



IEA Review of EU Energy Policies 2020

Sylvia Beyer, Senior Energy Analyst IEA

Evening lecture: The Role of nuclear in Europe's energy transition, 25 June 2020

Launch of the IEA Review of EU Energy Policies 2020



European Union 2020

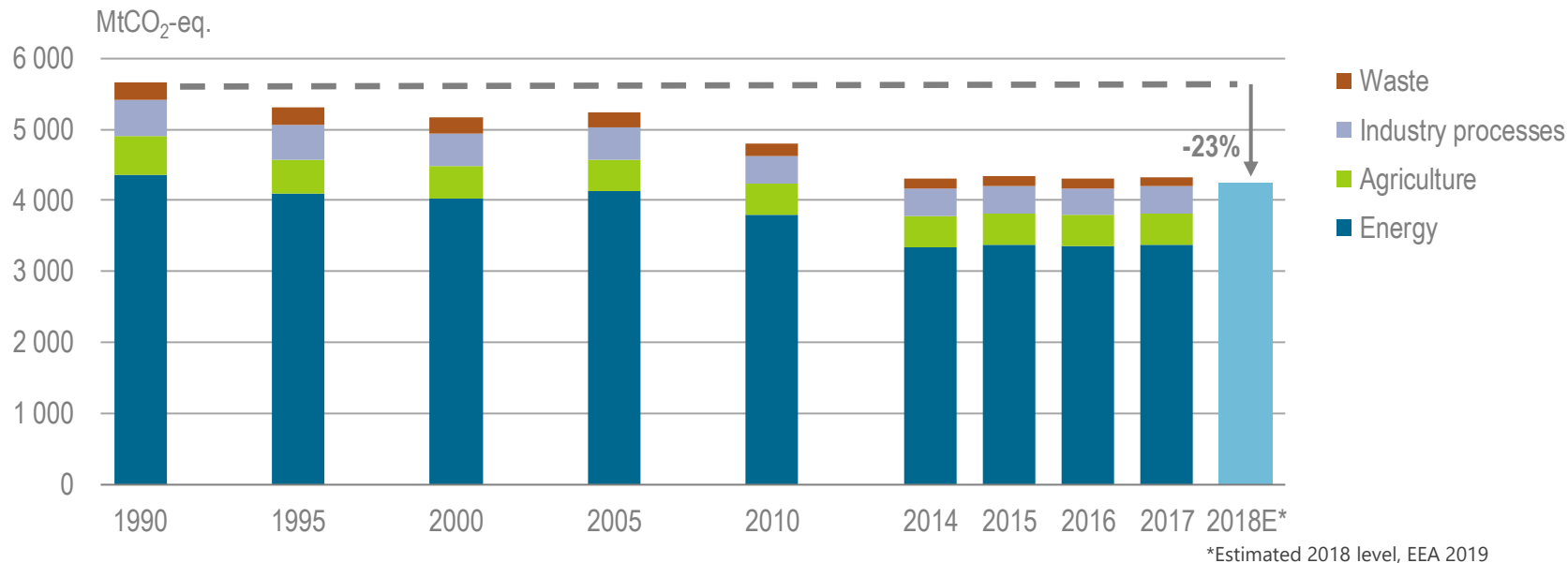
Energy Policy Review

International
Energy Agency

- Peer review by IEA member and partner countries (Australia, Canada, Japan, New Zealand, Norway, Switzerland, the United States, IEA and OECD/NEA)
- Support to major energy reforms (European Green Deal)
- Comprehensive review across the entire energy system, incl. technology & innovation
- Help guide the energy transition, sustainable development and energy security and achieve targets in a cost-efficient way
- Independent and evidence-based review

