

ARTIFICIAL INTELLIGENCE AND THE ENERGY MARKETS

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The crisis in the energy sector is confronting operators with the need to provide an effective response to diverse challenges including fluctuating prices, growing demand and reducing their environmental impact, all of which require innovative solutions. The support that AIs can provide presents stakeholders with the need to implement in advance internal compliance mechanisms in line with the growing regulation relating to this area.

"With AI offering cutting-edge answers to great challenges of the energy sector, operators are called upon to devote increasing attention to compliance mechanisms to the evolving regulations."

The crisis facing the energy sector requires operators to provide effective responses to different challenges: volatile prices influenced by geopolitical factors, growing demand and the need to reduce their environmental impact. In such a complex scenario, artificial intelligence ("AI") could be an effective means to help find successful solutions. The wide ranging application of AI frequently intersects with energy topics, especially regarding the need to take data-driven decisions and ensure instant reactions to constantly changing factors, where machine learning comes to the forefront. It is in this context that we should consider technological solutions ranging from so-called "algo-trading" to "smart homes," whilst not forgetting smart grids and automated renewable optimisation processes.

SMART GRIDS

AI plays a crucial role in the networking of energy consumers and distributors:

increasing decentralisation and digitalisation of grids brings growth in the number of active participants and, with it, the difficulty of keeping the grid in balance. At the same time, the rise of irregular energy sources, such as solar and wind, requires distribution to quickly adapt to floating consumption and vice versa. Smart grids – managed by Distribution System Operators ("DSOs") – fall within the scope of local medium and low-voltage distribution, carrying not only electricity but also data. Smart grid management, from origin to final branches, is done through remote control systems that enable consumption metering, real-time monitoring of infrastructure and power management at individual supply points. These means of managing the balance between supply and demand are driving the evolution of grids in a "prosumer" key, based on decentralised energy produced by B2C and B2B customers through photovoltaic solutions and beyond.

AI AND TRADING

Predictive capabilities of AI have even greater interesting potential in electricity trading. AI makes it easier to systematically evaluate large amounts of historical market or weather data. Moreover, as already seen, better forecasts ensure greater grid stability and security of supply. On these premises, some AI algorithms are already proving to be smart enough to trade independently (*algo-trading* or *automated trading*), following the lead of what has already happened in financial markets.

AI FOR HOME CONSUMPTION

Consumers, when connected to electricity systems through AI, can contribute to a stable and green grid. Solutions such as smart homes and smart meters already exist, but they are not yet widely employed. In a smart home, networked devices react to electricity market prices and adapt to household usage patterns to save electricity and reduce costs.

WHAT CHANGES WITH REGULATION?

In this scenario, companies using AI systems in the energy market should, from a legal perspective, start considering the regulatory requirements related to the systems they employ. Indeed, the debate on the use of AI intersects with the legislative progress of the Artificial Intelligence Act, grounded in an ethics and risk-based approach with a specific target: the trustworthiness of AI systems. The approach vis-à-vis AI systems should, therefore, be based on an assessment of the risks associated with them and consider different compliance mechanisms depending on whether the system is high or low risk.

Alongside compliance, which may turn out to be rather rigid once EU regulation has been finalised, operators should also consider EU proposals regarding other aspects of the use of AI. In particular, in October 2020, the issue of civil liability was the subject of a European Parliament Resolution, where a draft Regulation for the AI sector was prepared. The draft, which proposed to introduce a mechanism of strict liability for actors operating on high-risk systems, has been subject to public consultation and as of now has yet to be transposed into a binding text.

Given this uncertainty, energy sector operators, whether traders, resellers or business users, are called upon to pay increasing attention to the issue of AI in order to exploit its advantages as much as possible. Above all, implementing internal compliance mechanisms well in advance to comply with future provisions and avoid bans or limits on AI systems that could penalise their company against potential competitors will be key.

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