



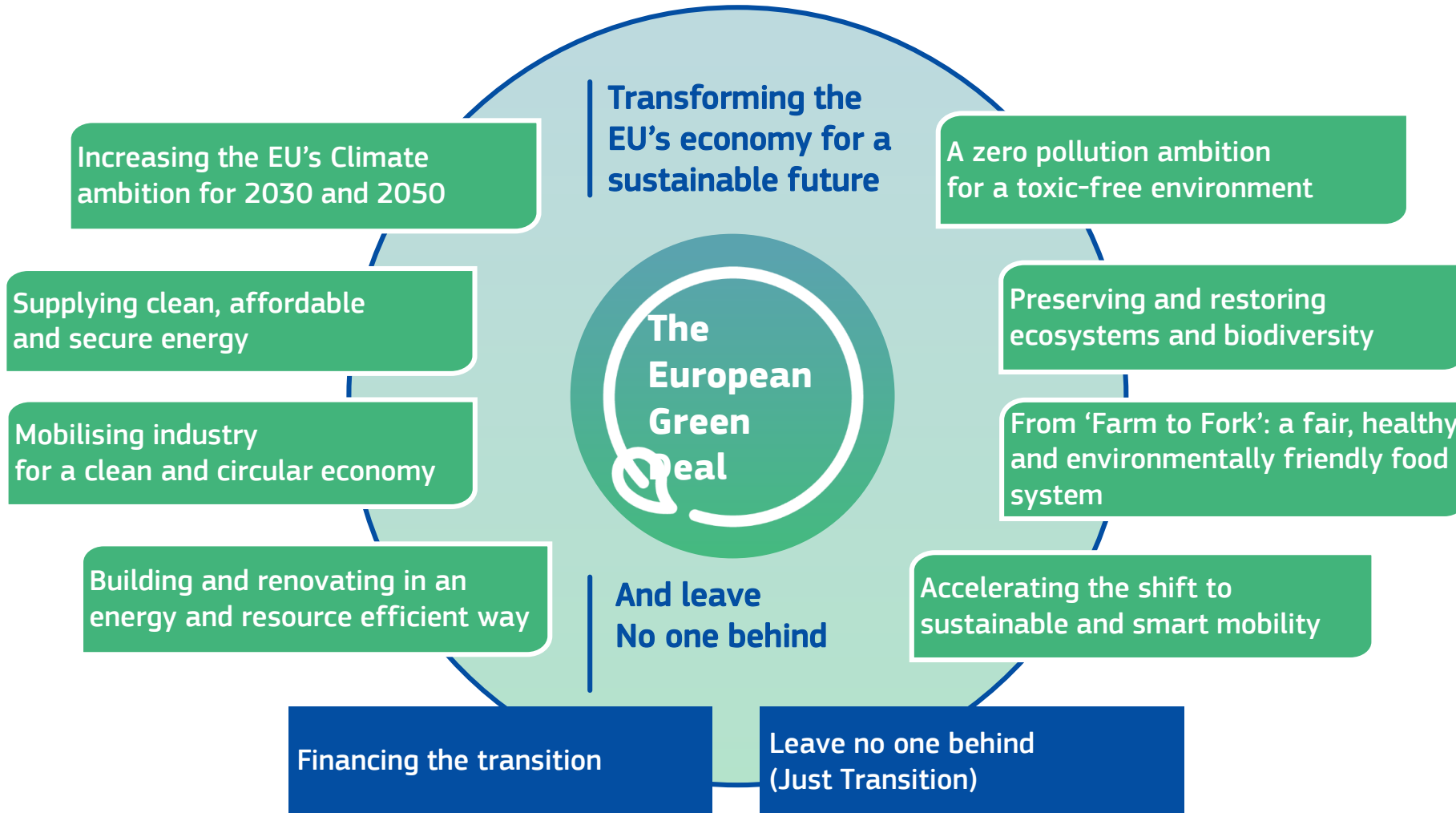
The Energy Transition – Key for the Climate Objectives and Industrialisation of Europe

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The European Green Deal



The EU as a global leader

A European Climate Pact

Laying the foundation for a climate-neutral energy system

Energy System Integration Strategy

A more **circular and energy efficient** energy system

1

A **deep electrification** of consumption, based on **renewable electricity**

2

The use of **renewable and low carbon fuels (incl. hydrogen)** in hard-to-abate sectors

