Powering a climate-neutral economy: an EU Energy System Integration Strategy

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<<Verso la decarbonizzazione dell'offerta e dei consumi finali europei>>

organizzato da Anigas ed Elettricitá Futura

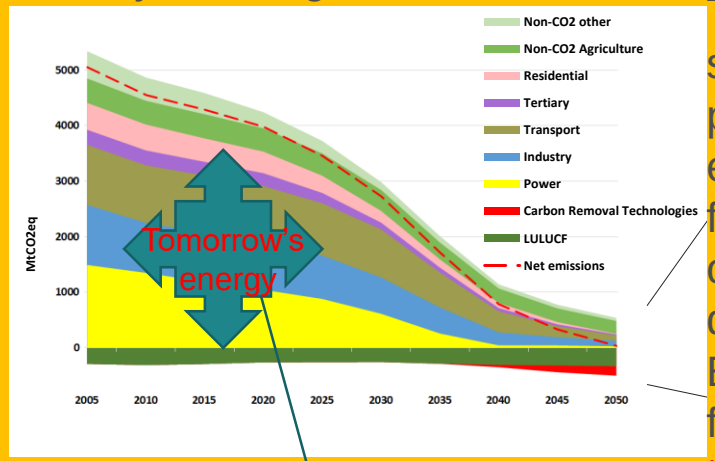
…the rationale rooted in the EGD → new role and tasks for ENERGY

We globally need to actively pursue – alongside natural sinks - a REDUCTION of the cumulated GHG level, namely the CO2 component by one or both the following pathways:

- **Capture** from the atmosphere part of the overall annual GHG emissions and confine them somewhere
- **Avoid** part of annual GHG emissions originated by human activities by avoiding to emit CO2

Based on existing and "visible" technologies, today one cannot rely on the Capturing policy because largely insufficient in volume with respect to the overall challenge

…therefore the AVOIDANCE policy is a NO REGRET OPTION if one must act NOW



Decarbonised energy INTEGRATES other sectors helping the overall decarb.

To revert from a stand alone problem to an extensive solution for other sectors of economy to decarbonize, ENERGY must go for a profound transformation IN ITSELF and spurring a profound transformation of many OTHER SECTORS of economy and society

Decarbonisation thus becomes the "conventional mitigation" policy

- Very Intense because it is applied to a part of the GHG emission problem
- Very Swift because the allowed carbon budget to stay in the Average Temperature Increase as per Paris Agreement is so tiny for few years
- EU cannot be left alone because it counts only for 8-9% of the global GHG problem but it can lead the overall process of decarbonisation
- Decarbonisation of EU economy and society will rely on and leverage the fact the PRODUCTION AND USAGE OF ENERGY accounts for 75% of GHG

…being 75% of the problem, ENERGY could be *magna pars* of the solution to the problem itself

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…how deep and how fast energy may decarbonize economy

Basically we know 3 modes to turn existing energy into tomorrow's decarbonized energy:

