# The rising energy demands of AI and the legal challenges ahead



The expanding use of artificial intelligence (AI), particularly generative AI, is creating increasingly strong connections between the technology and energy sectors, due to the substantial power consumption associated with AI systems. As the adoption of AI technologies intensifies, key challenges emerge relating not only to technical and operational constraints but also to the legal and contractual frameworks governing these developments.

A report by Computer Weekly highlights that training a single large language model can consume as much electricity as a small town, underscoring the significant energy demands involved. Currently, data centres account for approximately 1.5% of global electricity use. The International Energy Agency (IEA) forecasts that this demand will more than double by 2030, driven predominantly by AI workloads. The projected growth would require new global energy capacity equivalent to around four times the United Kingdom’s present total electricity consumption.

The increased energy requirements are primarily concentrated in regions hosting data centres. This situation places considerable strain on local power grids, necessitating substantial and rapid upgrades to grid infrastructure or compelling data centre owners and operators to swiftly secure reliable and sustainable energy sources dedicated to their facilities. The competition to access sufficient energy resources is intensifying as AI becomes more prevalent.

Paradoxically, while AI applications require large amounts of power, AI technologies also hold promising potential to improve energy management. AI can optimise power grid operations, facilitate the integration of renewable energy sources, predict equipment failures, and enhance energy efficiency across industries and buildings. Despite this potential, the energy sector has been slower to adopt AI technologies compared to industries such as technology and finance. Greater AI integration within energy management systems is anticipated in coming years.

The interplay between AI and energy brings additional complexities from a legal and contractual perspective. The frameworks governing AI-energy projects involve navigating diverse regulatory regimes, complex supply chains, and geopolitical uncertainties. This leads to intricate negotiations focusing on risk allocation, pricing structures, and responsibilities to avoid operational downtime. Moreover, the regulatory environments for both AI and energy are rapidly evolving, which complicates efforts to achieve compliance and contractual certainty.

According to Computer Weekly, it is essential during the contract drafting phase to anticipate potential disputes and implement mechanisms for their early resolution or avoidance. Contracts must be carefully constructed to foresee possible issues while maintaining sufficient flexibility to accommodate unpredictable factors in projects expected to span decades. This entails clearly defining stakeholder responsibilities, establishing measurable performance criteria with agreed monitoring methods, and effectively assigning risks between parties.

In summary, the growing interdependence of AI technologies and the energy sector presents both opportunities and challenges. The technical demands of AI necessitate robust energy infrastructure, while AI itself offers tools for more efficient energy use. On the legal front, carefully negotiated agreements and regulatory compliance will be critical to the long-term success of projects at the intersection of these dynamic industries.

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

## References

* <https://www.polytechnique-insights.com/en/columns/energy/generative-ai-energy-consumption-soars/> - This source corroborates the claim that training large AI models consumes significant electricity, comparable to small towns, and that AI energy use is rapidly increasing with generative AI's rise, matching the article's emphasis on energy demands of AI systems.
* <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 supports the article’s information on data centres accounting for about 1.5% of global electricity consumption, the forecast that electricity demand will more than double by 2030 mainly due to AI workloads, and the need for new energy capacity on a scale comparable to multiple UK electricity consumption.
* <https://e360.yale.edu/features/artificial-intelligence-climate-energy-emissions> - This article confirms the projection that data centers’ electricity consumption in 2026 will double compared to 2022, matching the scale of a country such as Japan, and discusses the operational factors that create energy strain and opportunities for AI to improve energy efficiency.
* <https://mitsloan.mit.edu/ideas-made-to-matter/ai-has-high-data-center-energy-costs-there-are-solutions> - This MIT Sloan article verifies the challenges AI data centers pose to energy infrastructure, the share of global energy demand data centers consume, and also discusses AI’s potential for energy optimization and efficiency improvements, supporting both the energy impact and the potential AI benefits highlighted in the article.
* <https://www.statista.com/statistics/1536969/ai-electricity-consumption-worldwide/> - This source provides statistical data on AI’s electricity consumption globally, supporting claims about current power usage, its proportion relative to total data center consumption, and forecasts for significant growth by 2028, consistent with the article’s projections on AI energy demand.