Fission and Friction: New Nuclear and Data Centre Co-location Disputes in the Middle East and Africa

Presentation to the 8th Annual Conference on Energy Arbitration & Dispute Resolution in the Middle East and Africa

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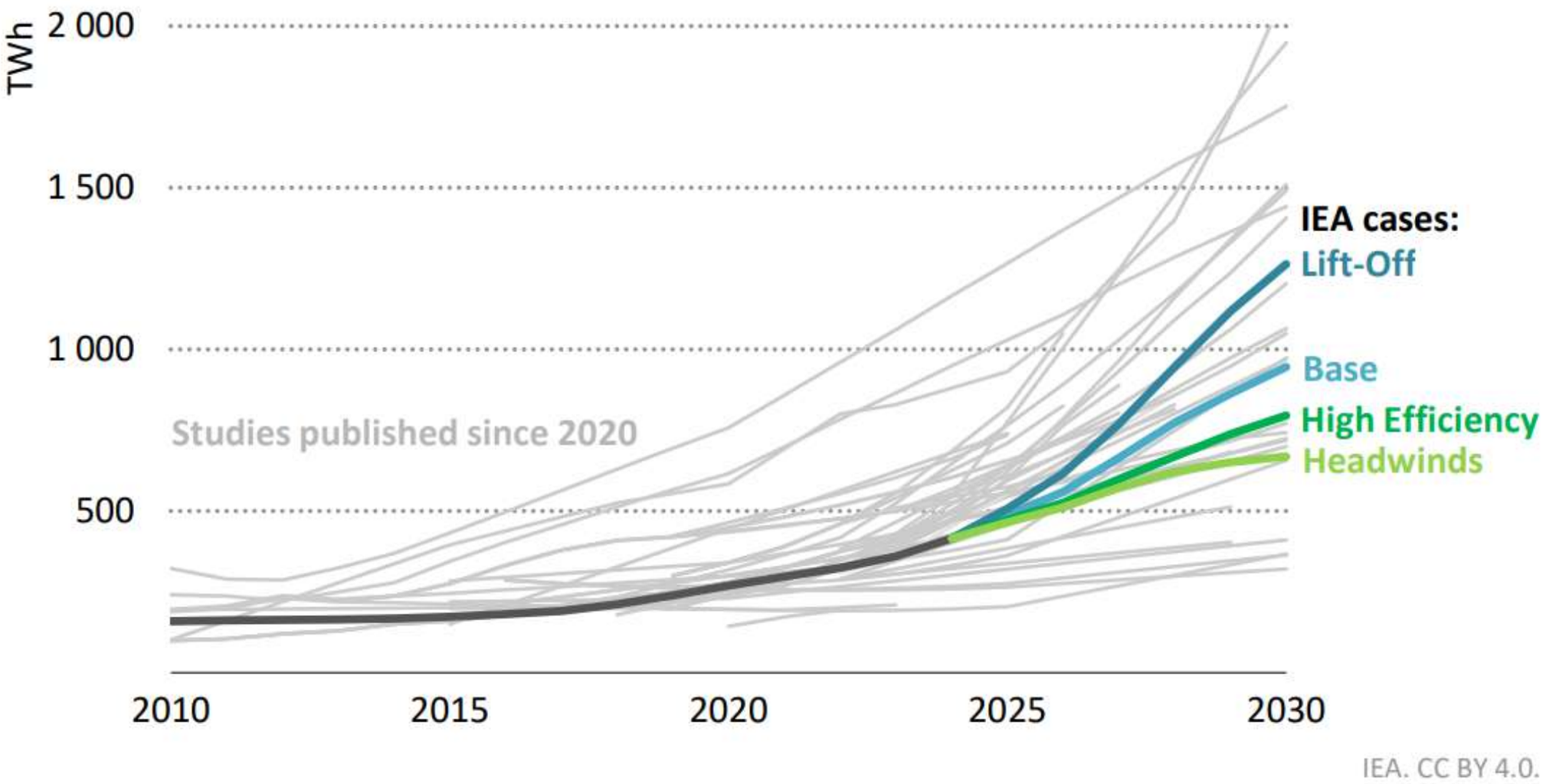
Executive Summary

- **Artificial intelligence (AI) advancements and growing cloud computing needs** will drive future demand for electric power by data centres globally
- Electricity demand from **electric vehicle adoption, crypto mining, industry electrification, and high-tech manufacturing** will accelerate longer term
- This trend is sparking **renewed interest in nuclear energy**, as nuclear power plants can deliver large quantities of **dispatchable zero-carbon electricity**
- This renewed interest is focused on both **new nuclear technologies** (including **large** reactors and small modular reactors, known as **SMRs**) and **nuclear co-location opportunities**

