Energy Markets: Introduction to EU Energy Markets, Law and Policy for Sustainability and Climate Change

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Jean Monnet Module- Pro Facts

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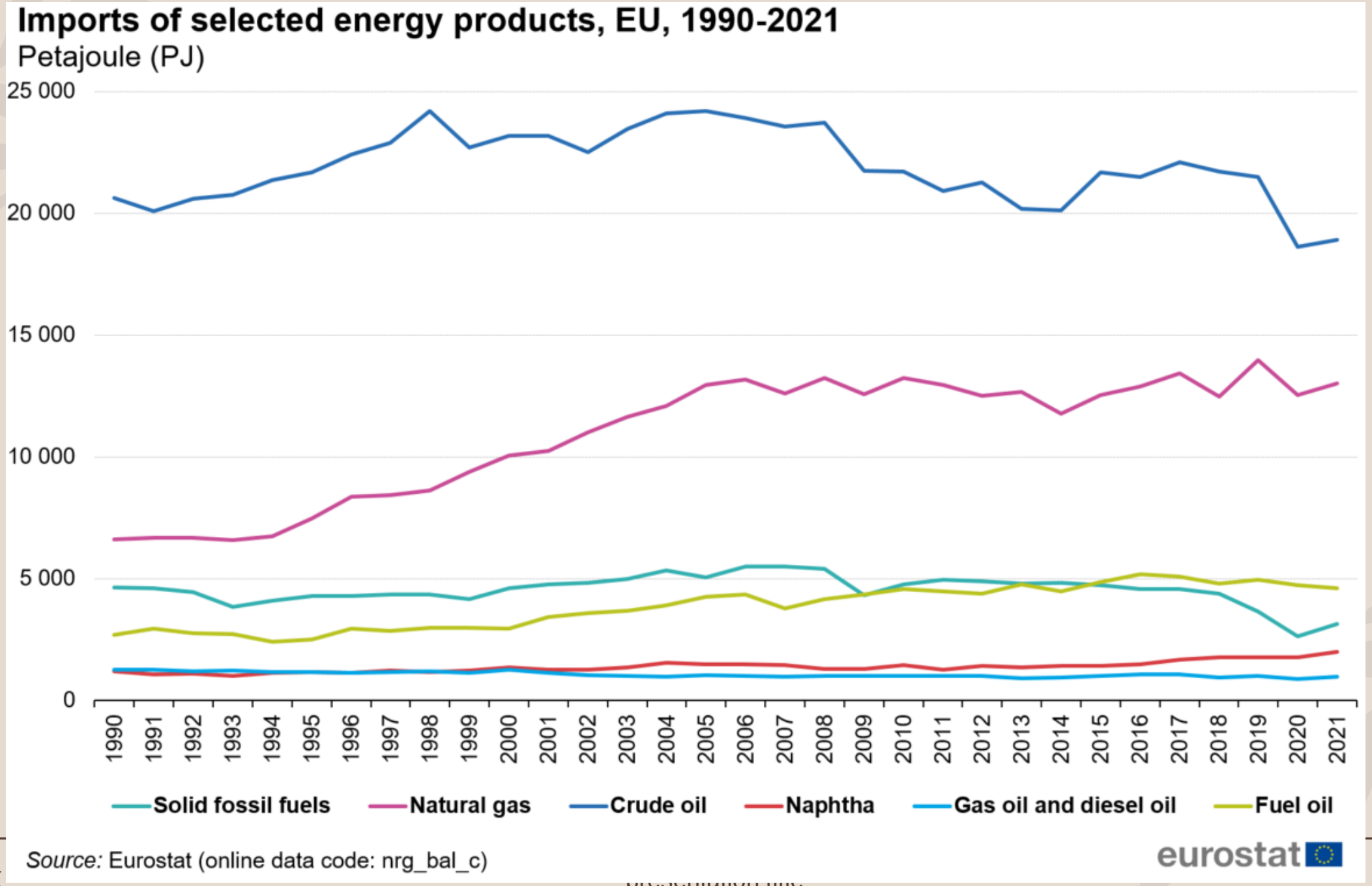
Contents

An overview of EU Energy Markets

- The EU is a net importer of energy, relying on imports for about 55% of its energy needs in 20211.
- The EU produces about 25% of its energy from renewable sources, mainly wind, solar and hydro power1.
- The EU is the world’s largest importer of natural gas and liquefied natural gas (LNG), accounting for about 20% of global gas trade in 20212.
- The EU is also a major importer of crude oil and petroleum products, mainly from Russia, Norway, Iraq and Saudi Arabia2.


