

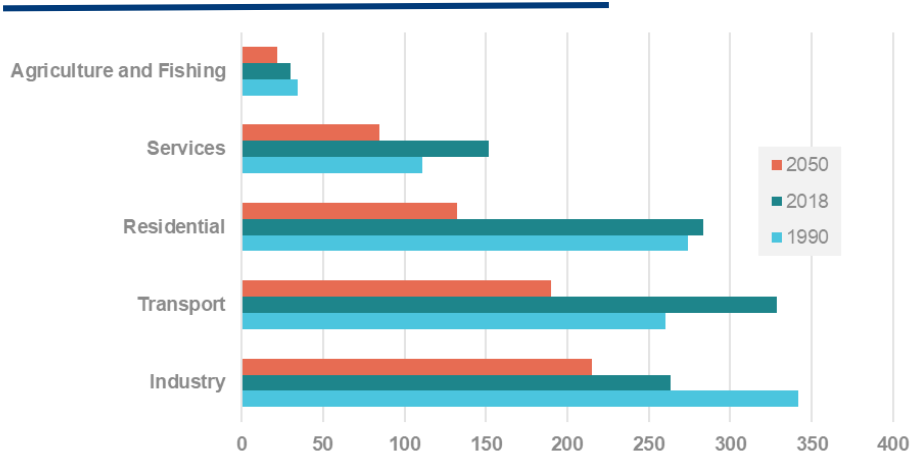


Energy System Integration & Hydrogen Strategies and Review of the Renewable Energy Directive

35th EU ELECTRICITY REGULATORY FORUM
7-8 December 2020

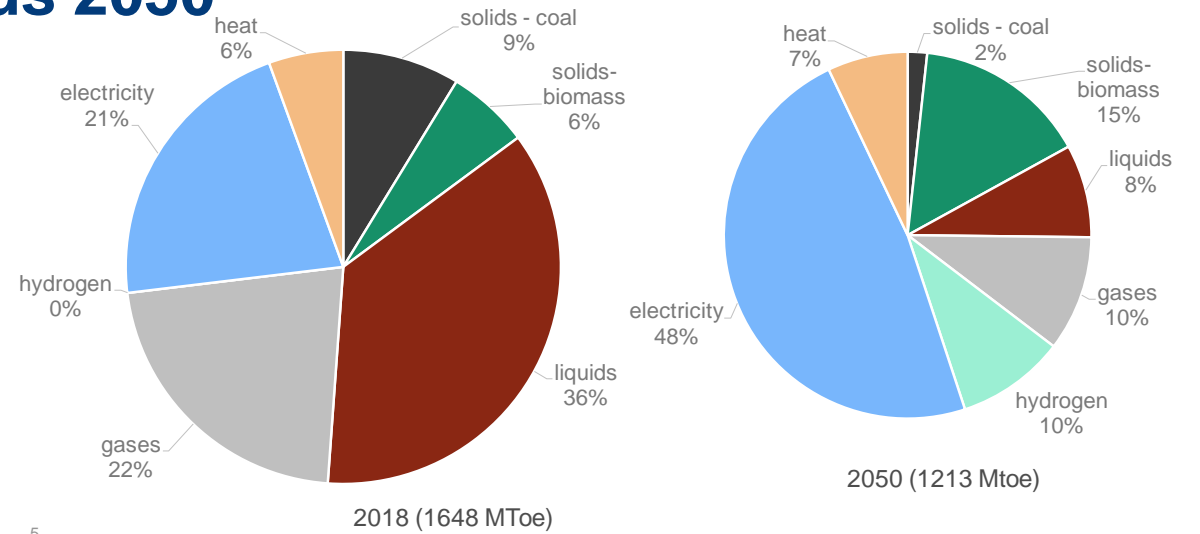
Antonio Lopez-Nicolas Baza
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Directorate-General for Energy

