# the rising energy demands and legal challenges of artificial intelligence



The growing adoption of artificial intelligence (AI), particularly generative AI, is creating significant new connections between the technology and energy sectors. However, this development brings with it both technical challenges and complex legal considerations.

One of the foremost concerns is the substantial energy consumption associated with AI. Training a single large language model, for example, can consume as much electricity as a small town. Data centres currently account for approximately 1.5% of global electricity demand, and according to forecasts from the International Energy Agency (IEA), this demand is expected to more than double by 2030, primarily due to AI-related workloads. Meeting this surge in energy consumption could require new power capacity equivalent to about four times the current electricity usage of the entire United Kingdom.

This intensified energy demand largely concentrates in the locations of existing or planned data centres, placing pressure on local power grids. Addressing these demands may necessitate substantial and rapid upgrades to grid infrastructure or spur competition among data centre owners and operators to secure reliable and sustainable energy sources dedicated to their operations.

While AI itself is an energy-intensive technology, it also offers opportunities to improve energy management. AI has potential to optimise power grids, facilitate better integration of renewable energy sources, anticipate equipment failures, and increase energy efficiency in various sectors, including buildings and industrial operations. Despite this promise, the energy sector has historically been slower to adopt AI technologies compared to the technology and financial services industries. Experts expect further integration of AI in energy management moving forward.

Alongside the technical issues, the legal and contractual frameworks governing AI-energy projects are becoming increasingly complex and, in some cases, unprecedented. These frameworks must navigate a patchwork of regulatory systems, supply chain intricacies, and geopolitical uncertainties. Negotiations must address risk allocation, pricing models, and responsibilities for maintaining uninterrupted operations.

Moreover, both AI and energy regulatory landscapes are evolving rapidly, complicating compliance and contractual certainty over the long term. Given that AI-energy projects can span years or decades, contracts require careful drafting to anticipate potential disputes and incorporate mechanisms for early and effective resolution. Such contracts must balance thoroughness with flexibility to accommodate inevitable unpredictabilities as projects progress. Clearly defining each stakeholder’s responsibilities, setting measurable performance metrics with agreed methods of tracking, and allocating risks appropriately are essential elements in successful contractual arrangements.

The intersection of AI’s burgeoning energy demands and the need for robust legal frameworks highlights a critical area of development as digital infrastructures underpinning these technologies continue to expand globally.

Source: [Noah Wire Services](https://www.noahwire.com)

## References

* <https://www.iea.org/news/ai-is-set-to-drive-surging-electricity-demand-from-data-centres-while-offering-the-potential-to-transform-how-the-energy-sector-works> - This IEA report details the projection that electricity demand from data centres worldwide is expected to more than double by 2030, driven primarily by AI workloads, corroborating the article's claims on increased energy consumption due to AI and data centres and the need for new power capacity.
* <https://www.polytechnique-insights.com/en/columns/energy/generative-ai-energy-consumption-soars/> - This source confirms that training large language models consumes electricity comparable to small towns and highlights the rapidly rising energy consumption of generative AI, supporting the article's points on AI's substantial electricity use and the anticipated surge.
* <https://www.statista.com/statistics/1536969/ai-electricity-consumption-worldwide/> - Statista provides statistics forecasting AI's power consumption growth to up to 20% of data centre power usage by 2028, underpinning the article's data on AI’s increasing share in global data centre electricity demand.
* <https://e360.yale.edu/features/artificial-intelligence-climate-energy-emissions> - This Yale Environment 360 article discusses the challenges of AI's energy demand growth, the role of data centres, and also describes AI's potential to optimize energy use, aligning with the article's discussion of AI both as a driver of energy consumption and opportunity for energy sector improvements.
* <https://mitsloan.mit.edu/ideas-made-to-matter/ai-has-high-data-center-energy-costs-there-are-solutions> - MIT Sloan explains the technical challenges around AI’s high data centre energy use and explores strategies for improving efficiency, supporting the article’s points on technical challenges and the potential for AI to optimize energy management.