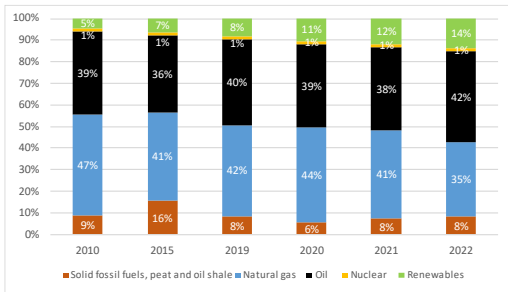


# State of the Energy Union 2024: Netherlands

## Key energy figures

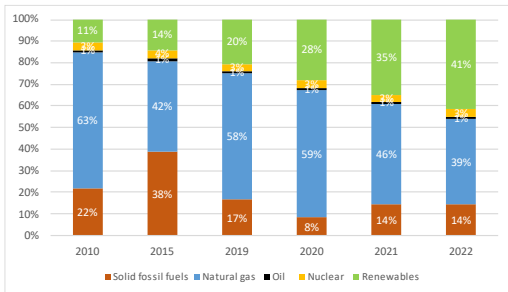
Graph 1: **Energy mix**



(1) The 2022 gross inland energy consumption was 2.8 million TJ. (5% of the total EU consumption).

Source: Eurostat

Graph 2: **Electricity mix**



(1) The 2022 gross electricity production was 121.8 TWh. (4.4% of the total EU production).

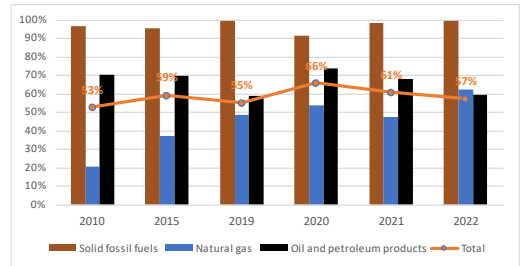
Source: Eurostat

- Fossil fuels account for 84.7% of the Netherlands' **energy mix** (compared to 69% at EU level). The share of renewables was 13.8% and nuclear %.
- The **electricity mix** of the Netherlands is dominated by fossil fuels 54.8% (compared to 38.6% at EU level). Renewable energy accounts for 41.3% of the electricity mix (compared to 39.4% at EU level) and nuclear for 3.4%.

## 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.

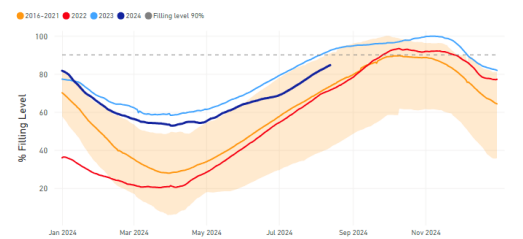
(2) Combustible renewables and electricity are excluded.

(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 the Netherlands**



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

- The Netherlands has **six underground gas storage facilities** with a total capacity of **15.5 bcm**, representing 46% of its annual gas consumption in 2022.
- On 17 August 2024, the country's storage capacity was filled to 86.12%.

### 3. NUCLEAR FUEL DIVERSIFICATION

- Following the ambition to achieve CO2-free electricity production as early as 2035, the

Netherlands is currently examining the role of nuclear energy in its future mix, through a possible lifetime extension of Borssele nuclear power plant beyond 2033 and the construction of two new nuclear power plants. Nuclear energy is considered as a complement to renewable energy sources with a capability to also produce hydrogen, which would make the Netherlands less dependent on gas imports. In this context, a market analysis is also being carried out on the possibilities, applications, and timelines for the deployment of small modular reactors (SMRs).