IEA finding: EU is overachieving its 2020 emissions target

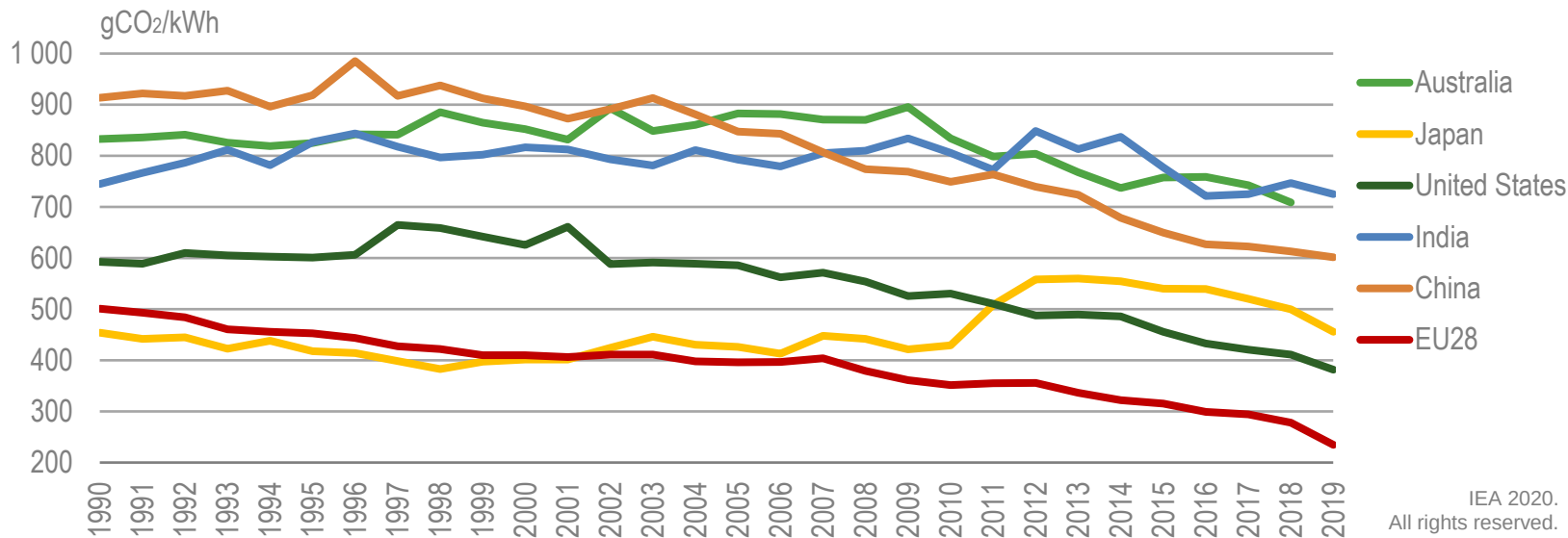
EU Greenhouse Gas (GHG) emissions, 1990-2018



In 2018, EU GHG emissions had fallen by 23% since 1990, allowing the EU to meet its 2020 target. However, since 2014 emission levels have stabilised which raises the bar for meeting the 2030 target.

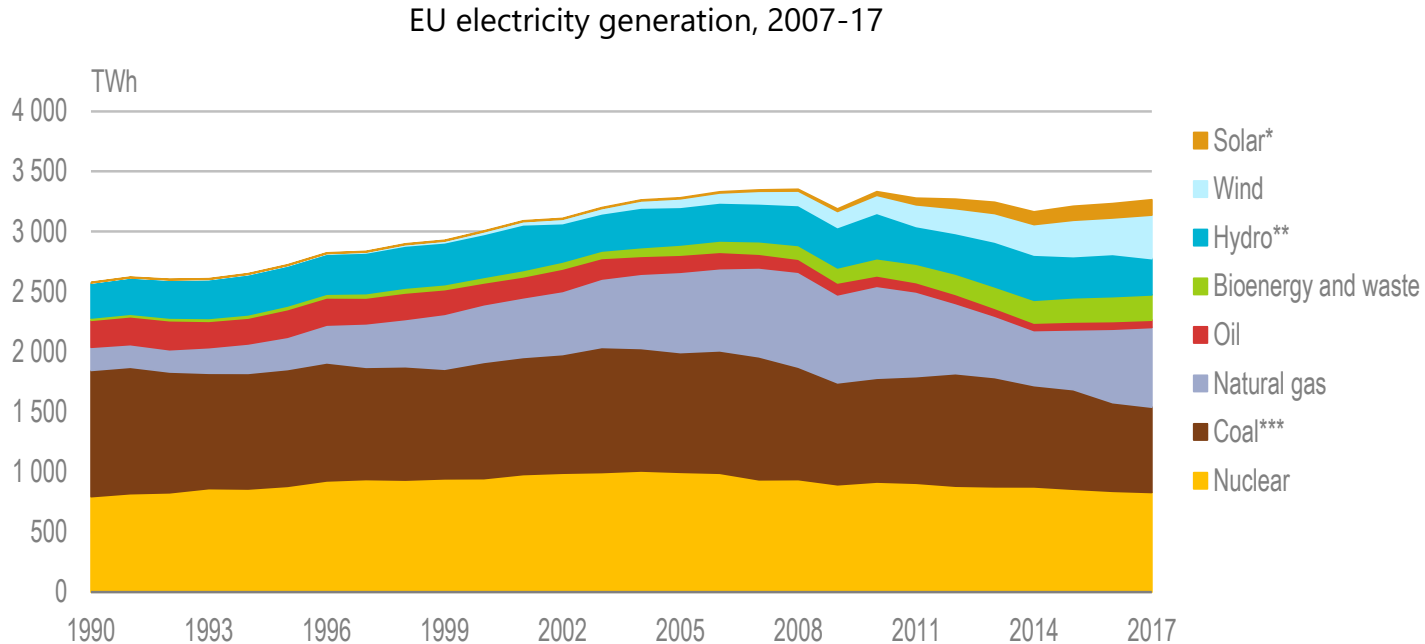
IEA finding: EU power system is decarbonising

CO₂ emissions per kWh heat and power generation in EU and other large economies, 1990-2019



Thanks to strong renewable growth, the carbon intensity of electricity reached 235 gCO₂/kWh in 2019, a strong basis for decarbonising Europe's economy. However, electricity only accounts for 23% in energy use.