A changing energy landscape towards 2050



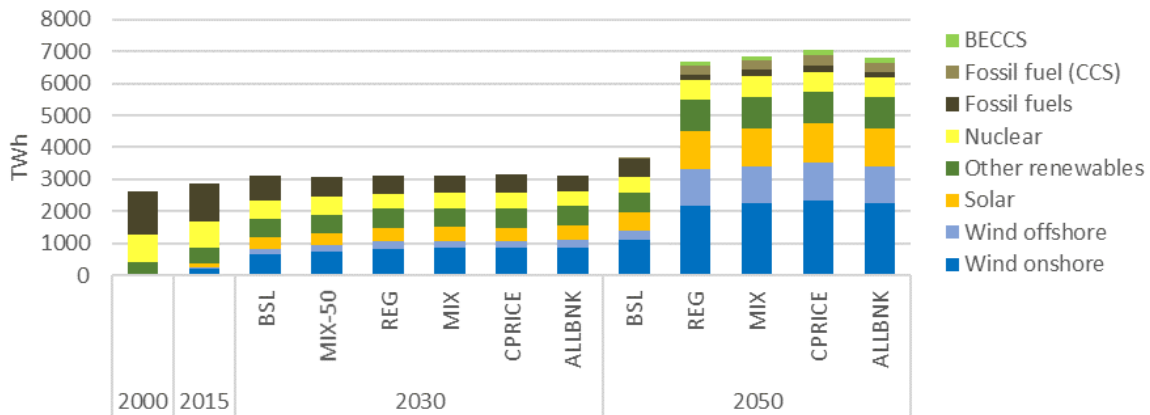
Source: Mtoe, based on EU28 Eurostat/LTS 1.5LIFE/TECH scenarios

(1) Changing demand



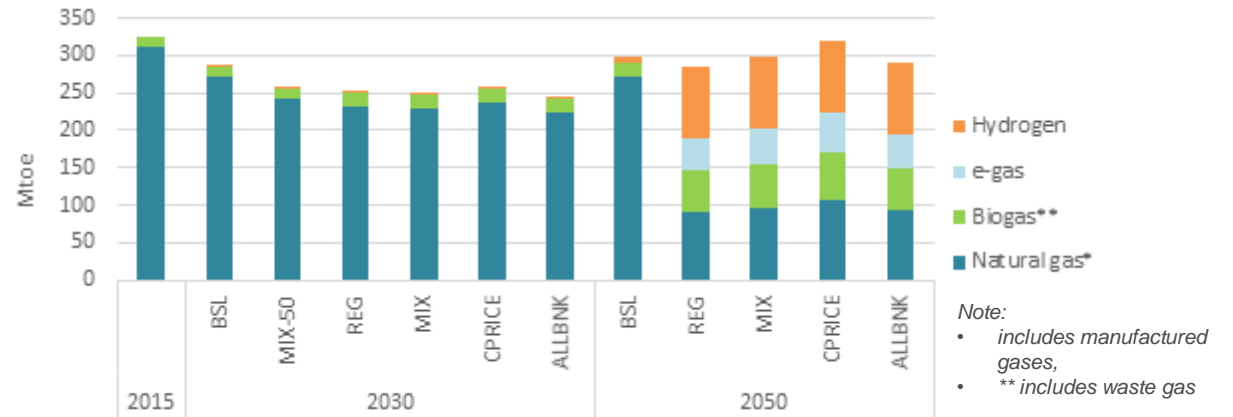
Source: Based on EU28 Eurostat/LTS 1.5LIFE/TECH scenarios