3

Hydrogen Strategy

A full value chain approach to upscale hydrogen

By 2030: 40 GW of renewable electrolysers
+

Clean Hydrogen Alliance

EU Hydrogen Strategy: an action plan

Full value chain approach,	Actions oriented towards	Main tools involved (*)
An investment agenda	<ul style="list-style-type: none"> • Create project pipeline • €220-340 bln renewable power, €24-42 bln electrolysers, €65 bln infrastructure 	Clean Hydrogen Alliance, InvestEU, IPCEI, State aid, Cohesion policy
Boosting demand and scale up production	<ul style="list-style-type: none"> • Comprehensive terminology and EU-wide certification of hydrogen • Support schemes and CCfD for renewable and low-carbon hydrogen • Demand-side policies in end-use sectors 	RED, EU ETS, Transport policy, Industrial strategies
Develop hydrogen infrastructure and markets	<ul style="list-style-type: none"> • Planning of hydrogen transport, storage and dispatch infrastructure • Ensure access, develop liquid hydrogen markets and integrity of internal gas market 	TYNDPs, TEN-E, TEN-T, AFID, CEF, decarbonisation of gas package
Research and Innovation	<ul style="list-style-type: none"> • Scale up electrolysers • Develop hydrogen value chain • Innovative hydrogen technologies 	Clean Hydrogen Partnership, ETS Innovation Fund, Horizon Europe,
The international dimension	<ul style="list-style-type: none"> • International standards, regulation and definitions for hydrogen • Promote cooperation 	IEA, IRENA, CEM, G20, Neighbourhood policy, EU-Africa Green Energy Initiative, bilateral energy dialogues, € benchmark

(*) *Non-exhaustive list*

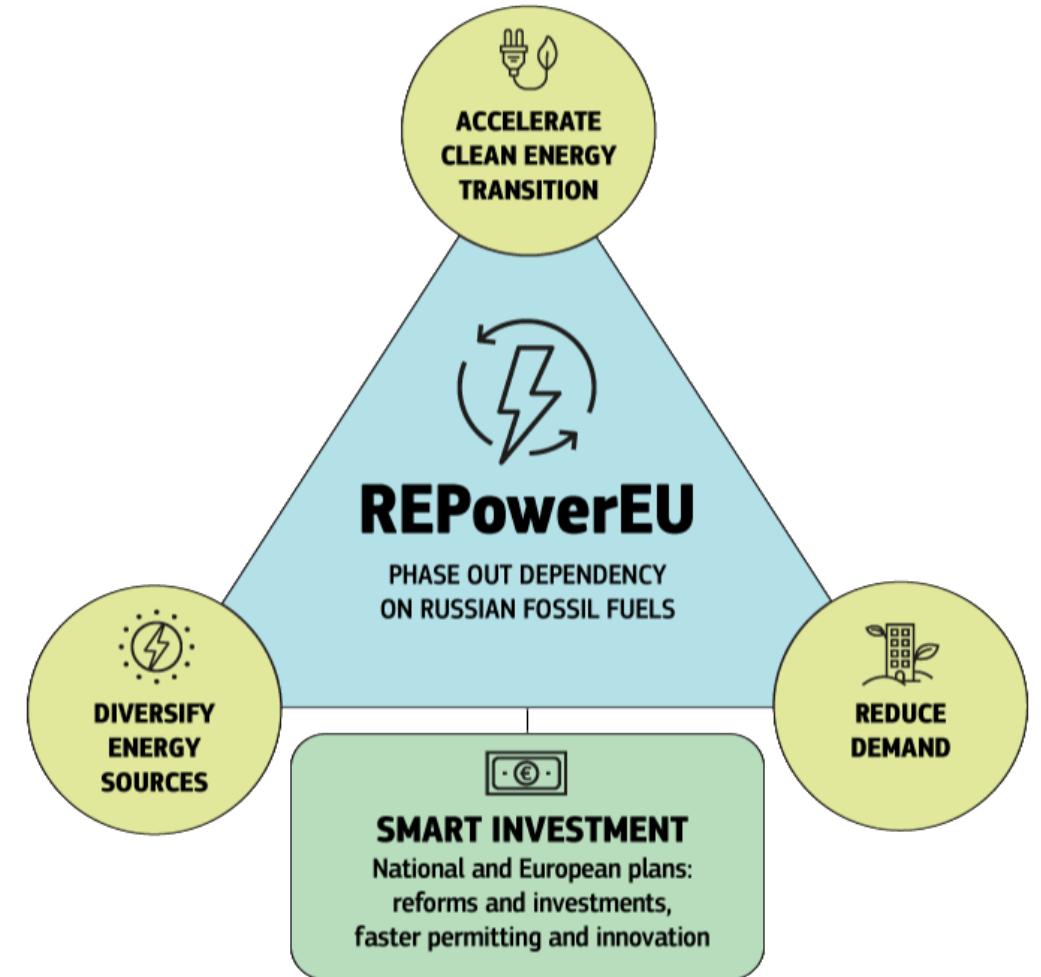
RePowerEU, Communication (March 22) and Plan (May 22)