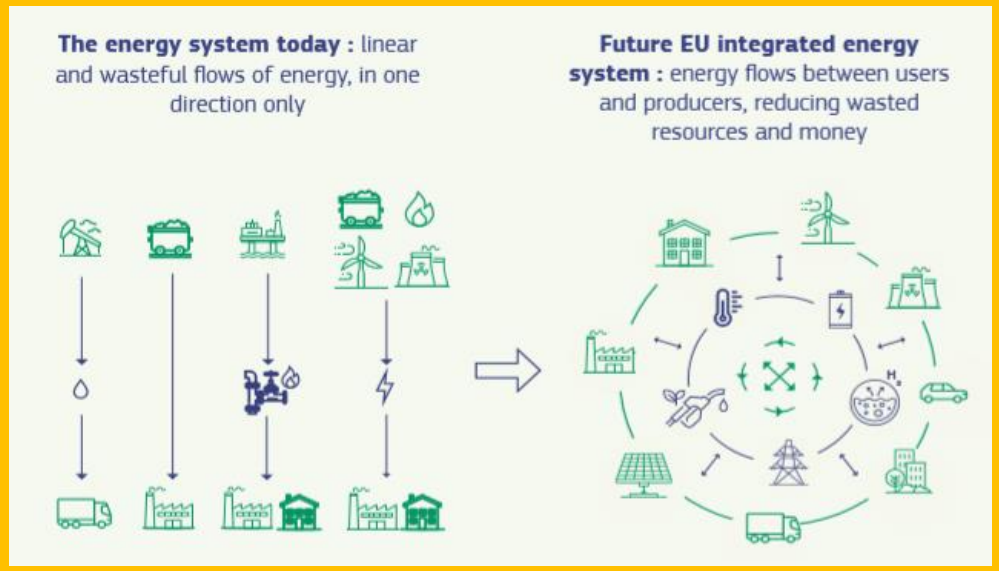
I. Reduce the quantity of final energy consumption to consequently reduce the carbon amount → ENERGY EFFICIENCY

II. Use carbon-free energy → RENEWABLE ENERGY SOURCES mainly linked to the electricity vector and bio-energies

III. Reduce the carbon footprint of the final energy consumption → DECARBONISATION (derating the carbon content).

Nevertheless the pace (how fast) and the scale (how deep) of the TRANSFORMATION (both about energy itself and extended to other energy-powered sectors of economy) DEPEND upon the **SYSTEMIC STRUCTURE** – so upon the relationships among components of the energy sector and the ability of energy to penetrate and decarbonize economy and society.

The SYSTEMIC STRUCTURE of the future decarbonized energy should be re-designed to make it happen.



RE-DESIGN SHOULD ENABLE THE SYSTEM TO SWITCH FROM SILOS TO A FULLY-BRIDGED LAYOUT
ALLOWING DECARBONIZATION TO SPREAD OVER AT THE MAXIMUM EXTENT
INFRASTRUCTURES AND MARKETS TO ENLARGE THEIR COVERAGE TO IMPROVE EFFICIENCY

