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Energy Efficiency for Europe's views on a Strategic Roadmap for digitalisation and AI in the energy sector.

Energy Efficiency for Europe (formerly EFIEES) is the voice of private energy service companies (ESCOs) and their national associations across Europe. Our members represent over 100.000 professionals committed to the design and implementation of energy efficiency measures in public and private buildings, industrial facilities, as well as to the efficient operation of district heating & cooling networks.

Energy Efficiency for Europe welcomes the European Commission's forthcoming Strategic Roadmap for the digitalisation and use of Artificial Intelligence (AI) in the energy sector. This initiative represents an important step towards ensuring that the green and digital transitions advance hand in hand, reinforcing each other. It is indeed essential that the digital transition supports, Europe's energy efficiency and climate objectives. We must ensure that we fully harness the potential of digitalisation and AI which can notably support the energy transition by optimising energy systems, by improving demand-side management, by supporting predictive maintenance of installations and enabling more efficient and flexible use of resources across the value chain. For companies working in the energy efficiency sector, the topic is therefore twofold: **digitalisation and AI as tools for energy consumption optimisation**, and **digitalisation and AI as increased needs in energy consumption that must be efficient**.

Digitalisation and AI as tools for optimisation: challenges and opportunities in the energy efficiency sector

First, when addressing the digital transformation of the energy sector, it is essential to clearly distinguish between *digitalisation* and *AI*. Digitalisation has already been a part of the sector for many years, notably through energy management systems and solutions, using equipment, software, processes that monitor and optimise energy consumption (i.e. sensors and IoT). AI, by contrast, represents a newer and fast-evolving dimension of this process. While it is increasingly embedded in digital systems, its full potential applications for energy efficiency, energy management and system optimisation are still emerging, and, to many extents, differ from digitalisation as far as production and compilation of huge quantities of data is concerned.

However, experience from the field shows that **the successful deployment of digital and AI-based solutions must always be accompanied by the expertise of qualified energy managers on the ground in order to ensure a smooth process of the installations**. AI can process and predict, but **human**

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oversight remains indispensable, as well as technical maintenance, when required. Data from buildings and energy systems must be interpreted, validated, and controlled and implemented by professionals to ensure accuracy, reliability, and alignment with energy efficiency objectives. In this regard, consumers behaviour coaching, and adaptation to industrial needs, require an additional and practical intervention of ESCOs on their client's site.

For energy service companies (ESCOs), **the main challenge linked to digitalisation and AI lies, and will increasingly lie, in cybersecurity.** The growing interconnection of systems exposes them to higher cyber risks, while data protection remains a key concern for both ESCOs and their clients. Ensuring security**, integrity, and confidentiality** of energy and building data will be critical to maintaining trust and enabling the full deployment of digital and AI-based solutions. This will require investment in new security protocols, as well as the development of new integration models across technologies and services. On the other hand, Open Api protocols will be needed to ensure compatibility of system (i.e. Flex ready protocol in France).

At the same time, some energy companies are already required by national law to disclose the environmental footprint of their services. Yet in the case of digital and AI solutions, quantifying this footprint remains highly complex, if not impossible, particularly when it comes to data processing and storage. The EU strategic roadmap could thus help to strike the right balance between ensuring robust cybersecurity and enabling access to the environmental and energy data that companies need to drive the EU energy transition forward.

AI as an energy user: balancing opportunities and environmental costs

At the same time, it is important to consider AI itself as an energy consumer that should act, as such, as responsibly as other energy consumers. AI can bring major benefits in critical sectors such as energy, environment, health, transport etc., where its application can generate significant societal value. Yet, generative AI models, often used without regulation, clear purpose, and a vision of environmental related costs, consume large amounts of energy. In the context of the EU's 2030 energy efficiency and climate targets, the environmental cost of AI must therefore be better assessed, explained, and integrated into policy discussions, in view of containing energy consumption, and potentially setting some objectives for the sector.

This issue also ties into the **energy consumption of data centres**, which are and will be major energy consumers, and where the potential recovery and reuse of waste heat could play a key role in mitigating the energy-related impact of AI and digitalisation's expansion.