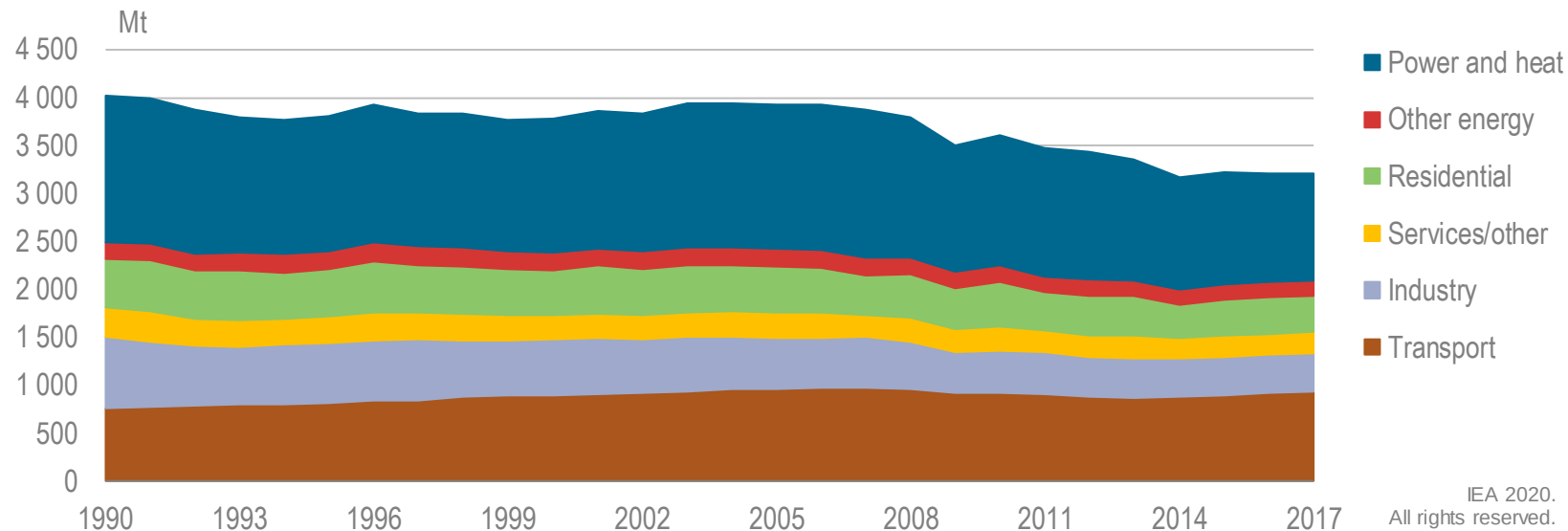
IEA finding: Renewables reached 30% in the EU electricity mix



The EU electricity generation is transforming: the share of renewables reached 30%, led by wind power (offshore wind). Nuclear (25%), natural gas (20%) and coal (21%) played a significant role.

IEA finding: Emissions are only declining in power and heat

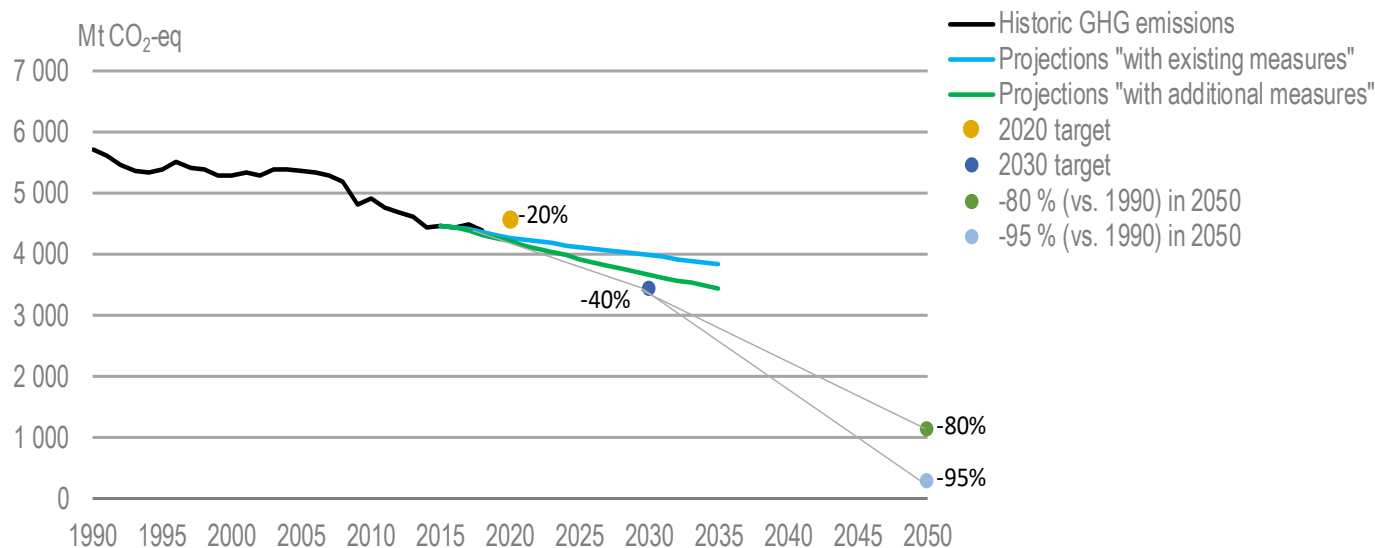
Energy-related CO₂ emissions by sector, 2007-17