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

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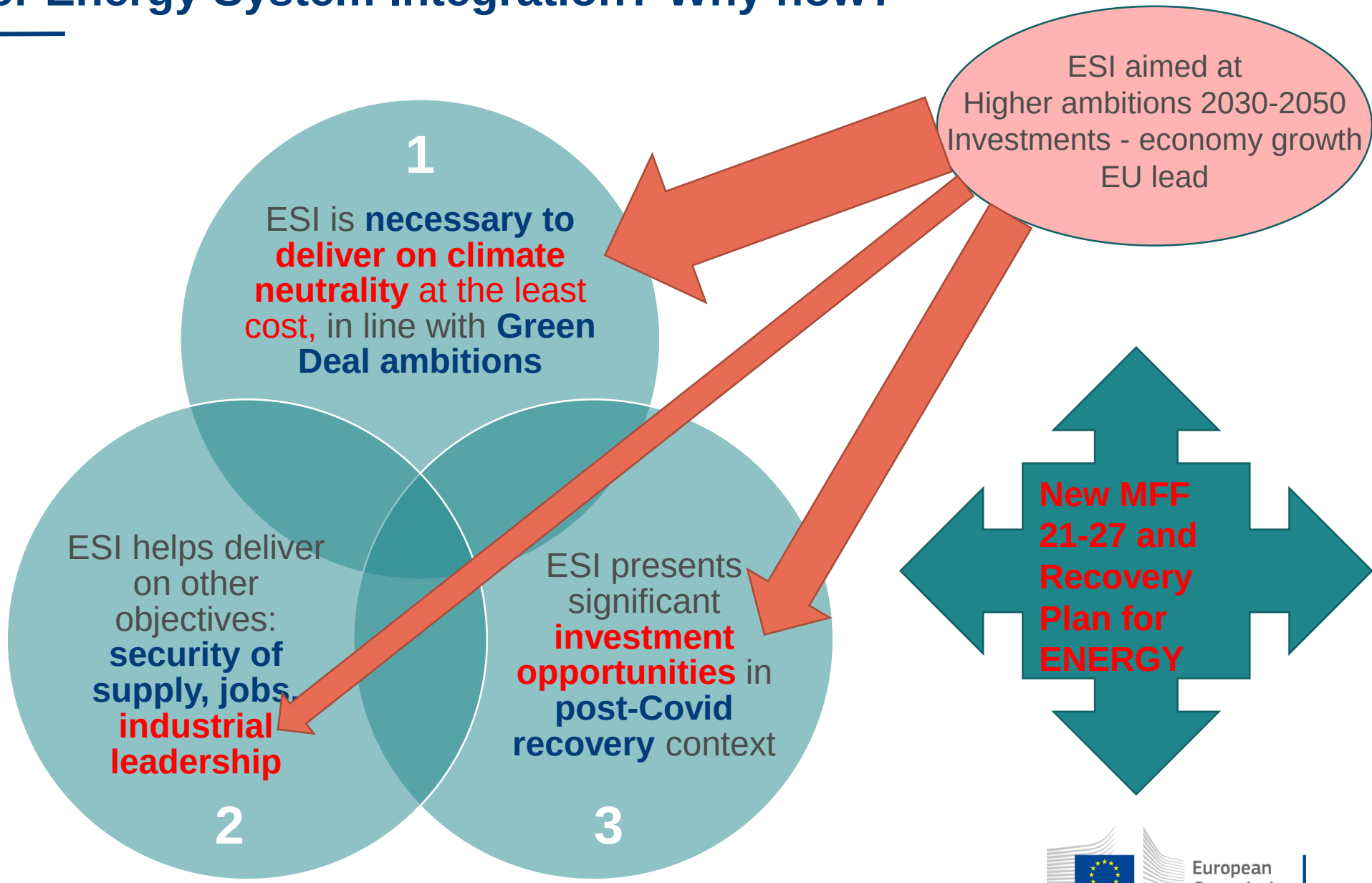
Why a Strategy for Energy System Integration? Why now?



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The Energy System Integration Strategy: the concept and relevant pillars

Re-sourcing the energy system

1. A more **circular and energy efficient** energy system
2. More **electrification** of consumption, based on renewables
3. **Renewable and low carbon fuels** (incl. hydrogen) in hard-to-abate sectors

+

Re-tooling the energy system

4. Making **energy markets fit for decarbonisation and distributed resources**
5. More **integrated energy infrastructures**
6. **Digitalised energy system and a supportive innovation framework**

Many key-actions have been proposed in ESI as a general menu to be decisively implemented by MSs

Making it happen –actions & instruments for Energy System Integration

Pillar	Actions oriented towards	Main instruments involved (*)
1. A more circular and energy efficient energy system	• Better apply EEF principle & PEF • Build a more circular system	RED, EED, TEN-E
2. A deep electrification of consumption, based on renewable electricity	• 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
3. RES & low carbon fuels for hard-to-abate sectors (incl. hydrogen)	• Promoting RES fuels from biomass • Promoting RES hydrogen • Enabling CCUS incl. for synthetic fuels	RED, Aviation/Maritime initiatives, EU funding + Hydrogen Strategy Follow-up
4. Energy markets fit for decarbonisation & distributed resources	• 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
5. A more integrated energy infrastructure	• More integrated planning at gas, electricity, heat and hydrogen • Better governance	TEN-E, TEN-T, RED, EED, TYNDP
6. A digitalised energy system & supportive innovation framework	• Ensure digitalisation support energy system integration • Research and innovation as a key enabler	Energy Digitalisation Action Plan, NC cybersecurity, impact oriented research outlook

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(*) Non-exhaustive list

Making it happen – 1

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

- *"To better apply the energy-efficiency-first principle:*
- Issue **guidance** to Member States on how to **make the energy-efficiency-first principle operational** across the energy system when implementing EU and national legislation.
- **Further promote** the energy-efficiency-first principle in all upcoming relevant methodologies
- Review the **Primary Energy Factor**