Key Measures:

- ✓ EU solar strategy, action on permitting
- ✓ EU Save Energy Communication
- ✓ Communication on Short-Term Energy Market Interventions and Long Term Improvements to the Electricity Market Design
- ✓ EU Energy Platform

Key Goals:

- ❖ Increase the EU 2030 target for renewable energy from 40% to **45%**
- ❖ Deployment of **wind and solar** energy in power sector
- ❖ Accelerated installation of **heat pumps** (10 mln by 2025)
- ❖ Renewable **hydrogen accelerator** (10 mln t. of domestic production and imports by 2030)



RED conclusion and Hydrogen Targets

- On 12 September, amendments were approved by the Parliament for RED III. RED III sets the Union-wide targets for the use of RFNBO, setting clear demand-side potential for the use of renewable hydrogen by 2030. The following RFNBO targets were included:
 - In industry, a target of up to 42% of RFNBO by 2030, expanding to 60% by 2035.
 - In transport, the agreed target for renewables is 29% or 14,5% reduction of emission intensity of fuels. Furthermore, at least 5.5% shall be advanced biofuels and RFNBO by 2030, with a minimum of 1% RFNBO.

Electricity Market

The electricity market has been designed to incentivize the clean energy transition while delivering on key objectives of energy security and affordability.

With the energy crisis in 2022, the Commission has proposed a structural reform of the electricity market, with the dual objective of securing European energy sovereignty and achieving climate neutrality. The reform will:

- Make the energy bills of European consumers and companies more independent from the short-term market price of electricity.
- accelerate the deployment of renewables and the phase-out of gas.
- accelerate the roll-out of multi-country offshore renewables projects in the different European sea basins by securing market access for offshore renewable energy production.
- improve the conditions under which flexibility solutions such as demand response, energy storage and other weather independent renewable and low carbon sources, compete with gas

Flexibility in the EU energy system

- **Several technologies compete** to provide flexibility to the energy system.
- Key role of **batteries** and **pumped-hydro storage** **already in the short term**
- **Key role of electrolysers in the long term** (around 550 GW) driven by need to decarbonise industry, mobility and heating.
- Potential of **electric vehicles** (smart charging) and **thermal storage** to provide daily flexibility to the energy system.