## Integrated internal energy market

### 1. ELECTRICITY INTERCONNECTIVITY

Table 1: Electricity interconnectivity

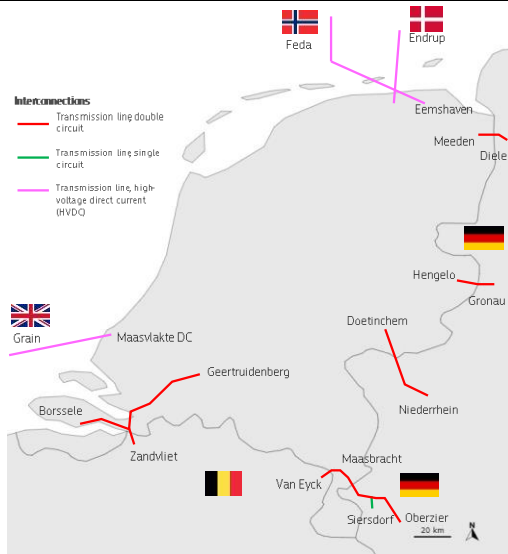
2024	2030 target
10.3 %	At least 15%

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

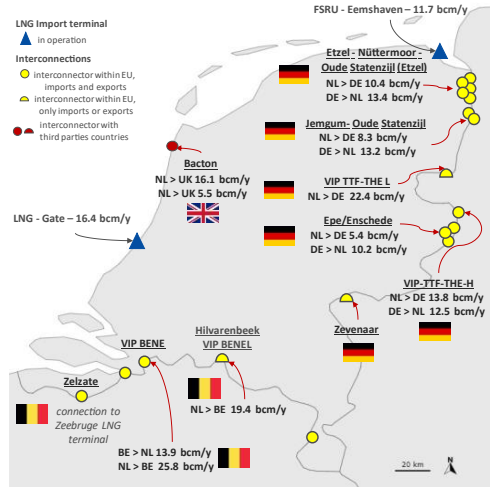
### 2. ENERGY TRANSMISSION INFRASTRUCTURE

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

- The latest ACER/CEER Market Monitoring Report indicates that the Netherlands has a 90% smart meter roll out with consumers having access to near real time consumption data possible at a 15-minutes interval.<sup>(1)</sup>

#### Diversification of gas supplies

- In 2023, the Netherlands had 18 natural gas supply sources, compared to 14 in 2021. Its three largest suppliers accounted for 70%, with the United States being the main supplier, holding a share of 30%. In 2021, Norway with 30%, its own domestic production with 28%, and Germany (18%) were the Netherlands' biggest natural gas supply sources.<sup>(2)</sup>

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

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

## 4. ENERGY POVERTY, SOCIAL CLIMATE PLAN AND JUST TRANSITION

Table 2: Energy poverty

Indicator	%	Evolution compared to		EU average
	2023	2021	2017	
<b>EED NECPs four main indicators</b>				
Inability to keep home adequately warm	6.9	+ 4.5 pp	+4.5 pp	10.6
Arrears on utility bills	1.1	-0.1 pp	-1 pp	6.9
Share of pop. With leak, damp or rot in dwelling	14.9	+ 0.1 pp (2020)	+1.4 pp	15.5
AROP (At risk of poverty)	15	+ 0.6 pp	+ 1.8 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 the Netherlands: EUR 800 million or 1.11 % of total SCF.

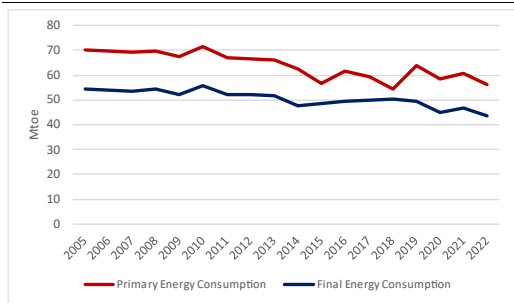
### Just Transition Plan

- The Dutch Territorial Just Transition Plans (TJTP) outlines the transition away from fossil fuels and carbon-intensive industries in six regions: Groningen and Emmen, IJmond, Groot-Rijnmond, Zeeuws-Vlaanderen, West-Noord-Brabant, and Zuid-Limburg. The plans set out how the Just Transition Fund (JTF), with a national allocation of EUR 623 million, will support the development of green technologies, renewable energy, energy efficiency and reskilling of the workforce. Coal phase-out commitment in 2030.