- *To build a more circular energy system:*
- Facilitate the **reuse of waste heat**
- Incentivise the **mobilisation of biological waste and residues from agriculture**, **food and forestry** sectors and support capacity-building for **rural circular energy"**

Making it happen – 2

More **electrification** of consumption, based on renewables

- *"To ensure continued growth in the supply of renewable electricity:*
- Through the Offshore Renewable Strategy and follow-up regulatory and financing actions, ensure the cost-effective planning and deployment of **offshore renewable electricity**
- Explore establishing minimum **mandatory green public procurement** (GPP) criteria and targets in relation to **renewable electricity**,
- Tackle remaining barriers to a **high level of renewable electricity supply** that matches the expected growth in demand in end-use sectors"

Making it happen – 2

More **electrification** of consumption, based on renewables

- *"To further accelerate the electrification of energy consumption:*
- As part of the **Renovation Wave** initiative, promote the further electrification of buildings' heating (in particular through heat pumps), the deployment of on-buildings renewable energy, and the roll-out of electric vehicle charging points
- Develop more specific measures for the use of **renewable electricity in transport**, as well as for **heating and cooling** in buildings and industry
- Finance pilot projects for the **electrification of low-temperature process heat in industrial sectors**
- Assess options to support the further decarbonisation of industrial processes
- Propose to revise **CO2 emission standards for cars and vans** to ensure a clear pathway from 2025 onwards towards zero-emission mobility"

Making it happen – 2

More **electrification** of consumption, based on renewables

- *"To accelerate the roll-out of electric vehicle infrastructure and ensure the integration of new loads:*
- Support the roll-out of **1 million charging points by 2025**, using available EU funding,
- Use the upcoming **revision of the Alternative Fuels Infrastructure Directive** to accelerate the roll-out of the alternative fuels infrastructure
- Take up corresponding requirements for charging and refuelling infrastructure in the **revision of the** Regulation for the Trans-European Transport network (**TEN-T)** and **TEN-E (Energy)** Regulations
- Develop a **Network Code on Demand Side Flexibility** to unlock the potential of electric vehicles, heat pumps and other electricity consumption to contribute to the flexibility of the energy system"