(2) Changing energy carriers



Source: 2015: Eurostat, 2030-2050: PRIMES model

(3) Massive increase RES-E

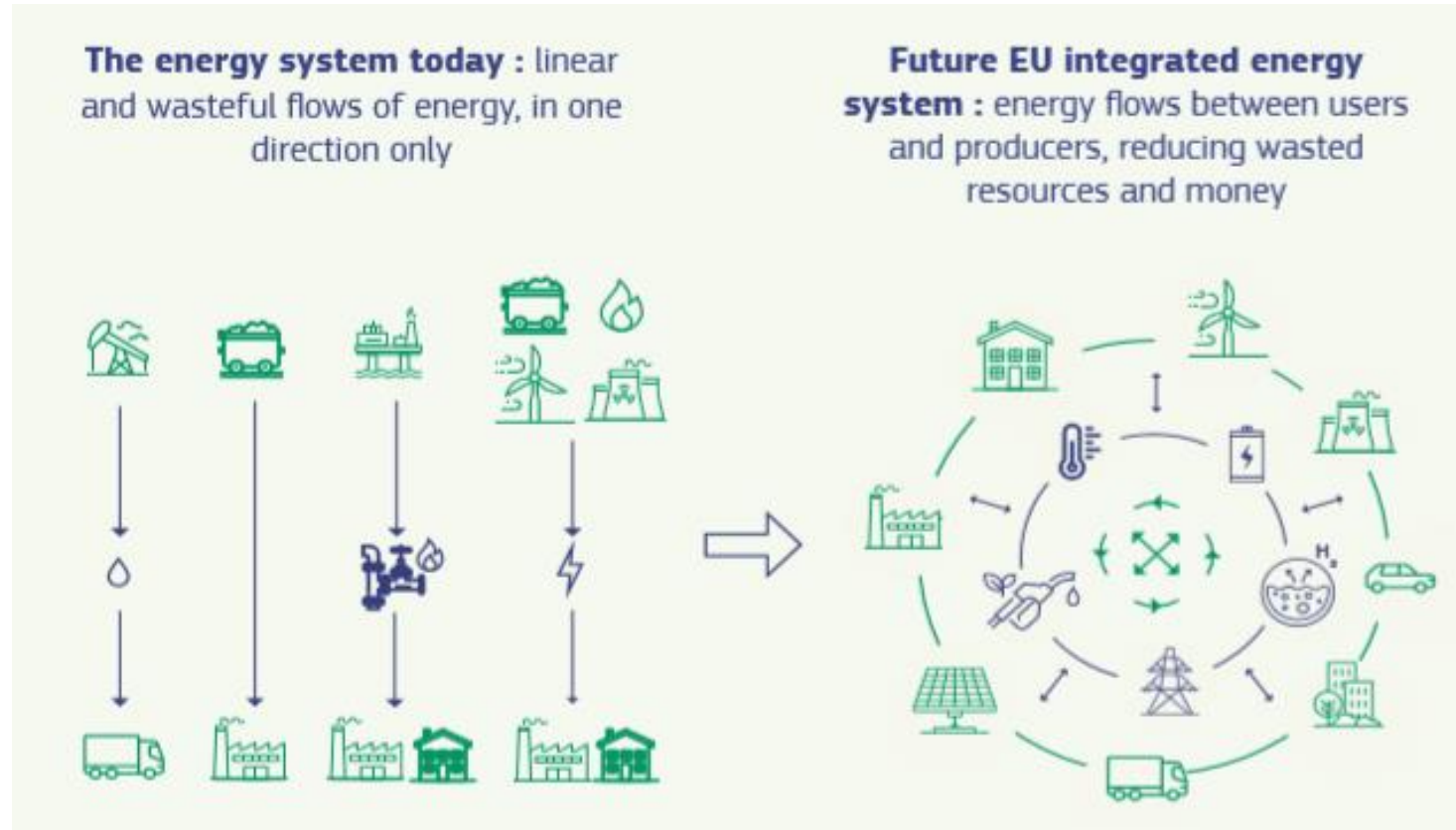


Source: 2015: Eurostat, 2030-2050: PRIMES model

(4) Renewable and low-carbon gases



Energy System Integration in a nutshell: why and what



Energy System Integration (ESI) is the integrated planning and operation of the energy system 'as a whole', across multiple carriers, infrastructures and consumption sectors