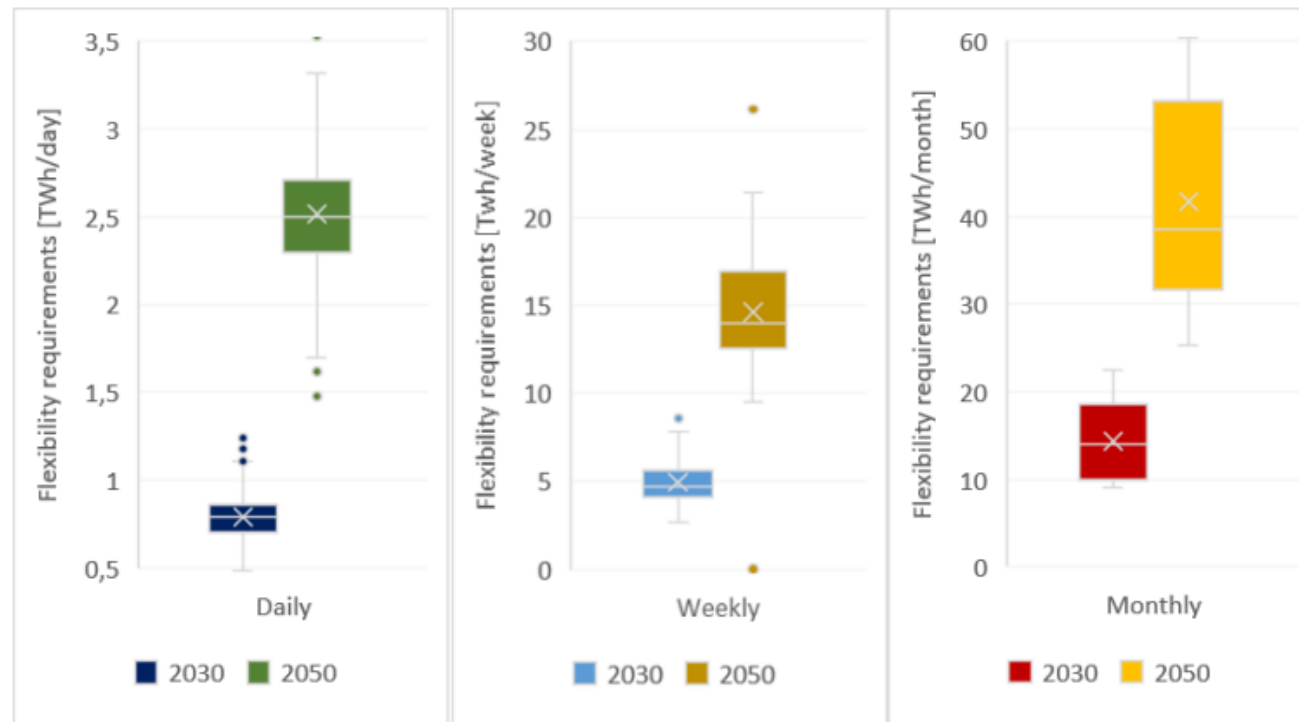


Figure 6. Distribution of EU daily, weekly, and monthly requirements for flexibility per respective timescale, in 2030 and 2050. Source: JRC, Flexibility requirements and the role of storage in future European power systems, 2022.