## Energy efficiency

### 1. ENERGY EFFICIENCY

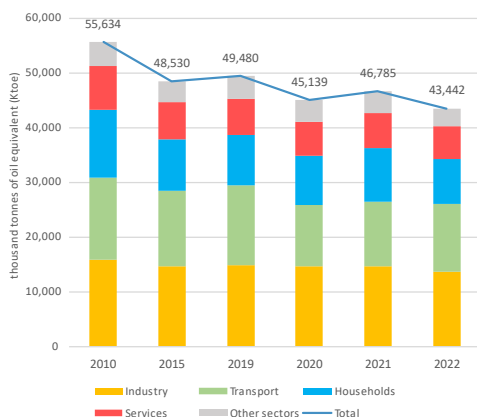
Graph 5: Primary and final energy consumption



Source: Eurostat

- In 2022, Netherlands's **Primary Energy Consumption (PEC)** amounted to 56.1 Mtoe, 7.7% lower than in 2021, while its **Final Energy Consumption (FEC)** amounted to 43.4 Mtoe, 7.1% lower than in 2021.

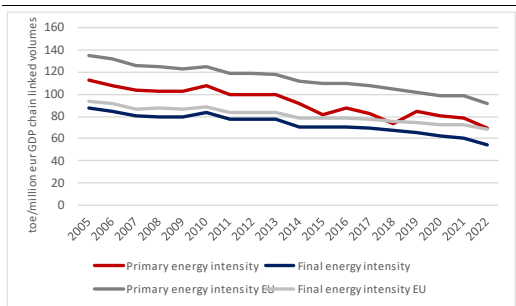
Graph 6: Final energy consumption by sector



(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

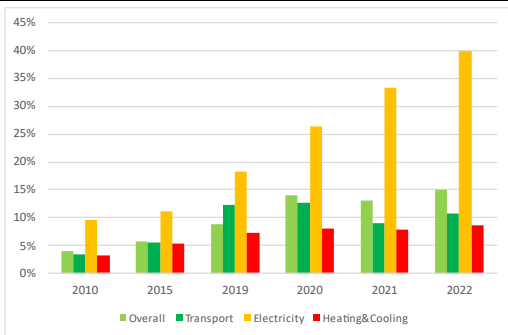
- In 2022, Final Energy Consumption (FEC) in the Dutch **residential sector** was **8.3 Mtoe**, representing a **reduction of 16.0%** compared to 2021. In the **services sector**, FEC was **6.0 Mtoe**, with an **6.4% decrease** compared to 2021.
- Heating and cooling account for around **80%** of the country's residential final energy consumption, with renewables supplying approximately **9%** of the gross final energy consumption for heating and cooling. Around 167,000 heat pumps were sold in 2023, representing an increase of 66% compared to the sales of the previous year, reaching a total stock of around 528,000 installed heat pumps, as per the European Heat Pump Association (EHPA).
- In 2023, **1.1%** of the total population was experiencing difficulties on paying their utility bills while **6.9%** was not able to keep their

home adequately warm over the cold periods of the year (with a mixed evolution compared to 2021, when such figures were, respectively, 1.2% and 2.4%). This underlines the importance to increase rate and depth of building renovation, specifically of worst-performing buildings.

## Decarbonisation and climate action

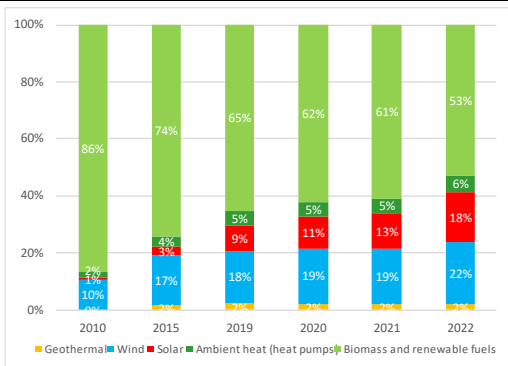
### 1. SECTORAL SHARE OF RENEWABLE ENERGY

