Electricity for a carbon-free future

Electricity's Strategic Role in Leading Europe's Decarbonization

The energy of the future: benefits of electrification

The European Union has increased its **2030 climate ambition**, pushing the target to at least a 55% decrease in greenhouse gas emissions compared to 1990, in order to achieve **carbon neutrality by 2050**. We will need a vast expansion of renewables and a huge increase in the number of vehicles, products and processes that run on electricity to get there. **Electricity, powered by renewable energy, is the most efficient and cost-effective solution**: it is clean, cheap and high-performance.

There are many benefits to switching to electricity in our daily lives:

- **CLEAN UP THE ENERGY WE USE:** Electricity produced with an increasingly

- **TURN OUR HOME INTO A SMART HOME**: Electric appliances can be digitalized through smart technologies. New products and services are available to the customer and support its empowerment.
- **HEALTHIER, CLEANER AND MORE LIVEABLE CITIES**: Switching from the direct use of fossil fuels to electricity leads to better air quality by reducing the emissions of local pollutants.

e-Transport, e-Buildings, e-Industries: a roadmap to improve the quality of our lives

With dramatic cost reductions making wind and solar cheaper than fossil-fueled power generation in many regions, low-cost renewable electricity can replace the direct use of fossil fuels in the sectors causing most greenhouse gas emissions:

- **Transportation:** Electric vehicles are three to five times more efficient than internal combustion engine models.
- **Buildings:** Heat pumps use four times less energy than oil or gas boilers.
- **Industry:** Energy intensity significantly decreases thanks to the electrification of industrial processes.

Electrification of final uses calls for clean technologies in power generation, notably increased wind and solar capacity, which need infrastructure digitalization as a crucial enabling factor. This transition towards clean electricity as the main source of energy can be combined with "indirect" electrification in some industrial applications, maritime shipping and aviation – where direct electrification is still not a feasible solution. In these areas, **green hydrogen and e-fuels obtained via electrolysis are the most suitable options to reduce emissions.**

How to accelerate the electrification pathways: policy actions and recommendations

that **reduces the tax burden on electricity** and **eliminates fossil fuel subsidies,** together with a policy framework that provides **easier procedures for the deployment of renewables**, supports **network modernization and digitalization** to enable the energy transition, and attracts **investments** in both **charging infrastructure** and the **efficient renovation of buildings.**