Flexibility in the EU energy system

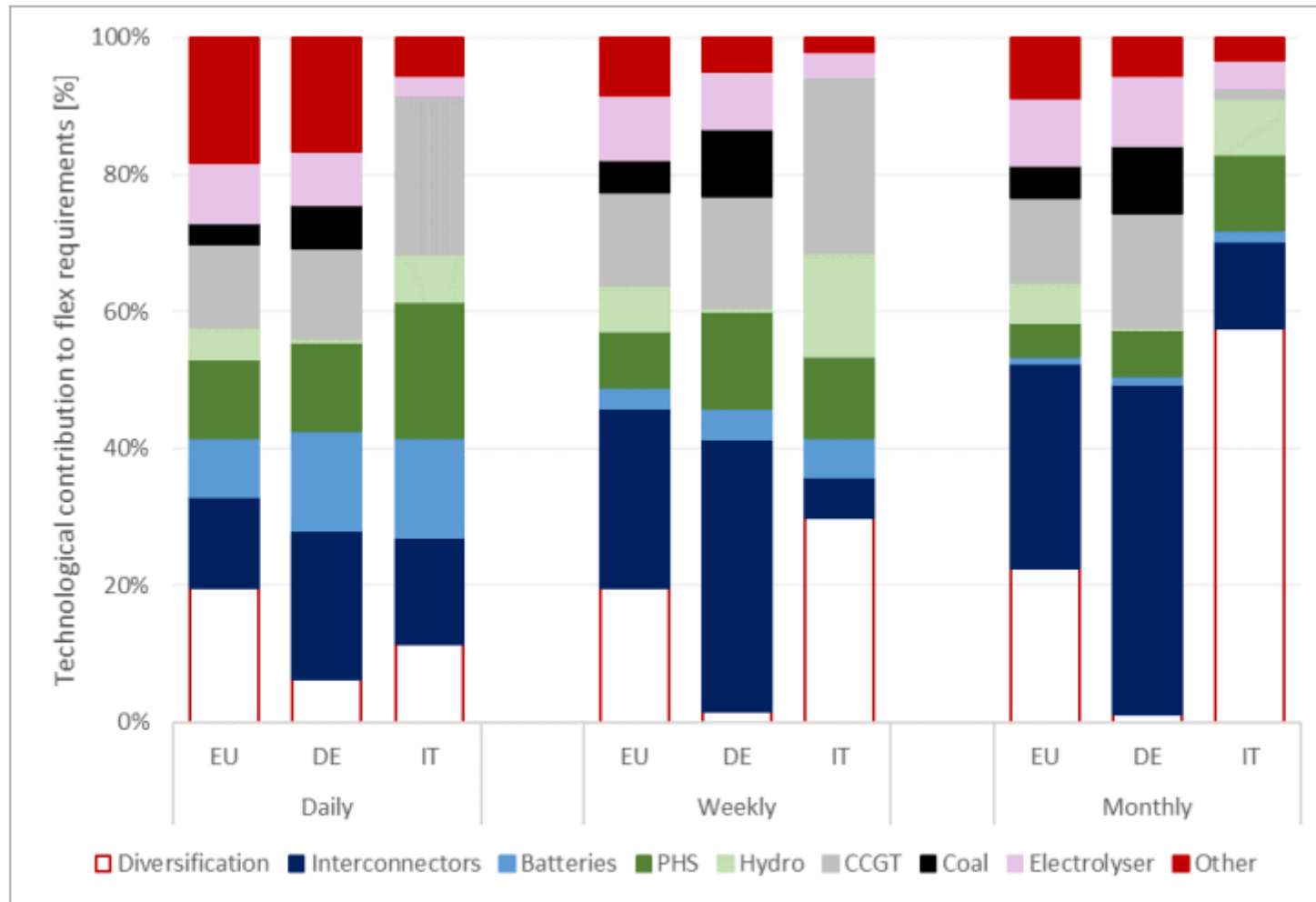


Figure 7. Technological contribution to flexibility requirements in the EU, Germany and Italy, 2030. Source: JRC Flexibility requirements and the role of storage in future European power systems, 2022.

Energy Storage in the Electricity Sector

Definition of energy storage (Directive of the European Parliament and the Council on common rules for the internal market for electricity, 2019):

“Energy storage’ means, in the electricity system, deferring the final use of electricity to a moment later than when it was generated, or the conversion of electrical energy into a form of energy which can be stored, the storing of such energy, and the subsequent reconversion of such energy into electrical energy or use as another energy carrier”.

The 2019 Electricity Directive and Regulation put in place a new framework for energy storage in the electricity system:

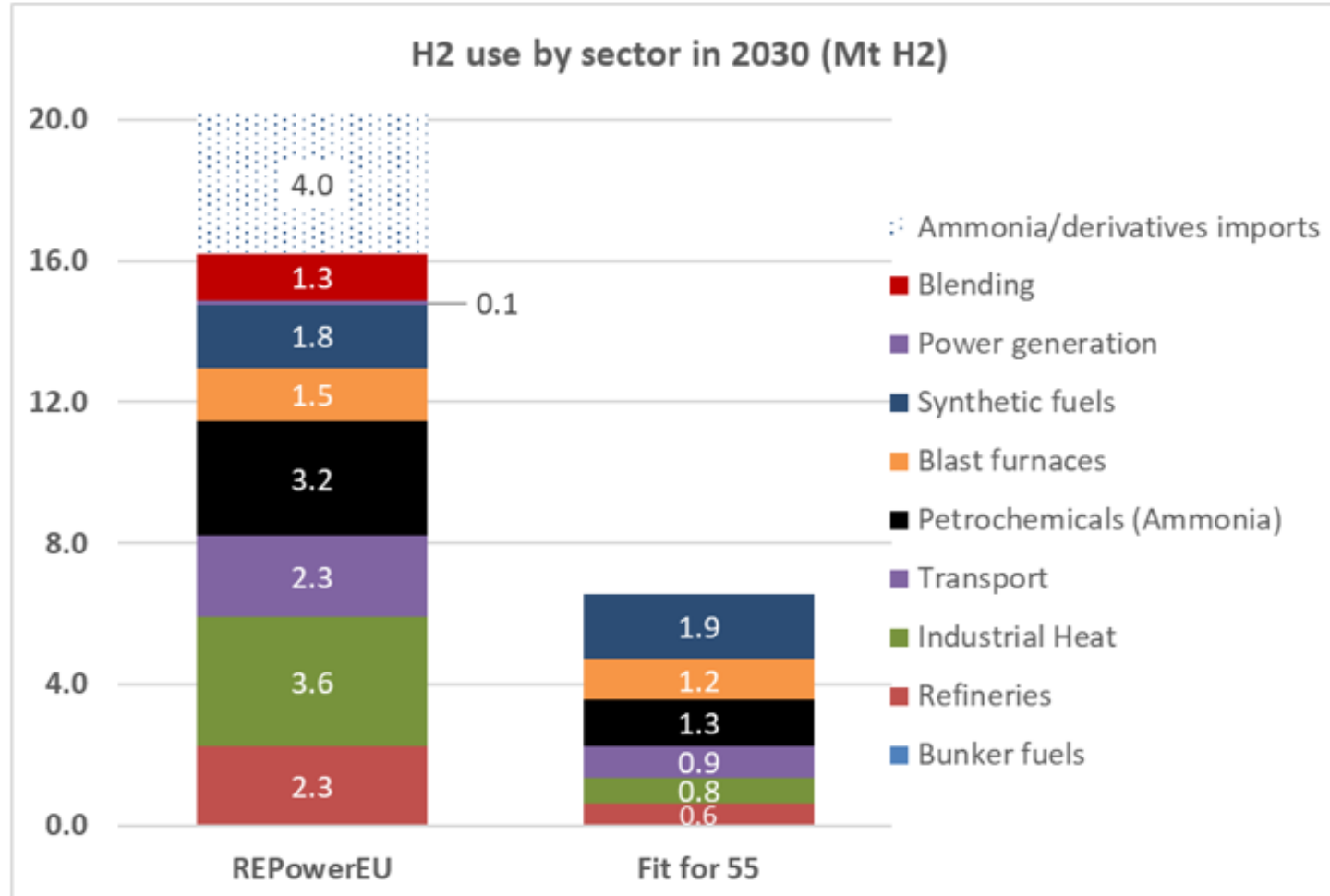
- Energy storage definition which accommodates the different storage technologies, including P-to-X solutions
 - Specific role of network operators
 - Participation of energy storage in the market and provision of flexibility services at a level playing field with other energy resources
-
- Currently – revision of the EU’s electricity market design; and (ii) the forthcoming EU network code on demand-side flexibility.
 - Storage is key for the coexistence of central and distributed power generation.

REPower EU 2022: The Hydrogen Accelerator

- **EU production:** 10 million tonnes (333 TWh)
- 80-100 GW electrolyzers
- Infrastructure, storage, terminals and ports
- 28-38 B€ pipelines + 6-11 B€ storage

- **Imports:** 10 million tonnes
- Three main import corridors
- Green Hydrogen Partnerships

Increase H2 demand



Source: Modelling using PRIMES

Net-Zero Industry Act

- Aims to strengthen the resilience and competitiveness of net-zero technologies by scaling up manufacturing of clean technologies in the EU.
- The 2030 goal for the EU's overall strategic net-zero technologies manufacturing capacity is to reach at least 40% of the EU's deployment needs.
- NZIA will facilitate investments in net-zero technology manufacturing projects. It will streamline the process for project promoters to establish net zero industrial manufacturing. Furthermore, it will improve market access in public procurement procedures by addressing key drivers of net-zero technology manufacturing investments.

EU funding

- **Recovery and Resilience Facility** is a temporary instrument that is the centrepiece of NextGenerationEU – the EU’s plan to emerge stronger and more resilient from the energy crisis.
- **ERDF, Cohesion Fund, Just Transition Fund** where hydrogen is among the eligible areas and **Smart Specialisation Platform**
- **Modernisation Fund** based on the ETS allowance revenue, that could also benefit the 10 MS
- **Connecting Europe Facility Energy** to support cross-border energy infrastructure projects
- On **Research and innovation**:
 - **Horizon Europe** (including **Clean Hydrogen Partnership** with a first call of EUR 300 million)
 - **EU ETS Innovation Fund** (supports the demonstration of innovative technologies and innovations in sectors such as renewables, and the **Hydrogen Bank**)

Thank you