Graph 8: Share of renewable energy sources



(1) In % of gross final consumption of energy.  
**Source:** Eurostat

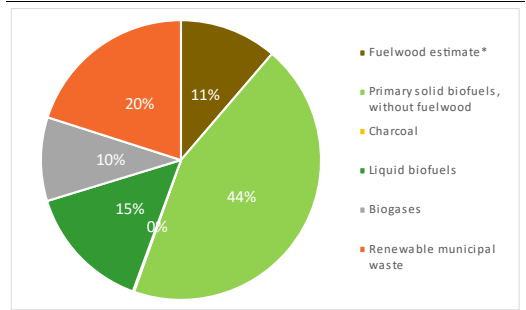
Graph 9: Renewable energy mix



(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

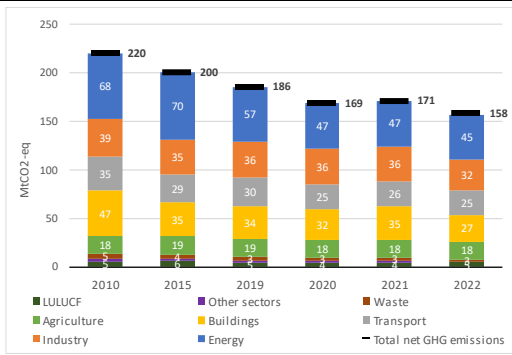
Table 3: Operational hydrogen projects

Name	Description
DNV Kema/DNV GL	0.01MW online since 2011
Hystock (EnergyStock)	1 MW from solar PV
Multiply	2.5MW from renewables
Alliander Oosterwolde - solar park of GroenLeven	1.4MW from solar PV
Hysolar Green on Road - Nieuwegein	2MW from solar PV
Hydrogenpilot Oosterwolde	1.3MW connected to the grid
GROHW	50kW from renewables

**Source:** European Commission based on IEA data

## 4. GREENHOUSE GAS EMISSIONS

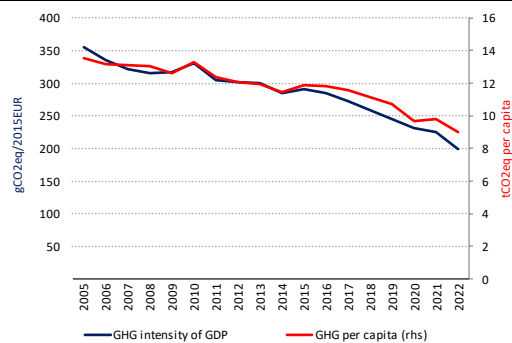
Graph 11: Greenhouse gas emissions by sector



Based on UNFCC 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).

- With 199 gCO<sub>2</sub>eq/2015EUR, the Netherlands lies below the EU average in terms of GHG intensity of GDP.
- With 9 tonnes of CO<sub>2</sub> equivalent per capita, the Netherlands is above the EU average in terms of GHG emissions per capita.
- For more detailed information on country profiles see [Progress on climate action \(europa.eu\)](https://progress-on-climate-action.europa.eu).

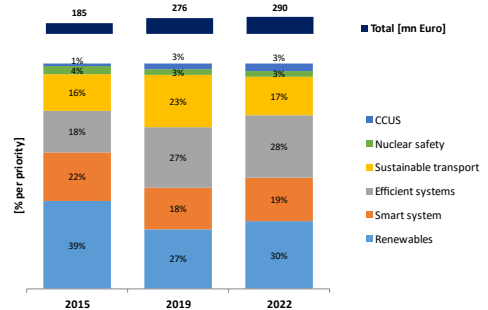
(3) Renewables, smart system, efficient systems, sustainable transport, CCUS and nuclear safety, COM(2015) 80 final ('Energy Union Package').

