

Decarbonisation and competitiveness: adopting an Electrification Act for Europe

A shared vision across Europe and beyond

Electricity is now recognised by the International Energy Agency and the European institutions as the energy that can make the fastest and most significant contribution to achieving carbon neutrality. There are three explanations for this:

- Electricity can be produced in large quantities from low-carbon sources (solar, wind, nuclear, hydro, biomass, etc.);
- Electricity can be used almost universally and usually generates energy efficiency gains (heat pumps, electric vehicles, etc.);
- Electricity is the foundation for the development of new industries and new economic activities (digital industries, artificial intelligence, hydrogen, new synthetic fuels, etc.).

In its report *Net Zero by 2050*, the International Energy Agency (IEA) concluded that electricity production should be totally decarbonised worldwide by 2050 and that electricity consumption should increase from 20% in 2020 to 53% in 2050, in order to limit global warming to 1.5°C, in line with the Paris Agreement.

The European Union has published a number of communications and strategies about electrification. In November 2023, the European Commission published the EU Action Plan for Grids which highlights the need to develop and strengthen networks in order to electrify Europe and meet our climate objectives. In February 2024, the Commission stated, in its communication on Europe's climate objective for 2040, that the share of electricity in the final energy consumption should double from 25% today to around 50% in 2040.

The conclusions of the European Council of 27 June 2024 confirmed this analysis and stated that the development of the Energy Union and the supply of low-carbon energy will require ambitious electrification efforts and investments in the grid. The political guidelines presented by President Ursula von der Leyen follow the same lines. **As a result, it was announced in the mission statement of the Energy Commissioner that an EU Electrification Action Plan would be published.**

These guidelines must now be confirmed and implemented. With the worsening climate crisis and the consequences of the war in Ukraine the 'second electricity revolution' is all the more necessary but has not started yet.



In Europe, fossil fuels continue to cover a large majority of final energy needs. In 2021, 65.1% of the energy consumed by Europeans came from fossil fuels. **The share of electricity in the final energy consumption continues to stagnate at around 23%, which is less than half the 2050 target, and lags behind the 31% to 35% target that should be met by 2030 to meet our climate targets.**

Meeting these electrification objectives depends on the rapid implementation of a comprehensive programme covering the entire electricity sector: production, transport, distribution and uses.

In the context of the ambitious action plan for electrification announced in the Commissioner for Energy and Housing's mission statement, EdEn would like to present the following recommendations.

The European Commission's future action plan on electrification should take the form of an 'Electrification Act'. This Electrification Act should notably:

- Set European electrification targets to be achieved by 2030, 2040 and 2050.
- Suggest an electrification indicator to include in Member States' National Energy and Climate Plans (NECPs).
- List the measures to achieve the electrification targets, specifying priorities for each of them.

Generating more low-carbon electricity: the cornerstone of electrification

The first requirement to achieve a stronger electrification is to succeed in mass-producing low-carbon electricity at a competitive price, whilst respecting environmental standards.

A low-carbon electricity system is necessary to decarbonise the buildings sector and the industry, both existing



industrial sites and the new sites that are to be developed as part of the Union's reindustrialisation. It is also a prerequisite for the deployment of low-carbon mobility and for the production of new synthetic fuels, which will require substantial amounts of low-carbon electricity. All countries in Europe will need more and more electricity, and any surpluses in one country will find outlets in another thanks to the electricity market and the interconnections.

Re-establishing a strong position in Europe in the field of electricity production is a key factor to ensure the Union's sovereignty and competitiveness.

The Electrification Act should include provisions aiming to foster low-carbon electricity production notably by:

- Identifying financial solutions to accelerate the deployment of low-carbon electricity production capacities, taking into account new electricity needs, in particular those linked to the production of synthetic fuels for the decarbonisation of the aviation and maritime sectors.
- Treating all low-carbon electricity forms – renewables including hydraulics and nuclear – on an equal footing, both in EU strategies and in legislative and regulatory texts.
- Supporting the development of low-carbon innovative technologies (in particular high-efficiency photovoltaics coupled with storage capacities, small modular reactors, nuclear fourth generation).
- Supporting the development of flexibility solutions to better use intermittent and less predictable electricity production, notably through associating them to the development of new storage solutions.





Investing in Europe's electricity grid: a strategic investment for the future

The development of electricity production must be coupled with the deployment and reinforcement of electricity networks. An annual investment of € 55 to 67 billion – twice the current level – is needed in the EU to set up a distribution network in line with our 2050 goals¹. Electricity grid operators have to face a number of challenges:

- Structuring and reinforcing the network in order to meet growing demand and even anticipate the needs of new consumers
- Anticipating the needs of future industrial hubs and developing the necessary infrastructure;
- Ensuring interconnections between European countries to take advantage of synergies between networks and make the European electricity system even more robust and more resilient;
- Adapting to the widespread use of bidirectional energy flows between producers and consumers and between electric vehicle batteries and the grid;
- Supporting the development of domestic power system manufacturing capacities and of reliable supply-chains of raw materials and key components;
- Adapting to climate change, thereby strengthening the resilience of network infrastructure, which is vulnerable to extreme weather events.

