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ENEL – THE EUROPEAN HOUSE - AMBROSETTI STUDY, ELECTRICITY AS THE ENERGY VECTOR OF THE FUTURE. A FLYWHEEL OF SUSTAINABILITY, RESILIENCE AND ECONOMIC DEVELOPMENT FOR ITALY

- *The analyses and recommendations of the **Electrify 2030** study, produced in collaboration with **Enel**, were presented at **The European House - Ambrosetti Forum**. The study identifies electricity as the energy vector of the future, as an enabler of sustainability, resilience and economic development and because of its key role in reducing CO₂ emissions and the overall impact of human activities on the environment.*
- *Italy's current level of electrification, expressed as a percentage of total energy consumption met by electricity, is equal to 21%, with the potential to reach between 24% and 30% by 2030. The sectors with the greatest growth potential are transport, building and industry.*
- *The overall value chain of electric mobility in Italy offers significant scope for growth in turnover, employment and skills, with its current 420 billion euro turnover projected to grow between **102.4** and **456** billion euros by 2030.*
- *Potential turnover from building and industry amounts to approx. **80** billion euros. Specifically, six promising technologies are identified: **heat pumps, LED lamps, electrochemical storage systems, electric drive, power electronics, and energy management systems**, which, overall, are able to generate between **135** and **326.5** billion euros by 2030.*

Cernobbio, September 7th, 2018 – Electricity represents the energy vector of the future, as an enabler of sustainability, resilience and economic development for Italy. Its importance lies not only in the decisive role it plays in reducing CO₂ emissions and mitigating the overall impact of human activities on the environment, but also in its ability to act as a flywheel of innovation, industrial efficiency and the creation of new employment.

These conclusions emerge from the **Electrify 2030** study, produced by **The European House - Ambrosetti**, in collaboration with **Enel** and revealed today - as part of the Forum - at a press conference with the participation of: **Valerio De Molli**, Chief Executive Officer of The European House - Ambrosetti, **Raffaele Tiscar** and **Francesco Profumo**, members of the study's scientific committee, **Francesco Starace**, Chief Executive Officer of Enel, **Francesco Venturini**, head of Enel X, and **Fatih Birol**, Executive Director of the International Energy Agency. The event was also attended by Enel Chairman, **Patrizia Grieco**.

*“The energy sector is currently in the midst of profound change, influenced by technological progress which is revolutionising the way we produce, distribute and consume energy,” commented Enel CEO **Francesco Starace**. “The first spin-off of the drop in the costs of renewable energy technologies is the reduction in the price of electricity, with increasingly sustainable and low-cost electricity destined to become the main energy source for end users. Given increasingly cleaner generation, the gradual penetration of electricity will enable us not only to decarbonise the most polluting sectors of the economy, but also to best utilise the resources at our disposal.”*

*“The latest data on climate change and greenhouse gas emissions in the world show that the traditional energy paradigm, based on the production of energy from fossil sources alone, is no longer feasible. Against this backdrop, electricity has the potential to become the energy vector of the future,” said **Valerio De Molli**, Managing Partner & CEO of The European House - Ambrosetti. “Electrification represents above all an unprecedented industrial opportunity, with the activation of new industrial value chains, the creation of new jobs and the promotion of investment. Our consultants have estimated that electric mobility as a whole could activate cumulative turnover of between 102.4 billion and 456.6 billion euros by 2030 in Italy. With regard to electrification technologies, our simulations forecast that the adoption of electrical technologies could generate total turnover ranging from a minimum of 135 billion euros to a maximum of 326.5 billion euros for Italy by 2030.”*

The study was carried out by **Enel X** and **Enel Foundation**. Acting as a scientific partner, the latter contributed to the definition of the scenarios and operating recommendations for more widespread use of the electric vector. The analysis begins with the data on greenhouse gas emissions, which at the global level have increased constantly, reaching 58,710 million tons of CO₂ in 2016, an increase of 62% compared with 1990. The response to such a scenario, which requires an acceleration of the decarbonisation process as a priority on the world agenda, must be sought in electricity. The study sets out at least five reasons: first and foremost, electricity, if generated by a balanced mix of technologies with a significant share of renewables, allows for the reduction of CO₂ emissions. In addition, it enhances the resilience of the energy system; promotes greater energy efficiency; integrates easily with digitalisation, facilitating better management of consumption; and, finally, stimulates innovation and the sustainability of lifestyles and industrial processes, ensuring better products.

The study emphasises that this evolution is under way, but the process must be strengthened. Between 1990 and 2016, the electrification of consumption increased in Europe (from 17% to 22%) and in Italy (from 17% to 21%). Many scenarios point to potential additional gains by 2030, represented by an increase of between 3 and 9 percentage points both for Europe and Italy. At the national level, the largest growth by comparison is expected in the transport sector, with growth projections from the current 2% to between 5% and 8%. A considerable increase - from 26% to 32-34% - is also forecast for the electrification of consumption in buildings. Finally, the industrial sector has an electrification potential estimated at an additional 2-4 percentage points (starting from electricity's current share of 35% of final energy consumption).

e-Mobility. In Italy, transport is the sector with the greatest potential. Taking account of the extended e-Mobility value chain, about **160,000** potentially involved **companies** can be identified, with over **820,000** employees and total turnover of over **420 billion euros** as of today. The study also estimates the economic benefits achievable in Italy by 2030: in this case, potential additional turnover amounts to between **102.4** and **456.6 billion euros**.

Focus on six electrification technologies for the building and industrial sectors. To identify the most promising electrification technologies, the analysis develops a model that identifies **more than 60** technologies capable of generating a significant economic impact. In Italy, the overall industrial value chain of electrification potentially comprises about **17,000 companies** with over **320,000 employees** and

total turnover of around **80 billion euros**. Specifically, the study identifies six key technologies, namely **heat pumps, LED lamps, electrochemical storage systems, electric drive, power electronics and energy management systems**, which can generate total turnover of between **135 and 326.5 billion euros**.

The strategy. The study concludes that the stimulus produced by the electrification process requires action across different sectors and fields to reap all the benefits and opportunities that can be activated. More specifically, five focus areas are identified: **the take-up of electric mobility, the deployment of energy efficiency, the enhancement of collaboration between companies and research networks, the strengthening of national capabilities in electric frontier technologies, and the dissemination of awareness of the benefits of electrification.**

The study also argues that the **Distribution System Operator (DSO)** can act as a key enabling factor, sustaining technological development and the associated investment. The legislative and regulatory environment should appropriately incentivise the DSO's investment in its own network, both in digitalisation and renewal, committing itself to managing the ever-increasing integration of renewables, the spread of an extensive network of charging infrastructure for electric vehicles and the expansion of the share of electricity in final energy consumption. Furthermore, it is necessary to define rules and responsibilities for the various network operators (TSO and DSO), in line with the current European regulatory framework.