## Research, innovation and competitiveness

### 1. INVESTMENT IN R&I

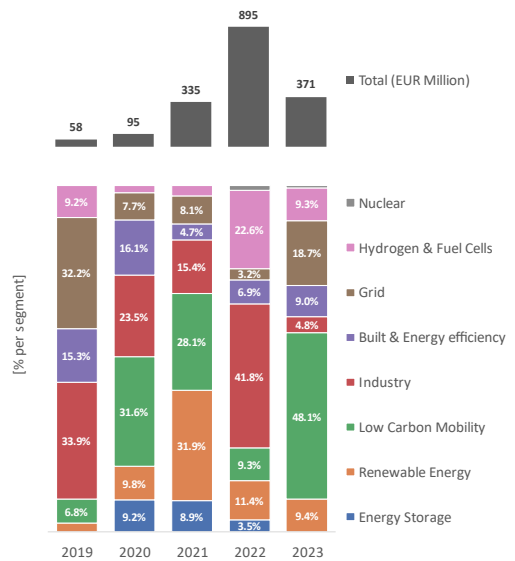
- Public investment in research and innovation (R&I) in Energy Union priorities<sup>(3)</sup> increased from 0.027% in 2015 to 0.030% in 2022 (share of GDP).<sup>(4)</sup>

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



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)

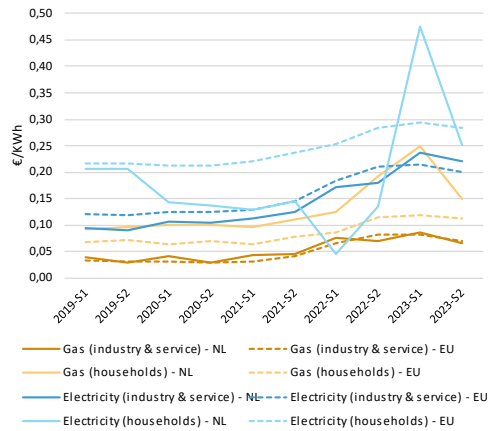
(4) Source: JRC SETIS 2024

## 2. NET-ZERO ENERGY TECHNOLOGIES

- Netherlands remains highly dependent on non-EU countries for clean energy technologies, particularly for components of wind turbines, but exhibits positive developments in solar module manufacturing and a growing foothold in battery manufacturing. In early 2024, the Netherlands launched the SolarNL initiative, a national research, innovation and industrial investment program to stimulate PV manufacturing in the Netherlands and Europe. This initiative builds on a dynamic ecosystem of small and innovative PV module manufacturers, based in e.g. Westknollendam and The Hague. Overall manufacturing capacity for PV ought to increase. Despite a substantial deployment of on and offshore wind energy, there is no manufacturing capacity for wind turbine components in the Netherlands. Regarding battery facilities, the opening of the first lithium-ion battery factory in Helmond last year paved the way forward. This capacity is likely to increase in future if the gigafactory project carried by an Anglo-Korean company materialises. When it comes to hydrogen, backed by the investments carried out in the framework of the state aid supported Important Project of Common European Interest Hy2Tech program, the Fuel Cell Giga Factory (FCGF) project in Arnhem is set to pioneer the initial industrial deployment of large-scale fuel cell manufacturing, set to come online in 2026.

## 3. ENERGY PRICES DEVELOPMENT

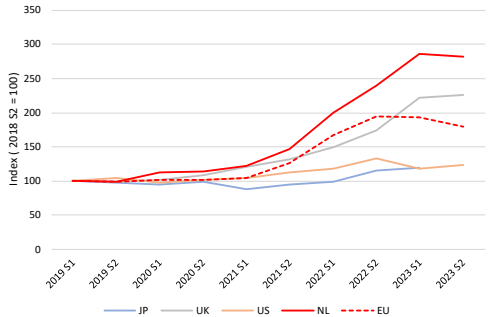
Graph 15: Netherlands' energy retail prices for households and industry & service



- For industry, consumption bands are I3 for gas and IC for electricity, which refer to medium-sized consumers and provide an insight into affordability.
- For households, the consumption bands are D2 for gas and DC for electricity.
- 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)