Imports of selected energy products, EU, 1990-2021
Petajoule (PJ)
25 000
20 000
15 000
10 000
5 000
0
1990
1991
1992
1993
1994
1995
1996
1997
1998
1999
2000
2001
2002
2003
2004
2005
2006
2007
2008
2009
2010
2011
2012
2013
2014
2015
2016
2017
2018
2019
2020
2021
Solid fossil fuels
Natural gas
Crude oil
Naphtha
Gas oil and diesel oil
Fuel oil
Source: Eurostat (online data code: nrg_bal_c)
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EU Energy Policy

EU energy policy is based on several legal sources, such as Article 194 of the Treaty on the Functioning of the European Union (TFEU), which establishes a shared competence between the EU and its member states on energy matters, and the Treaty establishing the European Atomic Energy Community (Euratom Treaty), which covers nuclear energy issues

EU Energy Policy

EU energy policy is implemented through various legislative acts, strategies and initiatives, such as:

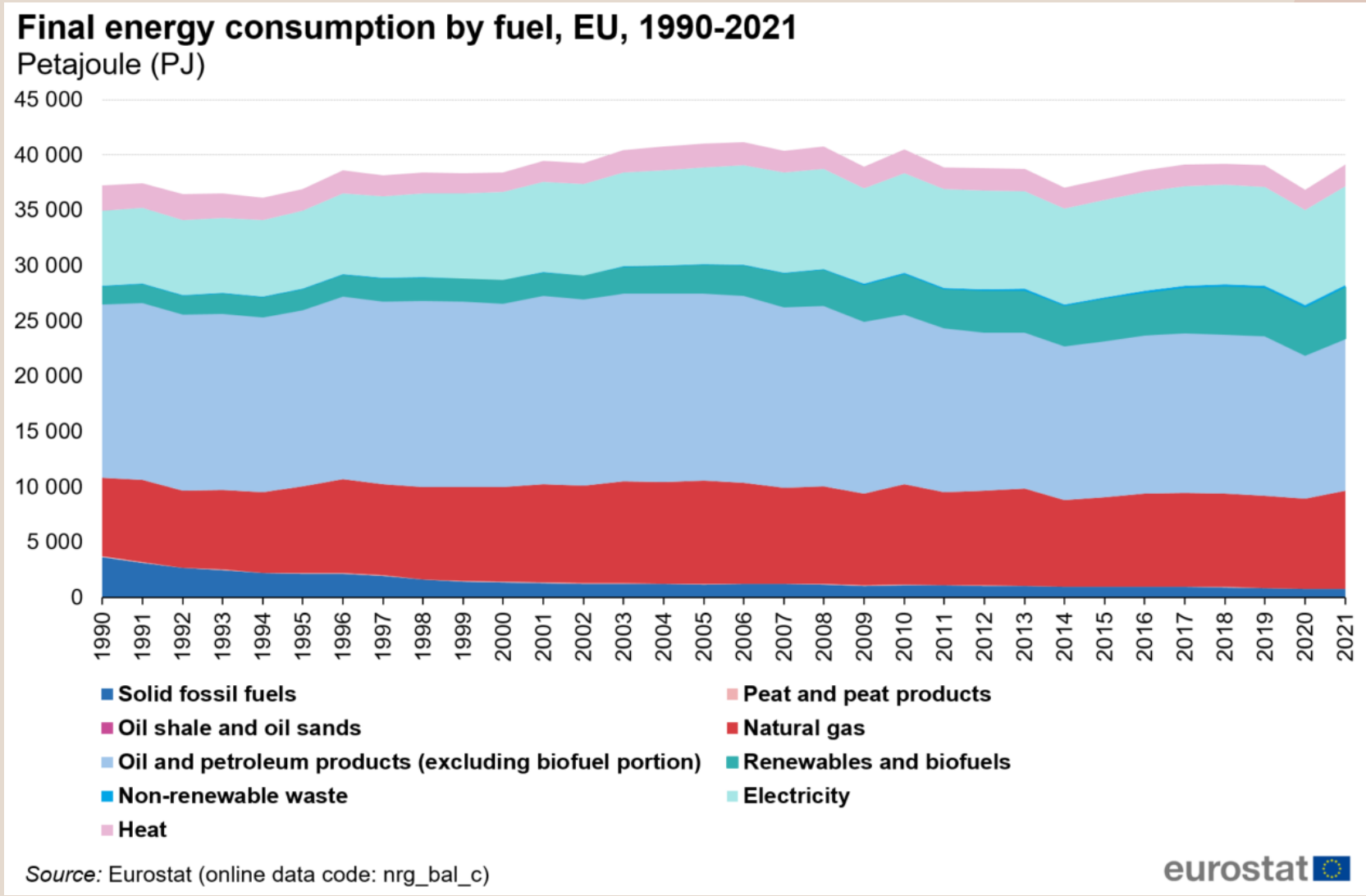
- The **Energy Union** (2015), which provides a comprehensive framework for achieving the EU's energy objectives and sets out five dimensions: security of supply; internal energy market; energy efficiency; decarbonisation; and research and innovation.
- The **Clean Energy for All Europeans** package (2019), which updates and strengthens the EU's rules on electricity market design, renewable energy, energy efficiency, governance and consumers' rights.
- The **Fit for 55** package (2021), which proposes a set of measures to align the EU's climate and energy policies with the new target of reducing greenhouse gas emissions by at least 55% by 2030 compared to 1990 levels.
- The **Hydrogen Strategy** (2020), which outlines a vision for developing a clean hydrogen economy in Europe as a key enabler for decarbonising hard-to-abate sectors such as industry, transport and heating.
- The **Offshore Renewable Energy Strategy** (2020), which sets an ambitious goal of increasing Europe's offshore wind capacity from 12 GW in 2019 to at least 60 GW by 2030 and 300 GW by 2050,

