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EUROPEAN TECHNOLOGY AND INNOVATION PLATFORM
SMART NETWORKS FOR ENERGY TRANSITION

"R&D for flexible power generation: today's and tomorrow's challenges and pathways"

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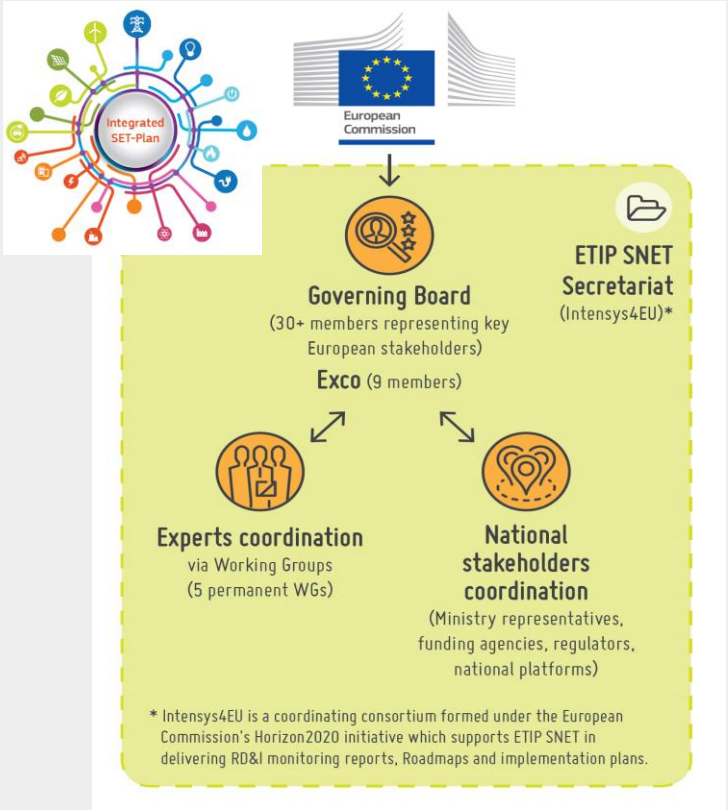
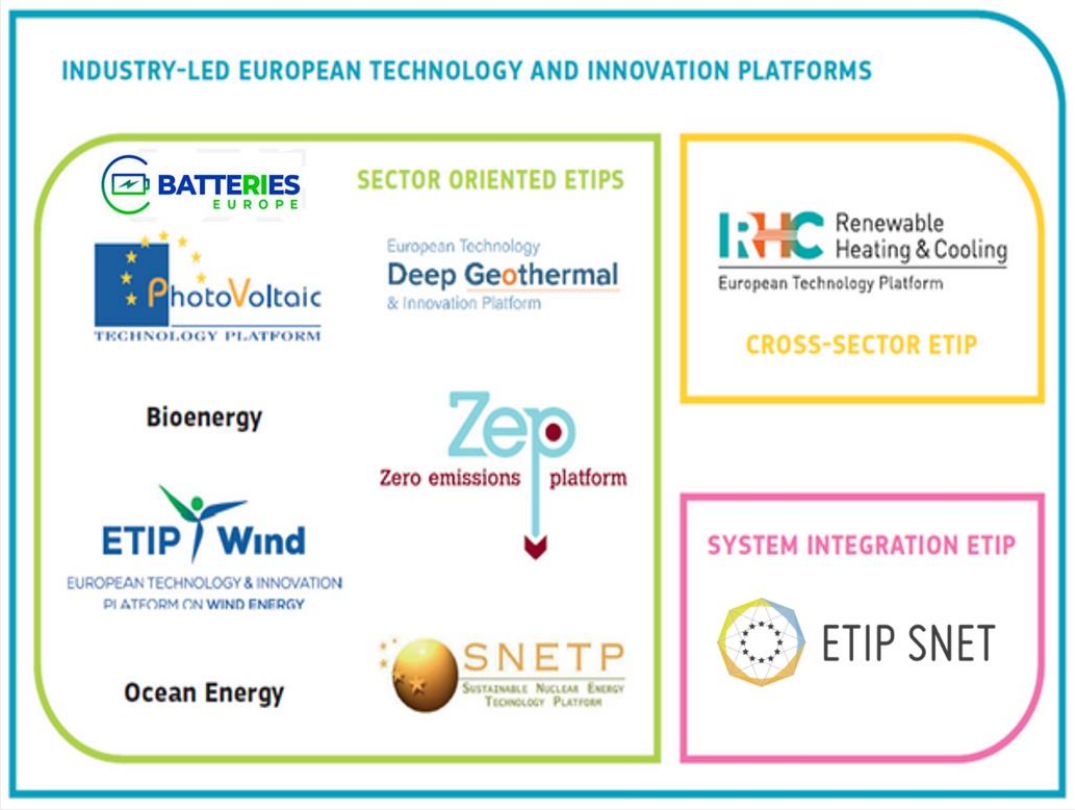
ETIP-SNET WG3 « Flexible Generation » Chair

