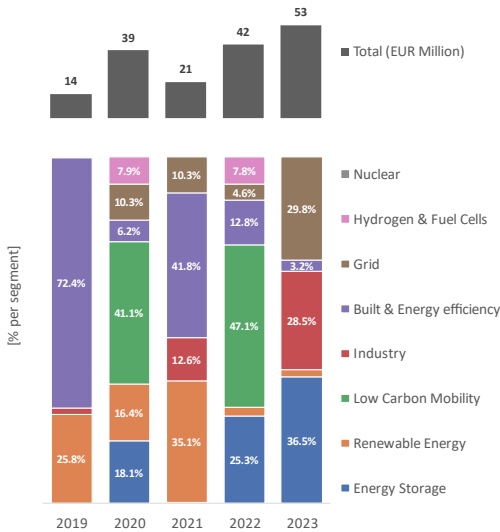
Graph 13: **Public investment in Energy Union R&I priorities**



Source: JRC SETIS 2024

(4) Source: JRC SETIS 2024

Graph 14: **Venture capital investment in net-zero energy technology (start-ups and scale-ups)**



(1) Firms typically use venture capital to expand, break into new markets, and grow faster. Venture capital is essential for the growth of innovative firms and it is key to foster the EU's competitiveness and to strengthen the EU's technology sovereignty in the net-zero energy sector.

Source: JRC elaboration based on PitchBook data (08/2024)

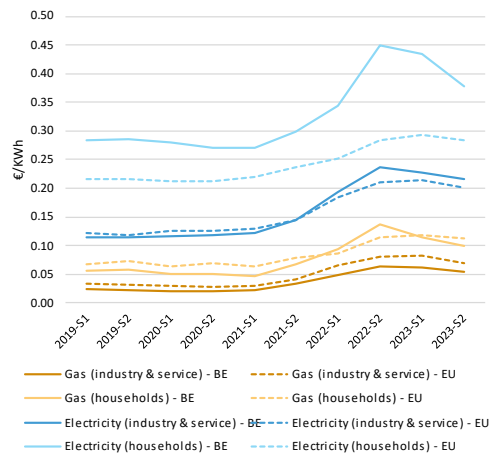
2. NET-ZERO ENERGY TECHNOLOGIES

- Belgium remains dependent on imports from non-EU countries for most clean energy technologies. However, Belgium shows some positive developments in the battery and electrolyser supply chain, as well as a considerable foothold in the wind industry. Notably, Belgium is a strategic producer of offshore wind foundations and substations, with multiple factories in Flanders contributing to offshore projects all over Europe. Belgium has also been historically manufacturing wind rotor gearboxes in Lommel. Belgium is host to two electrolyser manufacturing plants, both supported by the Important Project of Common European Interest (IPCEI) Hy2Tech programme. One is operated by an American company in Oevel with an estimated capacity of 500 MW, while the other, situated in Seraing, is the stacking unit of a new transnational operation (with a second factory in France), managed by a Belgian firm. Both operators have announced plans to scale up their capacity to 1 GW each at the latest by 2030. Belgium has substantial potential for battery manufacturing, with one manufacturing plant located in Ninove, with the capacity to produce 10 000 units annually. It is operated by a Belgian company that aims to establish Belgium's first battery pack

gigafactory (3 GWh) in Seneffe-Manage by mid-2025. Regarding solar PV, Belgium has been producing solar modules in Wallonia for an extended period, boasting a capacity of about 100 MW as of 2023. The landscape comprises a standard module producer and two firms specializing in building integrated photovoltaics (BIPV). One of these companies serves as the manufacturer for a pioneering offshore PV project in the North Sea, known as SeaVolt.

3. ENERGY PRICES DEVELOPMENT

Graph 15: **Belgium's energy retail prices for households and industry & service**



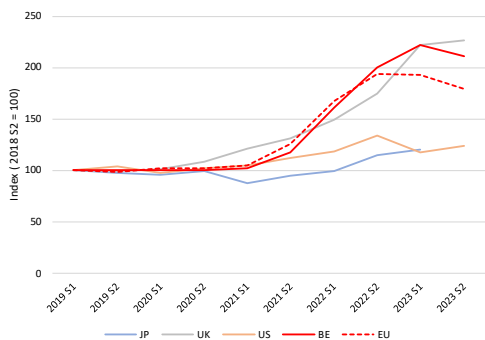
(1) For industry, consumption bands are I3 for gas and IC for electricity, which refer to medium-sized consumers and provide an insight into affordability.

(2) For households, the consumption bands are D2 for gas and DC for electricity.

(3) Industry prices are shown without VAT and other recoverable taxes/levies/fees as non-household consumers are usually able to recover VAT and some other taxes.