Making it happen – 3

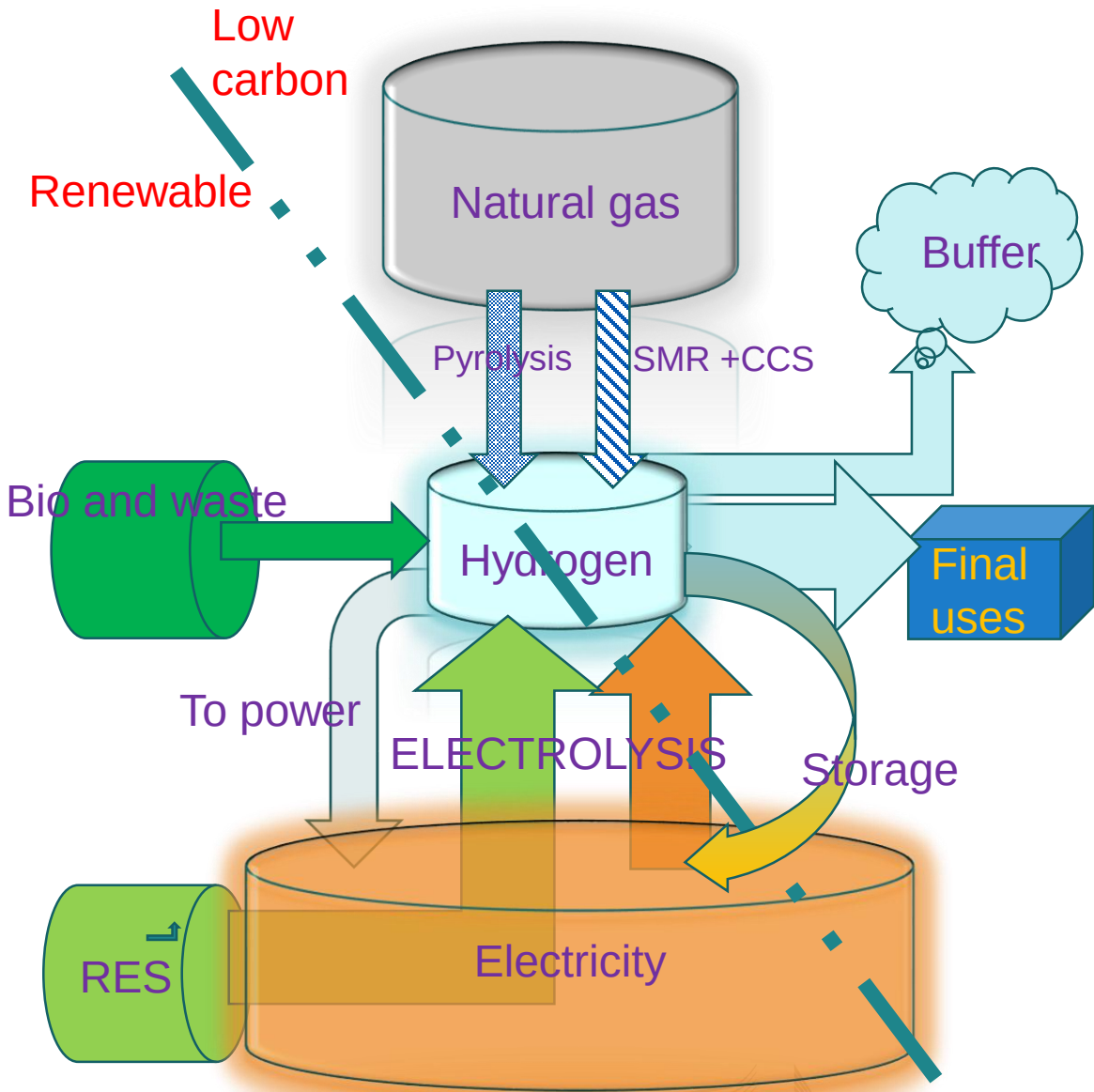
Renewable and low carbon fuels (incl. hydrogen) in hard-to-abate sectors

- Propose a **comprehensive terminology for all renewable and low-carbon fuels** and a **European system of certification** of such fuels, based notably on full life cycle greenhouse gas emission savings and sustainability criteria
- Consider **additional measures to support renewable and low-carbon fuels,** possibly through minimum shares or quotas in specific end-use sectors (including aviation and maritime), through the revision of the Renewable Energy Directive and building on its sectoral
- Promote the financing of **flagship projects** of **integrated, carbon-neutral industrial clusters** producing and consuming renewable and low-carbon fuels,
- Demonstrate and scale-up the **capture of carbon** for its use in the production of **synthetic fuels**
- Develop a regulatory framework for the **certification of carbon removals**"

Why Hydrogen

- “Hydrogen is enjoying a renewed and rapidly growing attention in Europe and around the world. Hydrogen can be used as a **feedstock**, a **fuel** or an **energy carrier** and **storage**, and has many possible applications across industry, transport, power and buildings sectors. Most importantly, it does not emit CO2 and almost no air pollution when used. It thus offers a solution to decarbonise industrial processes and economic sectors where reducing carbon emissions is both urgent and hard to achieve. All this makes hydrogen essential to support the EU’s commitment to reach carbon neutrality by 2050 and for the global effort to implement the Paris Agreement while working towards zero pollution” – COM(2020) 301 final

CLEAN HYDROGEN: THE MISSING LINK IN ESI



Hydrogen – an investment agenda

Next Generation EU, Invest EU, Cohesion Policy, CEF-E, CEF-T
ETS Innovation Fund, Horizon Europe *