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

+

Clean Hydrogen Alliance

Making it happen – an action plan for Energy System Integration

Pillar	Actions oriented towards	Main tools involved (*)
A more circular and energy efficient energy system	<ul style="list-style-type: none"> Better apply EEF principle & PEF Build a more circular system 	RED, EED, TEN-E
A deep electrification of consumption, based on renewable electricity	<ul style="list-style-type: none"> Increased supply RES-E Faster electrification end-use sectors Roll out EV infrastructure & new loads integration 	RED, IED, AFID, TEN-E, TEN-T, CO2 emissions for cars, EU funding, offshore RES, Renovation wave, NC Flexibility
RES & low carbon fuels for hard-to-abate sectors (incl. hydrogen)	<ul style="list-style-type: none"> Promoting RES fuels from biomass Promoting RES hydrogen Enabling CCUS incl. for synthetic fuels 	RED, Aviation/Maritime initiatives, EU funding + Hydrogen Strategy Follow-up
Energy markets fit for decarbonisation & distributed resources	<ul style="list-style-type: none"> Creating a level playing field across carriers Review gas regulatory framework Improve customer information 	ETD, ETS, State Aid, gas legislation, guidance on non price components
A more integrated energy infrastructure	<ul style="list-style-type: none"> More integrated planning at gas, electricity, heat and hydrogen Better governance 	TEN-E, TEN-T, RED, EED, TYNDP
A digitalised energy system & supportive innovation framework	<ul style="list-style-type: none"> Ensure digitalisation support energy system integration Research and innovation as a key enabler 	Energy Digitalisation Action Plan, NC cybersecurity, impact oriented research outlook

(*) *Non-exhaustive list*

Hydrogen – key issues

Hydrogen:

- Feedstock, fuel, energy carrier / storage, many applications
- Does not emit CO₂, no air pollution
- Essential to reach our climate ambition (hard-to-abate sectors)
- Europe is highly competitive in clean hydrogen technologies manufacturing

Which hydrogen:

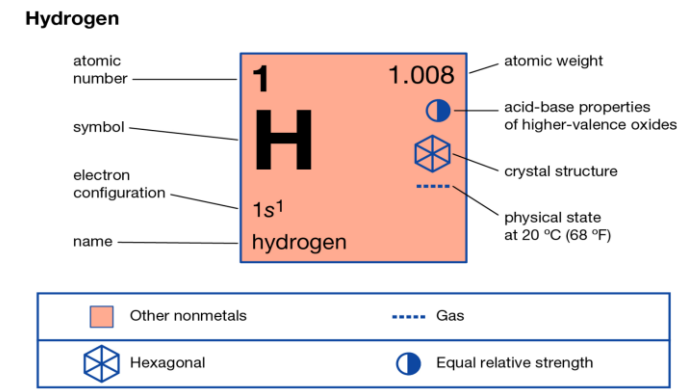
Currently: **fossil-based hydrogen**

Our vision: **Renewable (clean)**, and in a transitional period **low-carbon hydrogen** (fossil-based hydrogen with carbon capture and electricity based) for:

- Replacing existing hydrogen production
- **Industry** (fertilisers and green steel) and transport
(Local buses, parts of rail, heavy duty road vehicles; in the longer term: maritime and aviation)

Issues:

- **Cost-competitiveness**
- **Technological maturity (cost-effective electrolysers)**
- **Renewable energy & scale**