Source: Eurostat

Graph 16: Trends in electricity prices for non-household consumers (EU and foreign partners)



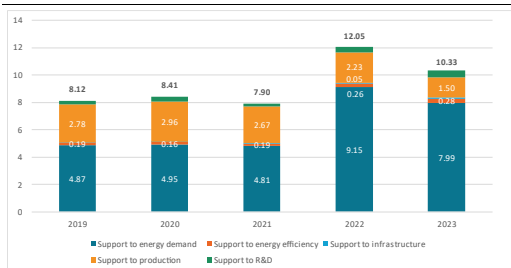
(1) For Eurostat data (EU and BE), the band consumption is ID referring to large-sized consumers with an annual consumption of between 2 000 MWh and 20 000 MWh, such as in electricity intensive manufacturing sectors, and gives an insight into international competitiveness.

(2) JP = Japan

Source: Eurostat, IEA

4. ENERGY SUBSIDIES

Graph 17: Energy subsidies by purpose

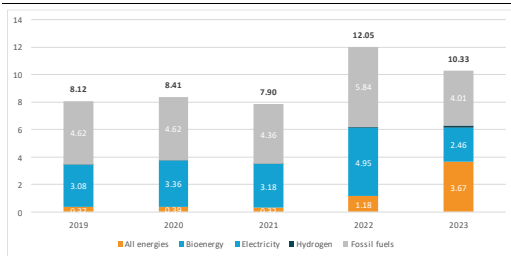


(1) Subsidies in EUR 2023 billion

(2) Some 2023 data were not fully available or validated at the time the study was completed (August 2024). For missing 2023 values, 2022 data were taken as a basis for an estimate.

Source: Enerdata. Inventory of energy subsidies in the EU27 – 2024 edition

Graph 18: Energy subsidies by carrier



(1) Subsidies in EUR 2023 billion

(2) Some 2023 data were not fully available or validated at the time the study was completed (August 2024). For missing 2023 values, 2022 data were taken as a basis for an estimate.

Source: Enerdata. Inventory of energy subsidies in the EU27 – 2024 edition

European Semester 2024

- **Country Specific Recommendation (Energy):** In particular, take steps to phase out fossil fuel subsidies, including by shifting excise duties from electricity to fossil fuels.⁽⁵⁾
- For more information see the [2024 European Semester Country Report](#)

National Energy and Climate Plan (NECP)

- The **draft updated NECP** was submitted to the European Commission in December 2023.
- Member States were due to submit their **final updated NECP by 30 June 2024**, taking into account the Commission recommendations.
- **The final updated NECP** was not submitted yet to the European Commission.
- For documents and information see the dedicated [webpage of the European Commission on the NECPs](#).

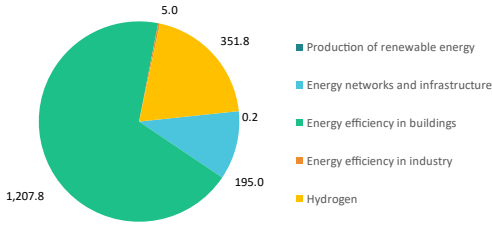
Recovery and Resilience Plan (RRP and REPowerEU chapter)

- The Belgian RRP has a total allocation of EUR 5 billion in grants and EUR 264 million in loans, with 51 % of available funds supporting climate objectives.
- **EUR 1.76 billion are allocated to energy-related measures**, with the largest amount for **energy efficiency in buildings** [EUR 1.2 billion]:
 - Reforms to **improve the existing energy subsidy schemes** focussed on private housing, combined with investments in **renovation of social housing**, as well as **renovation of public buildings** across Belgium (public administration, schools, care buildings, cultural and sport facilities).
- For disbursements, Belgium has so far received only the pre-financing. In July 2024 the Commission endorsed a positive preliminary assessment of 19 out of the 20 milestones and targets linked to Belgium's 1st payment request.

(5) Council of the European Union 11693/24.

Graph 19: **Energy-related investments in the RRP (in EUR million)**

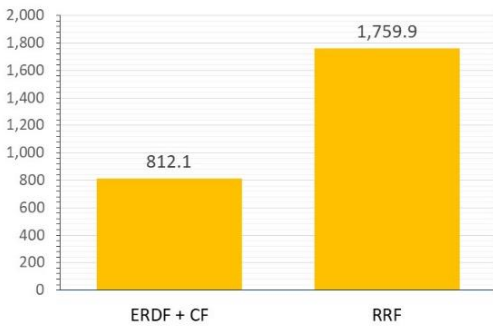
BE Energy-related Investments EUR 1,759.9 mn



Source: European Commission

EU Funds supporting energy related investments

Graph 20: **Energy-related investments across EU funds (in EUR million) (*)**



(*) European Regional Development Fund (ERDF) + Cohesion Fund (CF): comprise EU grants & national cofinancing; RRF: comprise grants & loans. Investment categories can also differ across funds.

Source: European Commission

- **Innovation Fund: EUR 670.8 million.** For more information see the webpage [innovation-fund-projects-country_en](#).
- **CEF-Energy: EUR 155.8 million** (8.1% of total EU contribution, for 2021-2027). For more information see [CINEA's Project Portfolio dashboard](#).