The Electrification Act should include provisions aiming to support the development of the grid, notably by:

- Planning the long-term development of the grid in order to effectively anticipate needs.
- Planning the necessary adaptation of electrical networks to climate change.
- Encouraging the standardisation of equipment (transformers, cables, etc.) so that it meets harmonised standards at European level, thereby contributing to the interoperability, robustness and resilience of the European electricity grid.
- Updating the energy aspect of the Connecting Europe Facility (CEF), which currently does not sufficiently and appropriately support distribution networks in an increasingly decentralised electricity system.
- Developing new financing mechanisms to adapt the grid: pension funds, taxes, setting up a dedicated European fund, green bonds, common debt, State aids.
- Making it possible for grid operators to facilitate the deployment of industrial sites by anticipating infrastructure requirements.
- Developing the grid digitisation to increase its capacity and flexibility.
- Promoting electrical energy management systems in all sectors.

Developing flexibility and storage technologies and capacities

With the development of intermittent energies and of new energy uses generating increased stress on the electricity grid, flexibility solutions are key to ensure the continuous balance between electricity supply and demand.

Alongside demand management, electricity storage will play a growing role on various levels but it is currently left to the market, which leads to a sub-optimal deployment of storage projects.

The Electrification Act should include provisions aiming to support the development of flexibility and storage solutions, notably by:

- Developing and promoting flexibilities to adapt to new consumer behaviours and to optimise investments.
- Inviting grid operators to draw up a coordinated multiannual programme for the development of demand flexibility and of storage capacities via batteries and pumped-storage hydropower (PSH).
- Allowing network operators to inform potential investors early of the areas where the risk of grid congestion is strong and of the status and size of storage capacity requirements in these areas.
- Raising awareness of stakeholders on the role of electrical storage, particularly battery and hydraulic storage, until new technologies become available and provide low-carbon electricity on-demand.
- Extending the rights of grid operators to develop and operate storage systems.
- Supporting pilot operations to develop new solutions.





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A stable and competitive electricity price that would not hinder investments in electricity infrastructure and projects

The desired reduction in electricity prices in Europe must not be achieved at the expense of investment capacity in electricity infrastructure and projects.

The Electrification Act should include provisions aiming at bringing electricity prices to an adequate level, notably by:

- Completing the electricity market revision in Europe to ensure better visibility and stability of electricity prices.
- Stimulating investments in the European electricity system through de-risking mechanisms and by ensuring minimum level of profitability, notably for warranted power output.
- Ensuring that low-carbon electricity production is valued at the legitimate price according to its economic net value at the time it is produced and that incentives are preferably targeted towards dispatchable energy sources.
- Encouraging the transition from an energy only system (i.e. mainly based on kWh consumed or produced) to a system more broadly relying on power demand.
- Revising the Energy Taxation Directive to ensure an adequate level playing field between low-carbon energies and fossil fuels.

Electrifying energy uses through increased support towards energy-efficient electric solutions

With energy efficiency, electrifying uses is a key lever to achieve GHG emission reductions, move away from fossil energy sources and improve the Union's energy autonomy.

Promoting electrification will require cross-sectoral policies as well as sectoral measures taking into account the new electric solutions that have emerged. These sectoral measures should tackle the regulatory obstacles and the need for high up-front capital that slow down the development of electric solutions.

The Electrification Act should include the following provisions to support the development of electric solutions:

Cross-sectoral measures:

- Expanding awareness-raising and educational initiatives aimed at the efficient use of electricity.
- Adopting a fiscal policy that solidifies the priority given to low-carbon electricity over fossil energy sources.

Residential and non-residential building sectors:

- Removing the regulatory barriers to the deployment of electric solutions in housing (notably by updating or deleting the Primary Energy Factor in the EPBD).
- Strengthening the EPBD provisions encouraging Member States to phase out fossil fuel boilers in the EPBD by 2040.
- Proposing an action plan for heat pumps aiming to:
 - Take into account the new requirements resulting from the F-Gas regulation.
 - Improve the efficiency and suitability of heat pumps for industrial applications and collective residential buildings.
 - Bridge the price gap between heat pumps and fossil fuel solutions.

Transport sector:

Proposing financing solutions for the development of electric mobility by:

- Reintegrating charging infrastructure for light vehicles into the scope of the CEF.
- Keeping heavy vehicles within the scope of the CEF (whereas it is currently planned to exclude them).
- Redirecting parts of the revenue from the ETS2 towards funding the deployment of charging stations and towards electric or hybrid aircraft.
- Ensuring a level-playing field between low-carbon e-fuels and renewable e-fuels in the allocation of allowances for the use of eligible aviation fuels.

Industry:

- Proposing a dedicated programme to electrify industrial heat.
- Compensate the price difference between fossil energy sources and electricity via CAPEX or OPEX support mechanisms for the development of mature or breakthrough electricity technologies.
- Proposing a support programme for the electrification of the industry by creating a European electrification bank that would mirror the European Hydrogen Bank and notably contribute to derisking investments.
- Prioritising, in the European industrial strategy, the deployment of industrial projects for electrical equipment and appliances (heat pumps, efficient electric radiators, batteries, etc.) as these solutions both contribute to the decarbonisation objective and the strategic autonomy objective.
- In the wake of the RefuelEU Aviation regulation, developing a European industrial strategy for the production of competitive synthetic fuels, so as to improve European energy sovereignty.

A clear political message and concrete political action

In conclusion, electrification must be clearly identified as a priority at the highest level of European and national political agendas. It will then be key to move on to concrete legislative action and to adopt appropriate incentives to drive electrification throughout all sectors.

This strategy must no longer be limited to the promotion of energy efficiency on the one hand, and on renewable energies on the other. Electrification meets all the requirements for decarbonisation and strategic autonomy and it paves the way for a modern, competitive and clean industry. The Electrification Act should tackle the whole electricity value-chain – production, transport, distribution and uses –, strengthen the EU's electricity system and thus contribute to European strategic autonomy.