Renewable electricity production

€220-340 BLN

Renewable hydrogen

€24-43 BLN

Hydrogen transport, distribution, and storage

€65 BLN

Transport (HDV)
€13 BLN

Steel

€8 BLN

European Clean Hydrogen Alliance

European Commission

* To be reviewed after EuCo 21st July 2020

Making it happen – 4

Making **energy markets fit for decarbonisation and distributed resources**

- *"To promote a level-playing field across all energy carriers:*
- **Issue guidance to Member States** to address the high charges and levies borne by electricity and to ensure the **consistency of non-energy price components across energy carriers**
- Align the taxation of energy products and electricity with EU environment and climate policies, and ensure a harmonised taxation of both storage and hydrogen production, avoiding double taxation, through the **revision of the Energy Taxation Directive**
- Provide more consistent carbon price signals across energy sectors and Member States, including through a **possible proposal for the extension of the ETS to new sectors**
- Further work towards the **phasing out of direct fossil fuel subsidies,** including in the context of review of the State aid framework and the revision of the Energy Taxation Directive
- Ensure that the revision of the **State aid framework** supports cost-effective decarbonisation of the economy where public support remains necessary"

Making it happen – 4

Making **energy markets fit for decarbonisation and distributed resources**

- *"To adapt the gas regulatory framework:*
- **Review the legislative framework to design a competitive decarbonised gas market,** fit for renewable gases, **including to empower gas customers** with enhanced information and rights.

- *To improve customer information:*
- In the context of the Climate Pact, launch a **consumer information campaign** on energy customer rights.
- **Improve information to customers on the sustainability of industrial products** (in particular steel, cement and chemicals) as part of the sustainable product policy initiative, and, as appropriate, through complementary legislative proposals. "

Making it happen – 5

More **integrated energy infrastructures**

- “Ensure that the **revisions of the TEN-E and TEN-T regulations** (in 2020 and 2021, respectively) fully support a more integrated energy system, including through greater synergies between the energy and transport infrastructure, as well as the need to achieve the 15% electricity interconnection target for 2030.
- **Review the scope and governance of the TYNDP** to ensure full consistency with the EU’s decarbonisation objectives and cross-sectoral infrastructure planning as part of the revision of the TEN-E Regulation and other relevant legislation
- Accelerate investment in **smart, highly-efficient, renewables-based district heating and cooling networks**, if appropriate by proposing stronger obligations through the revision of the Renewable Energy Directive and the Energy Efficiency Directive and the financing of flagship projects. “

Making it happen – 6

Digitalised energy system and a supportive innovation framework

- "Adopt a **Digitalisation of Energy Action plan** to develop a competitive market for digital energy services that ensures data privacy and sovereignty and supports investment in digital energy infrastructure
- Develop a Network Code on **cybersecurity in electricity** with sector-specific rules to increase the resilience and cybersecurity aspects of cross-border electricity flows, common minimum requirements, planning, monitoring, reporting and crisis management.
- Adopt the implementing acts on **interoperability** requirements and transparent procedures for access to data within the
- Publish a new **impact-oriented clean energy research and innovation outlook** for the EU to ensure research and innovation supports energy system integration"

CONCLUDING NOTES ON ENERGY SYSTEM INTEGRATION

"*Obviously, system integration will* ***not be a one-size-fits-all process****: despite a common objective of EU climate neutrality by 2050,* ***EU Member States have different starting points****. As such, Member States will follow different pathways, depending on their respective circumstances, endowments and policy choices, which are already reflected in the respective National Energy and Climate Plans (NECPs). This strategy offers a* ***compass*** *to direct these efforts in* ***the same direction.***"

"Commission intends to invite interested parties to debate in a **large dedicated public event** at the end of this year [2020] and to contribute to the **public consultations and impact assessments that will inform the preparation of the follow-up proposals envisaged for 2021 and beyond**."

Grazie per l’attenzione e… “buona riflessione” !

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