Making it happen – an action plan for the Hydrogen Strategy

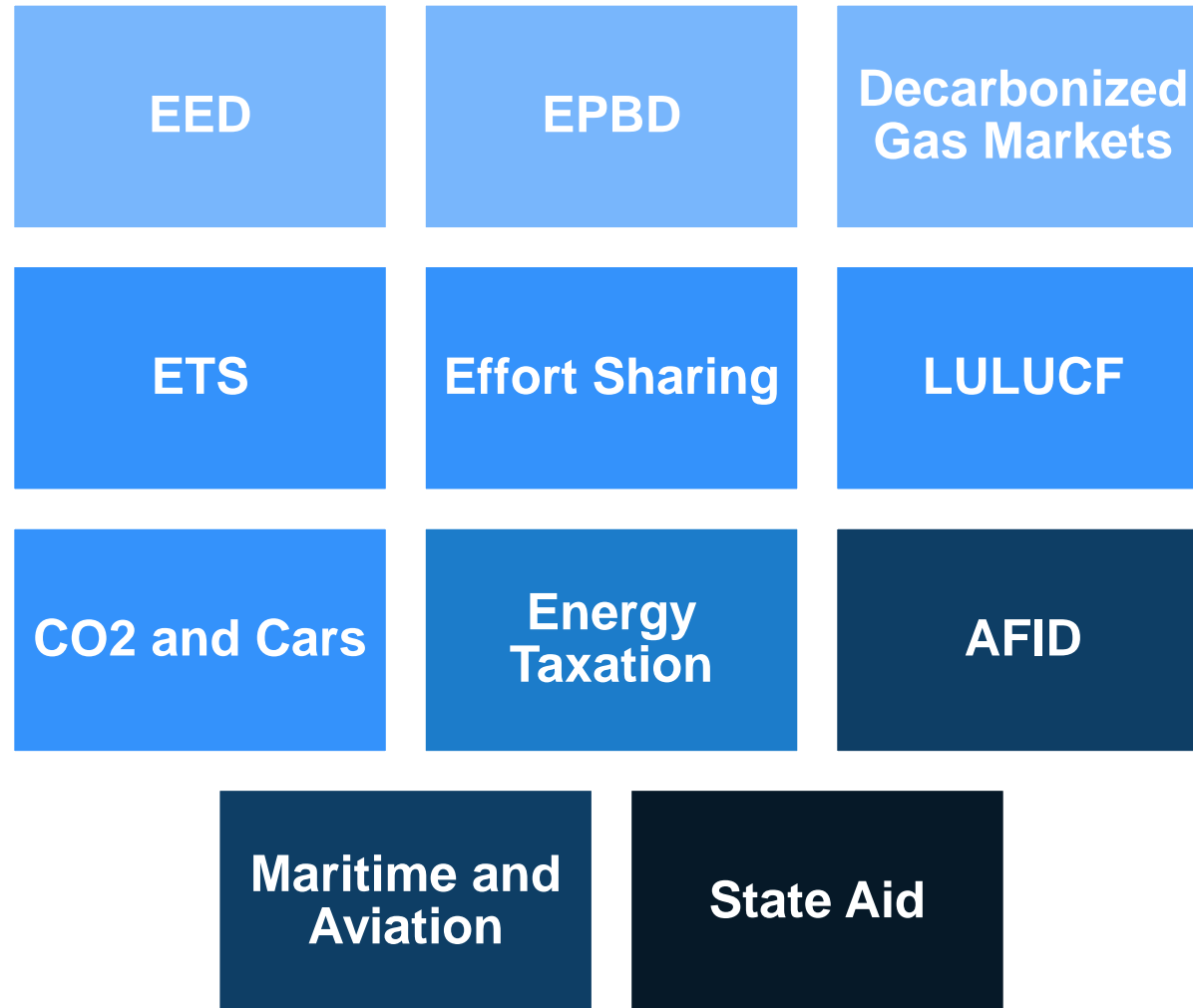
Full value chain approach,	Actions oriented towards	Main tools involved (*)
An investment agenda	<ul style="list-style-type: none"> • Create project pipeline • €220-340 bln renewable power, €24-42 bln electrolysers, €65 bln infrastructure 	Clean Hydrogen Alliance, InvestEU, IPCEI, State aid, Cohesion 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*

The policy context for the REDII review



REDII review main interactions with other key legislative reviews



The policy areas being looked at

Overall RES Targets

Energy system integration (incl RES and low-carbon fuels)
Transversal measures

Sector specific measures

H&C /
DHC

Buildings

Industry

Transport

Electricity

Bioenergy sustainability

Next steps

Open Public Consultation

- Published 17 November 2020 until 9 February 2021

Stakeholder virtual event

- Taking place on 11 December (full day)

Legislative proposal

- Planned in Q2 2021

Questions

Q1 – Which are key elements for the implementation of the Energy System Integration and Hydrogen Strategies?

Q2 - which are key issues for the review of REDII to contribute to the increased climate ambition and the energy system integration vision?



Thank you for your attention!

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