Press Release

GME'S NEWSLETTER – Issue no. 196 now online

Rome, 14 October 2025 – The new issue of the newsletter of *Gestore dei Mercati Energetici* (GME) is now downloadable from www.mercatoelettrico.org.

The new issue opens with an article by Chiara Proietti Silvestri, from *Ricerche Industriali Energetiche* (RIE), about the challenges and opportunities of Artificial Intelligence in the energy sector. *The global market of Artificial Intelligence (AI) is growing exponentially, driven by the progress of hardware systems, the availability of more and more sophisticated data and algorithms, and massive investments by the Big Tech companies. The development of this sector will increasingly need a powerful Information and Communication Technology (ICT) infrastructure and operational continuity, significantly contributing to future electricity demand. AI is not only an emerging energy consumer but it can also serve as a valuable tool to optimise energy end uses in terms of energy efficiency and resource management.* Proietti Silvestri stresses that, *in 2024, according to the International Energy Agency (IEA), data centres – key infrastructure for development and operation of AI applications and other digital services – had a 1.5% share of global electricity requirements, equivalent to 415 TWh. This consumption is expected to double in the next five years, reaching 945 TWh by 2030, slightly below Japan's current electricity demand. The primary driver of this increase will be the development of IA, which is proving to be highly energy-intensive.* Proietti Silvestri acknowledges that AI and related data processing systems pose a *major challenge to energy sustainability but, at the same time, they offer promising tools to improve efficiency and curb emissions. Indeed, on the one hand, the expected growth in electricity demand to supply data centres poses the risk that a significant share of additional energy will be generated from fossil sources – especially in regions where renewable generation capacity still represents a small portion of the energy mix – thereby increasing CO_2 emissions and slowing progress towards climate targets. On the other hand, AI can serve as an enabling technology for the energy transition, capable of improving grid/network flexibility and decreasing system inefficiencies.* Nevertheless, *the widespread adoption of AI, especially if it is integrated systemically into the most carbon-intensive sectors, might help reduce overall emissions, by offsetting emission*

costs with greater benefits. Proietti Silvestri points out that, *at present, data centres are responsible for roughly 180 million tonnes (Mt) of indirect CO_2 emissions from electricity consumption, thereby accounting for as little as 0.5% of total emissions from combustion.* However, over the next decade, *if we fail to take measures to enhance efficiency and decarbonise the global energy mix, emissions might record an 80% hike, increasing the share of indirect emissions from data centres to 1% under the baseline scenario, and to 1.4% under the more expansive AI growth scenario, called Lift-Off.* Proietti Silvestri emphasises that another challenging issue that has emerged in recent years is AI security. *On the one hand, AI may be an important ally in protecting critical infrastructure, e.g. thanks to systems of predictive maintenance, continuous remote monitoring, real-time grid/network risk analysis, and automated response to outages. On the other hand, digitisation expands the attack surface, exposing grids/networks and data centres to cyber, technical, and physical risks, which call for a new security culture. One of the most critical issues concerns the cybersecurity of energy grids/networks, which are often based on legacy infrastructure (therefore obsolete in relation to current technologies and cloud systems), and reliance on suppliers lacking effective security systems.* Proietti Silvestri notes that this digital dimension adds to the physical and geopolitical ones. *Data centres, which are concentrated in limited areas, require a huge amount of locally distributed energy and are highly exposed to bottlenecks, grid/network congestion, and infrastructural obstacles. The challenge of ensuring reliable and affordable energy supplies for the development of AI is thus emerging with increasing urgency.* In conclusion, *it is increasingly clear that AI security cannot be separated from energy security. A secure and sustainable development model requires data centres to become active components of the energy system, contributing to grid/network stability rather than vulnerability.* This is why *we need policies for siting data centres in areas with low carbon intensity, demand response tools to manage peak loads, and mandatory energy reporting standards for major digital operators. Ultimately, AI security is not merely a technical or ICT issue: it represents a new dimension of global energy and strategic security.*

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This issue of the newsletter comes with the usual technical commentaries about European and national power exchanges and environmental markets, a section focused on the analysis of Italian gas market trends, and a section with insights into the trends of the main European commodity markets.

As has become customary, the publication also reports the summary data of the Electricity Market for September 2025.

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