ETN Webinar Series
April 20th, 11:30 – 13:00

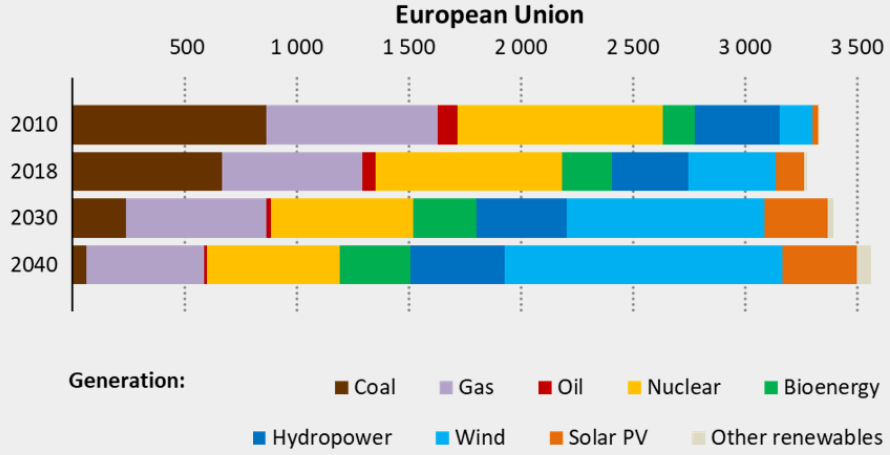
SET Plan & European Technology and Innovation Platforms

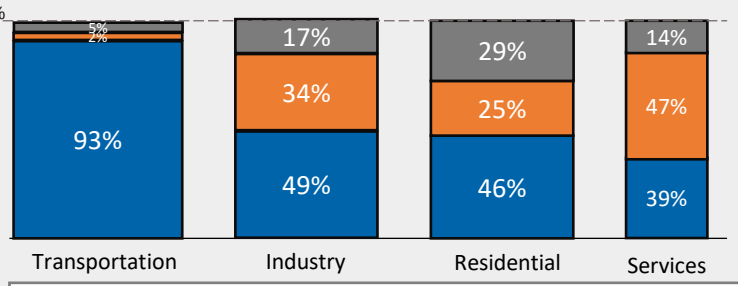




Electricity Generation Status and Outlook - EU

- A very extensive **electrification** in (nearly) all sectors of the energy system.
- An efficient **coupling** between the electricity system and other vectors to enhance flexibility at sustainable costs, enhancing the use of energy conversion and **storage** solutions
- **Decarbonization of power sector** → decarbonization all sectors
- **Substitution of fossil fuels** by synthetic fuels, biofuels and hydrogen in all sectors





Sector energy **consumption** share (EU27 2018 (Eurostat))

Fossil fuels | Electricity | Other (heat, non-renewable waste, renewable fuels,..)

Today only 25% of total energy consumption is in form of electricity

World Energy Outlook 2019; Figures for Stated Policy Scenario

The *Flexibility* concept for power plants

- **Operational Flexibility:** Significantly improved last decade for thermal/hydro plants
  - Reduced minimum loads of generators/turbines
  - Quick starting
  - Fast ramp rates
  - Black-start capability
  - Challenges: Material stress and wear due to cycling / efficiency of part-loading
- **Fuel Flexibility:** To be able to operate with different fuels or mixtures
  - Retrofitting of existing power generation / or new equipment
  - Challenge to include hydrogen and mixing of different fuels at various qualities (e.g. natural gas/hydrogen mix)

Public awareness

- **Pathway towards 2050:**

  - What is the role of thermal power and heat generation in 2050?
  - Blue Hydrogen, “ or can we produce enough „Green“ Hydrogen?
  - How can we achieve a common mind in all EU countries?
  - How can we raise more public awareness and acceptance for needed infrastructure?
  - How can policy contribute to accelerate the transition towards a decarbonized society?

Thank you for your attention!

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