Emissions in transport are rising, while industry and residential emissions have stabilised. Policies are inadequate to deal with rising emissions and air pollution in transport let alone decarbonise other sectors.

Hard to get to 2030 or 2050 with stated policies

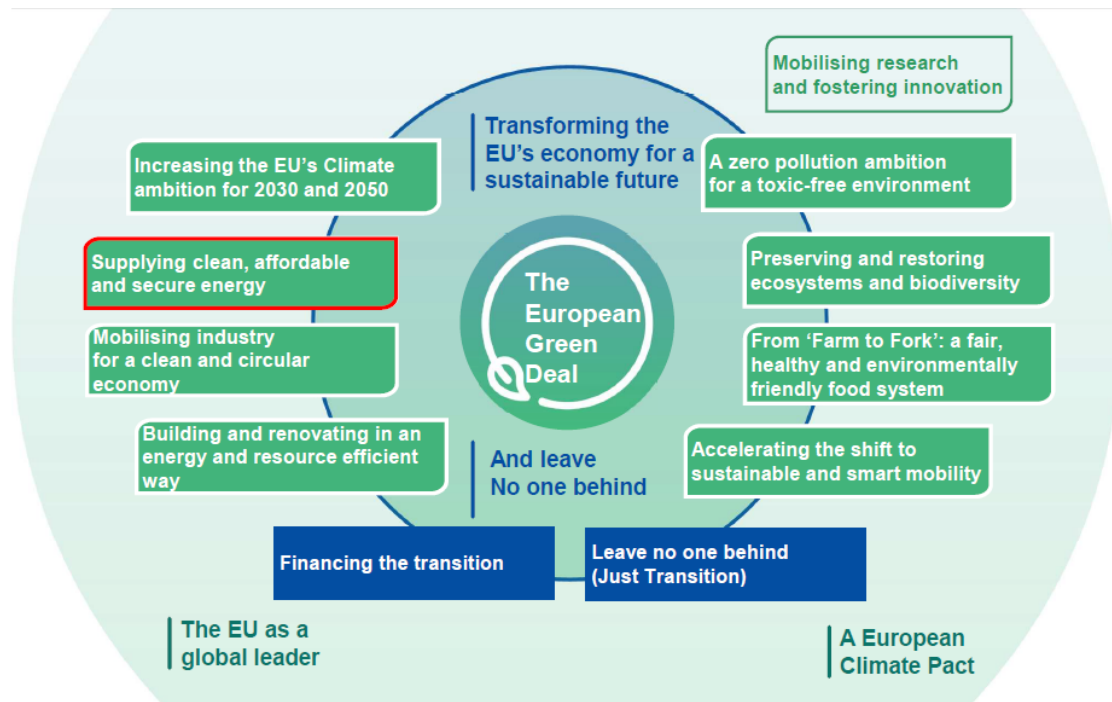
GHG emissions trends, projections and targets in the EU, 1990-2050



Source: EEA 2019

EU GHG emissions are not on a trajectory to the 2050 emissions reductions and may not reach the target of 40%. The implementation of final NECPs should identify the gaps and opportunities for scaling up.