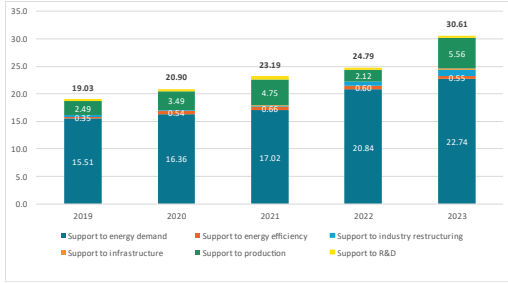


- For Eurostat data (EU and NL), the band consumption is ID referring to large-sized consumers with an annual consumption of between 2 000 MWh and 20 000 MWh, such as in electricity intensive manufacturing sectors, and gives an insight into international competitiveness.
- JP = Japan

Source: Eurostat, IEA

## 4. ENERGY SUBSIDIES

Graph 17: Energy subsidies by purpose

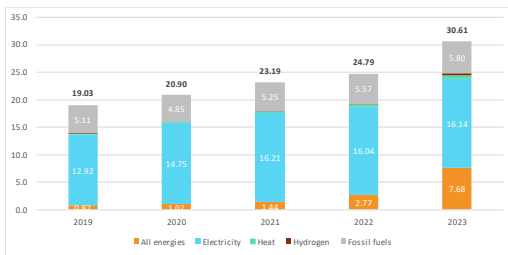


(1) Subsidies in EUR 2023 billion

(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):** Improve framework conditions to boost investment in the electricity transmission and distribution grids, in particular to accelerate the deployment of renewables and improve competitiveness.<sup>(5)</sup>
- For more information see the [2024 European Semester Country Report](#).

## National Energy and Climate Plan (NECP)

- Member States were due to submit their **final updated NECP by 30 June 2024**, taking into account the Commission recommendations.

<sup>(5)</sup> Council of the European Union 11711/24.

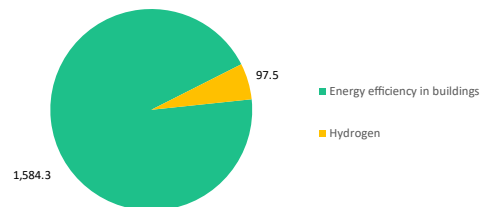
- The **final updated NECP** was submitted to the European Commission in June 2024.
- For documents and information see the dedicated [webpage of the European Commission on the NECPs](#).

## Recovery and Resilience Plan (RRP and REPowerEU chapter)

- The Dutch RRP has a total allocation of EUR 5.4 billion (only grants), with 55% of available funds supporting climate objectives.
- EUR 1.7 billion **are allocated to energy-related measures**, with the largest amount for **energy efficiency in buildings** [EUR 1.6 billion]:
  - **Investment in residential buildings and neighbourhoods** where subsidies are given to owners of public real estate (e.g. local administrations, educational and health institutions), to improve the buildings' energy efficiency and to reduce CO2 emissions. At least 225 000 of those interventions shall be funded.
- In May 2024 the Netherlands submitted a 1<sup>st</sup> payment request of EUR 1.3 billion.

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

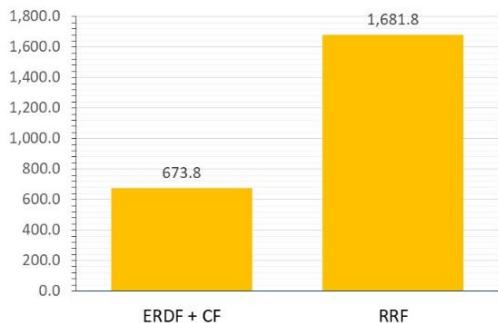
NL Energy-related investments EUR 1,681.8 mn



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 416.2 million.** For more information see the webpage [innovation-fund-projects-country\\_en](#).
- **CEF-Energy: EUR 157.0 million** (8.1% of total EU contribution, for 2021-2027). For more information see [CINEA's Project Portfolio dashboard](#).