EU energy consumption

•**Primary energy consumption**, which is the total amount of energy available in the EU, including domestic production and imports, minus exports and energy used for transformation (e.g. refining crude oil into petroleum products) and storage.

•**Final energy consumption**, which is the amount of energy delivered to end-users for their own use, excluding energy used for transformation and losses in transmission and distribution.

•**Gross inland consumption**, which is the total amount of energy necessary to satisfy the inland consumption of a country or region, including primary production, imports, exports, stock changes and international marine bunkers.


Final energy consumption by fuel, EU, 1990-2021
Petajoule (PJ)
45 000
40 000
35 000
30 000
25 000
20 000
15 000
10 000
5 000
0
1990
1991
1992
1993
1994
1995
1996
1997
1998
1999
2000
2001
2002
2003
2004
2005
2006
2007
2008
2009
2010
2011
2012
2013
2014
2015
2016
2017
2018
2019
2020
2021
Solid fossil fuels
Peat and peat products
Oil shale and oil sands
Natural gas
Oil and petroleum products (excluding biofuel portion)
Renewables and biofuels
Non-renewable waste
Electricity
Heat
Source: Eurostat (online data code: nrg_bal_c)
eurostat

EU energy consumption by MS

- EU energy consumption by member states varies according to their size, economic structure, climate and energy resources. According to Eurostat, the largest consumers of energy in the EU in 2020 were :
- Germany (19.3% of the EU total),
- France (15.4%), Italy (11.9%), Spain (9.5%)
- United Kingdom (8.6%).
- These five countries accounted for almost two thirds (64.7%) of the EU's energy consumption[1].

Energy Efficiency- The concept

EU energy efficiency is the concept of using less energy to provide the same or better service, thereby reducing energy waste and saving money. Energy efficiency is also a key strategy for achieving the EU’s climate and energy goals, as it reduces greenhouse gas emissions, enhances energy security and competitiveness, and improves air quality and health.

EU’s Approach

- The EU has an energy efficiency target of reducing energy consumption by 20% by 2020 and by at least 32.5% by 2030 compared to a baseline scenario
- The 2030 target may be revised upwards in 2024, in line with the EU’s increased climate ambition under the European Green Deal.
- In July 2021, the European Commission proposed to raise the 2030 target to 39% for primary energy consumption and 36% for final energy consumption, as part of the “Fit for 55” package.
- In May 2022, the Commission proposed to further increase the target to 43% for primary energy consumption and 40% for final energy consumption, as part of the REPowerEU plan

Legal Framework

The main legal instrument for implementing the EU's energy efficiency policy is the Energy Efficiency Directive (2012/27/EU), as amended in 2018 (2018/2002/EU) and in 2021 (2021/1119/EU).

Energy trading markets

- **Wholesale energy market**: This is where electricity and gas are traded between producers, suppliers, traders and large consumers. The EU sets rules on wholesale energy trading to foster competition and integration in the energy market.
- **Electricity network codes and guidelines**: These are EU-wide rules that regulate the cross-border electricity trade and the use of electricity infrastructure. They cover aspects such as market design, grid connection, system operation and emergency situations.

Energy trading markets

- **Electricity markets**: These are markets where electricity is exchanged at different time horizons, from years ahead to real-time. They include forward, day-ahead, intraday and balancing markets. The EU aims to create a single electricity market by coupling these markets across borders.
- **Capacity mechanisms**: These are measures that ensure sufficient electricity supply at times of peak demand or scarcity. They provide incentives for generators or consumers to make their capacity available when needed. The EU has set rules to ensure that capacity mechanisms are compatible with the internal energy market and do not distort competition.

Thank you

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