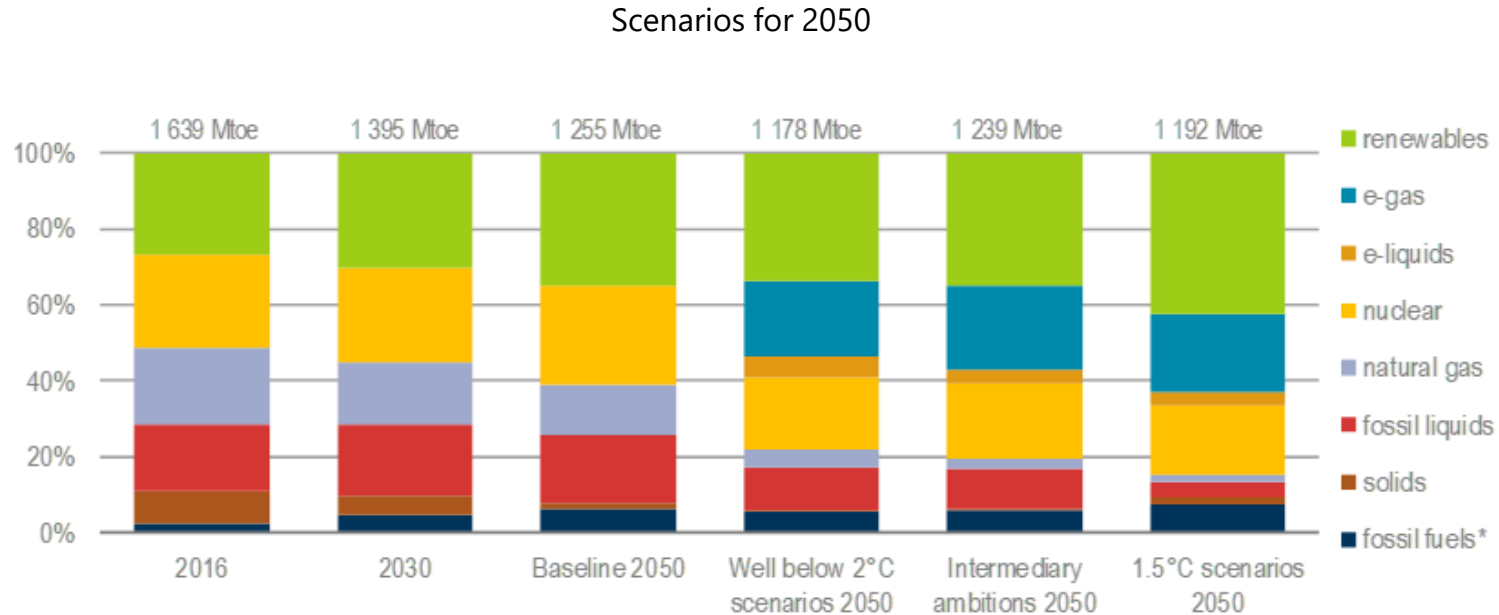
Energy policies are critical for a sustainable recovery



Source: European Commission

Energy accounts for 75% of EU GHG emissions. Opportunities abound for scaling up actions for sustainable recovery that boost climate action, competitiveness, affordability and security of supply.

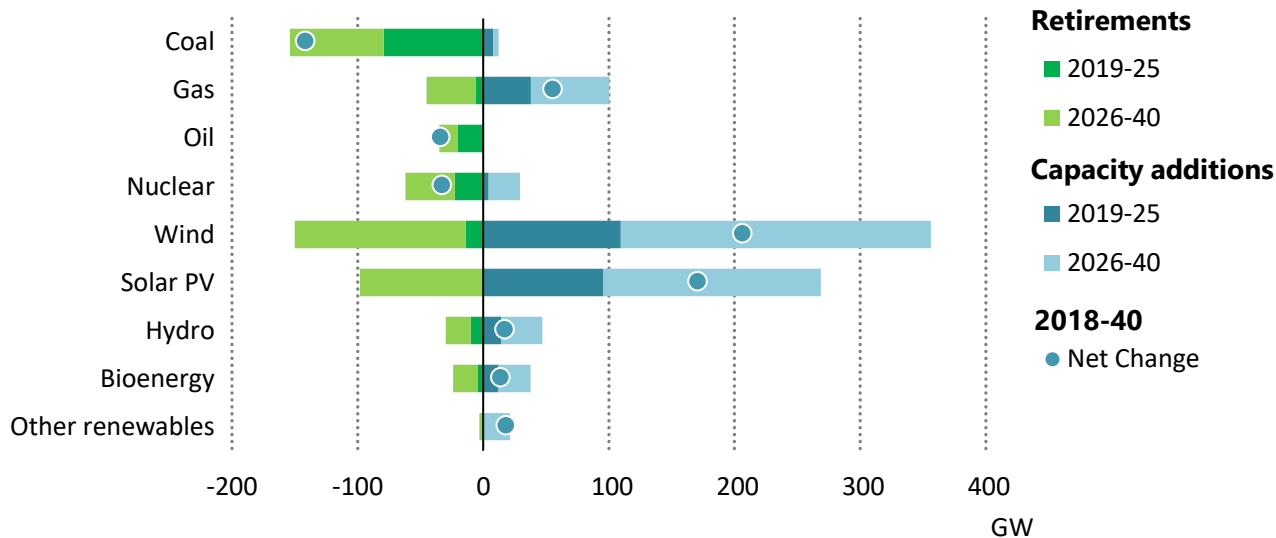
Nuclear forms part of the 2050 Long-Term Strategy



Renewables and nuclear energy are the backbones of the low-carbon energy mix in the EU's Long-Term Strategy in 2050.

IEA finding: Europe's electricity adequacy cliff - when and how deep?

Generation adequacy – Evolution of power generation capacity in the medium and longer term



In the EU most of the countries have decided coal phase-out and, even without such decisions, low gas and high CO2 prices are severely affecting coal power plants.

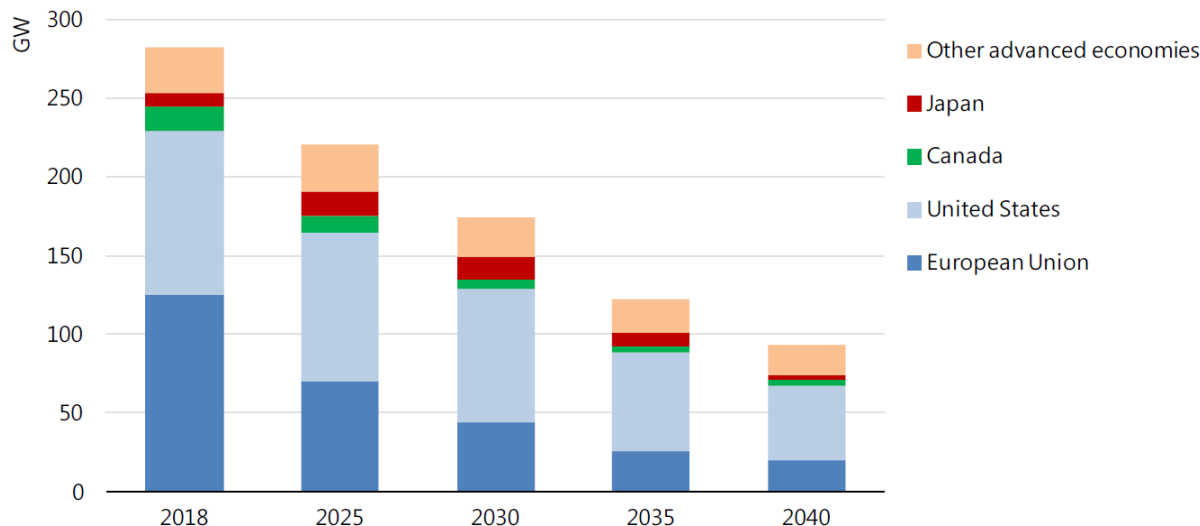
Coal phase-outs and nuclear retirements will boost the reliance on natural gas (imports) and will increasingly link gas and electricity security in the EU.

Source: IEA (2019), World Energy Outlook, Paris.

Electricity security is a top priority for the European Union. The European adequacy assessment is a success story but only the start of the journey, and nuclear requires a particular attention.

IEA finding: Nuclear energy is exiting the mix without policy action

Operational nuclear capacity in advanced economies (Nuclear Fade Case)



Today, nuclear accounts for 25% of EU electricity mix but falls to 5% with retirements in 2040.

EU long term strategy assumes 15% of nuclear power in 2050, which equals today's capacity.

Given fast retirements, EU would need to extend the lifetime and build new plants.

Source: IEA (2019), Nuclear report, Paris.

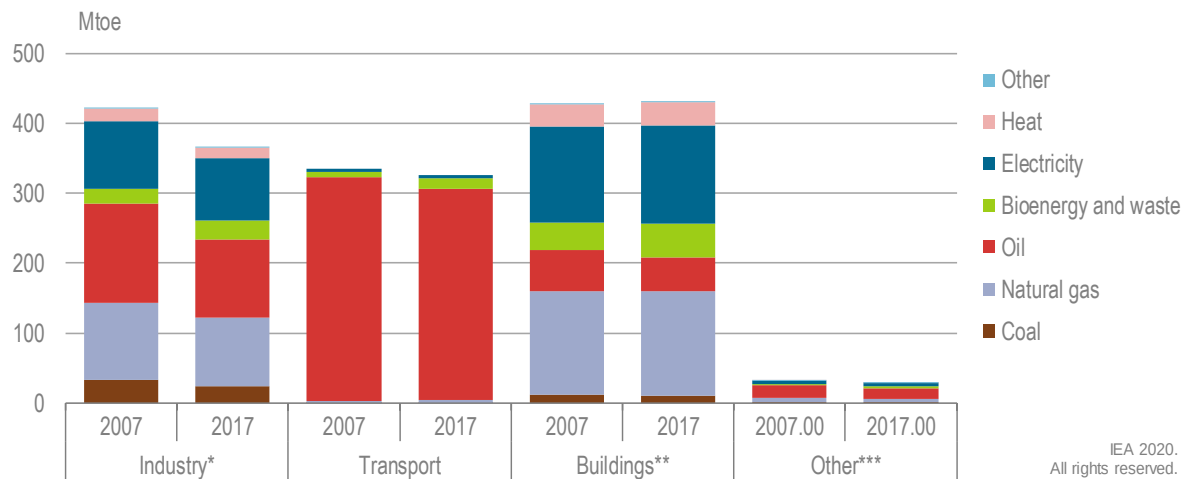
To keep the option for nuclear open in the EU's decarbonisation pathway, EU policies & financial support should not exclude nuclear and create a level playing field among technologies.

IEA key findings and recommendations – Nuclear

- **Support the role that nuclear energy can play in the transition towards decarbonisation and sustainability:** Concerned member states should keep the nuclear option open by supporting the lifetime extension of existing nuclear power plants as well as new plants.
- **Support a broader spectrum of RD&D on advanced concepts and small modular reactors. Promote better synergies between the research programmes under Euratom and the TFEU.** Ensure that financing mechanisms for innovation are open for nuclear.
- Work with EU member states on the **proactive development of plans for the final repository of high-level nuclear waste**, notably at regional level.
- Foster **international co-operation with non-EU countries and entities**, notably the use or construction of scarce large nuclear research infrastructure, including fusion research.

IEA recommendation 1: Operationalise 'energy efficiency first'

Total final consumption (TFC), by source and sector, 2010 and 2017



TFC has declined in industry, driven by relocation, the financial crisis and greater energy efficiency.

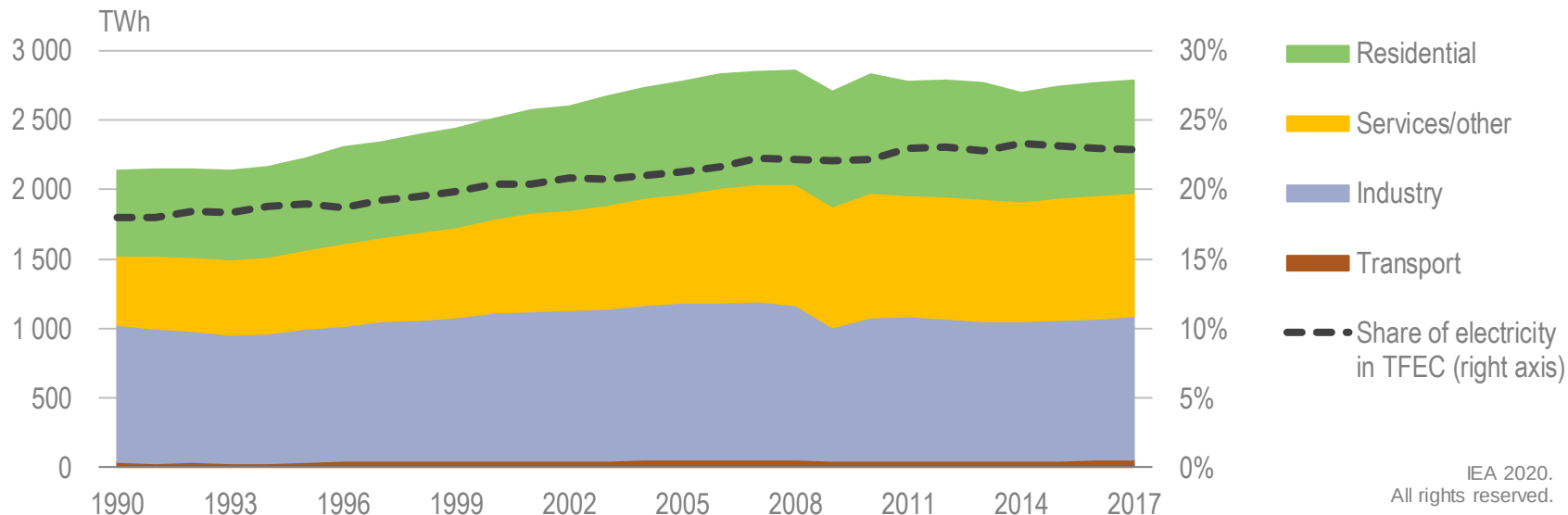
Buildings are a large end use sector, as heating demand is driving energy use, mostly from natural gas and electricity.

TFC is dominated by oil in transport and its energy use remained almost flat.

As first fuel, energy efficiency needs to be prioritised to become a driver of decarbonisation. Opportunities abound for scaling up energy efficiency improvements, notably in buildings and transport.

IEA recommendation 2: Low carbon fuels in buildings, transport, industry

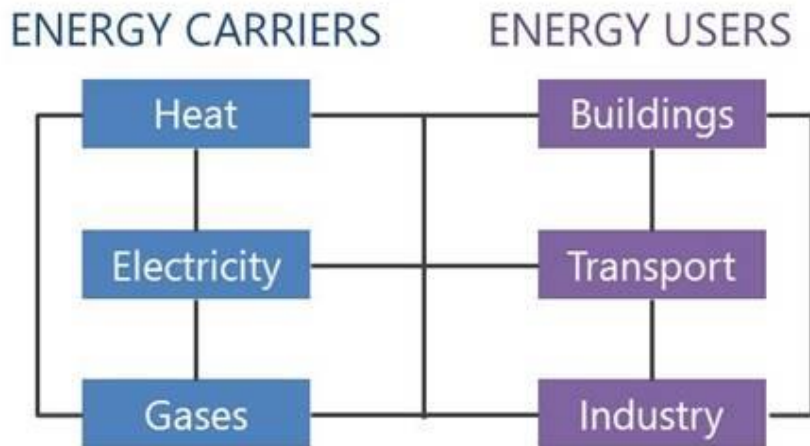
Electricity in TFC by sector and total share, 1990-2017



Opportunities remain for boosting energy efficiency and low-carbon fuels, coupled with electrification of end-uses. Strengthen carbon price signals in the EU ETS/non-ETS sectors and EU energy taxation.

IEA recommendation 3: Energy system integration

End-use sectors and energy carriers are going to see increasing integration



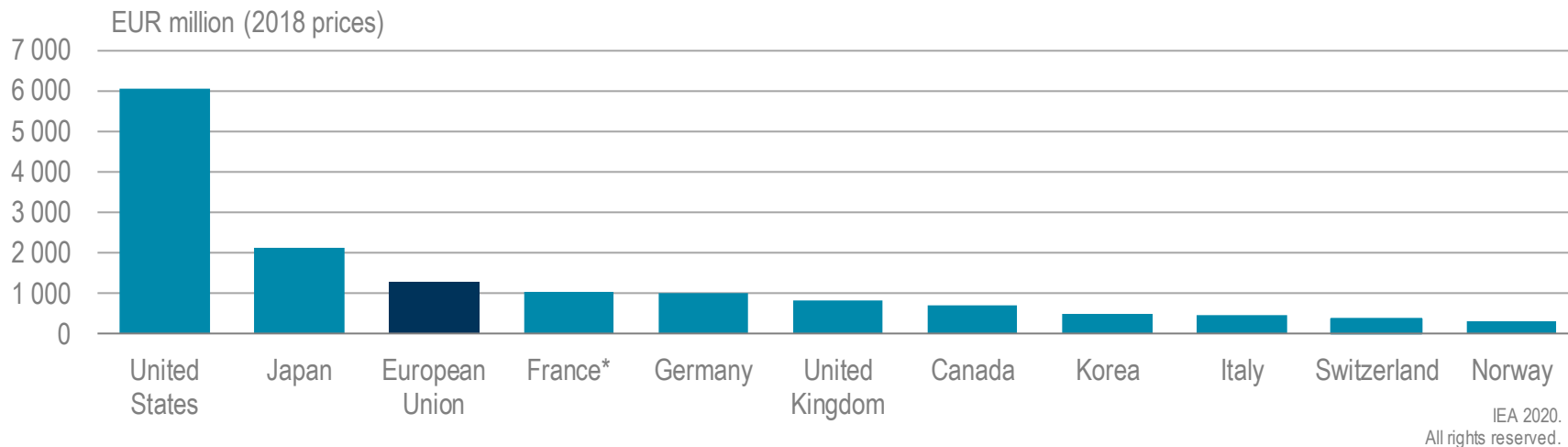
Policy principles:

- Prioritise energy efficiency, decarbonisation and security
- Coordinate policies across sectors
- Reduce overlapping rules, regulatory barriers and adapt market design
- Create an enabling framework for hydrogen
- Foster independent system operators
- Safety standards and system risks (cybersecurity) amid rising digitalisation
- Invest in infrastructure and technology & innovation

An energy system approach should offer efficiency, decarbonisation and reliability. Electrification is not possible for all end-uses but hydrogen and renewable fuels are critical, but require coordination.

IEA recommendation 4: Expand clean energy technology innovation

Energy-related RD&D spending by the EU and IEA country, 2018



*No data on France in 2018.

The energy RD&D budget of the EU under the Horizon 2020 is now larger than that of all but two IEA member countries: the United States and Japan. In comparison, private sector spent EUR 18 billion in 2018.

The IEA's key recommendations for the EU

- Building on the European Green Deal, the IEA recommends the following to help the EU improve energy sustainability, competitiveness & security:
 - *Put the energy sector at the heart of Covid-19 recovery, including through large-scale renovation of buildings, easing barriers on investment & promoting clean energy industries*
 - *Reduce regulatory & pricing barriers to boost energy efficiency, renewables and digitalisation*
 - *Keep all technology options on the table, by strengthening carbon pricing & leveling the playing field for investment and sustainable financing*
 - *Place ongoing focus on EU energy security, particularly in electricity & natural gas*
- The IEA will continue to work with the EU to support the transition to a cleaner & more resilient energy system, including through the **IEA Clean Energy Transition Summit on 9 July**

led