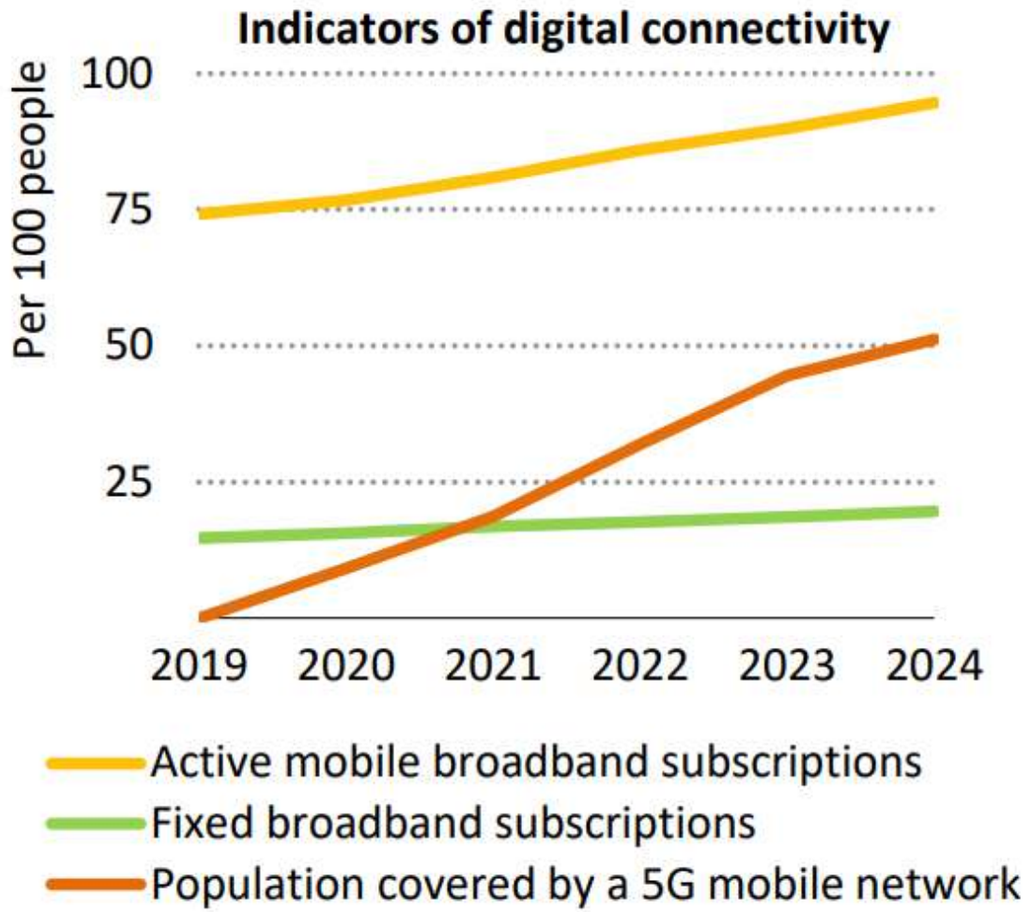
While disputes between nuclear power (and power plant) purchasers and providers is not a new phenomenon, emerging arrangements will give rise to a variety of disputes, both litigation and arbitration

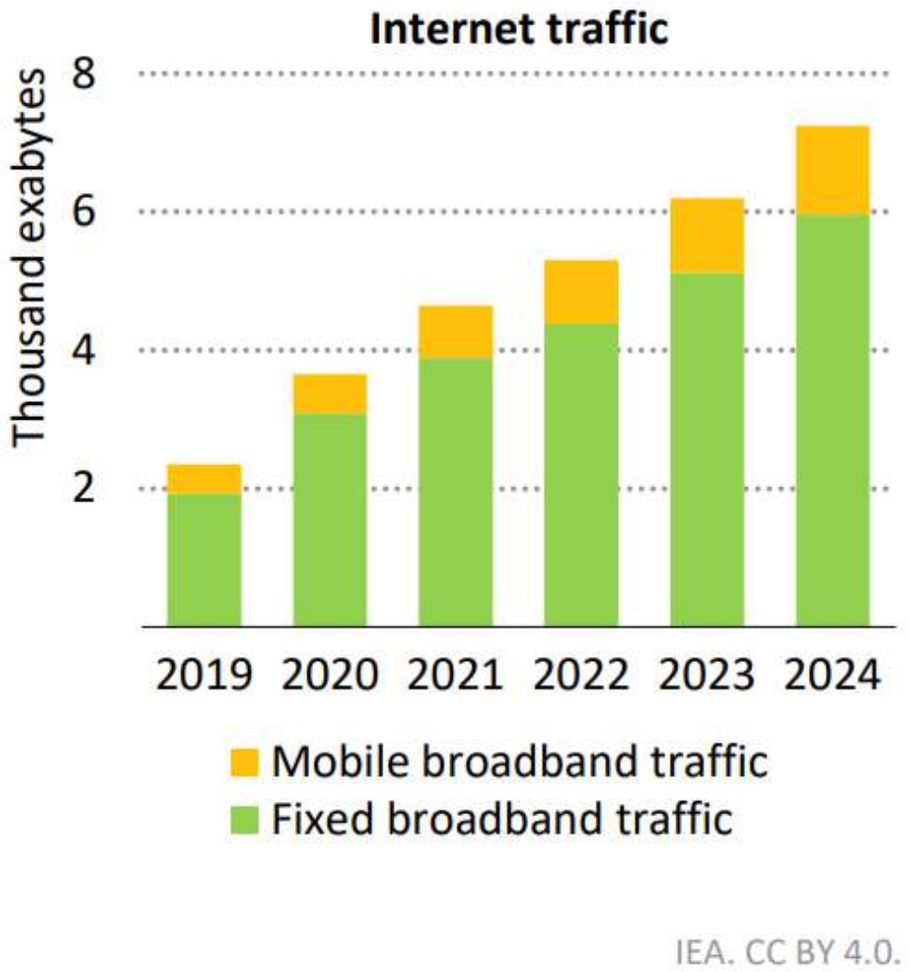
Global data centre electricity demand is projected to double or even triple or quadruple by 2030



Source: IEA

Electric power demand growth also reflects greater global use of online services (key trends, 2019-2024)



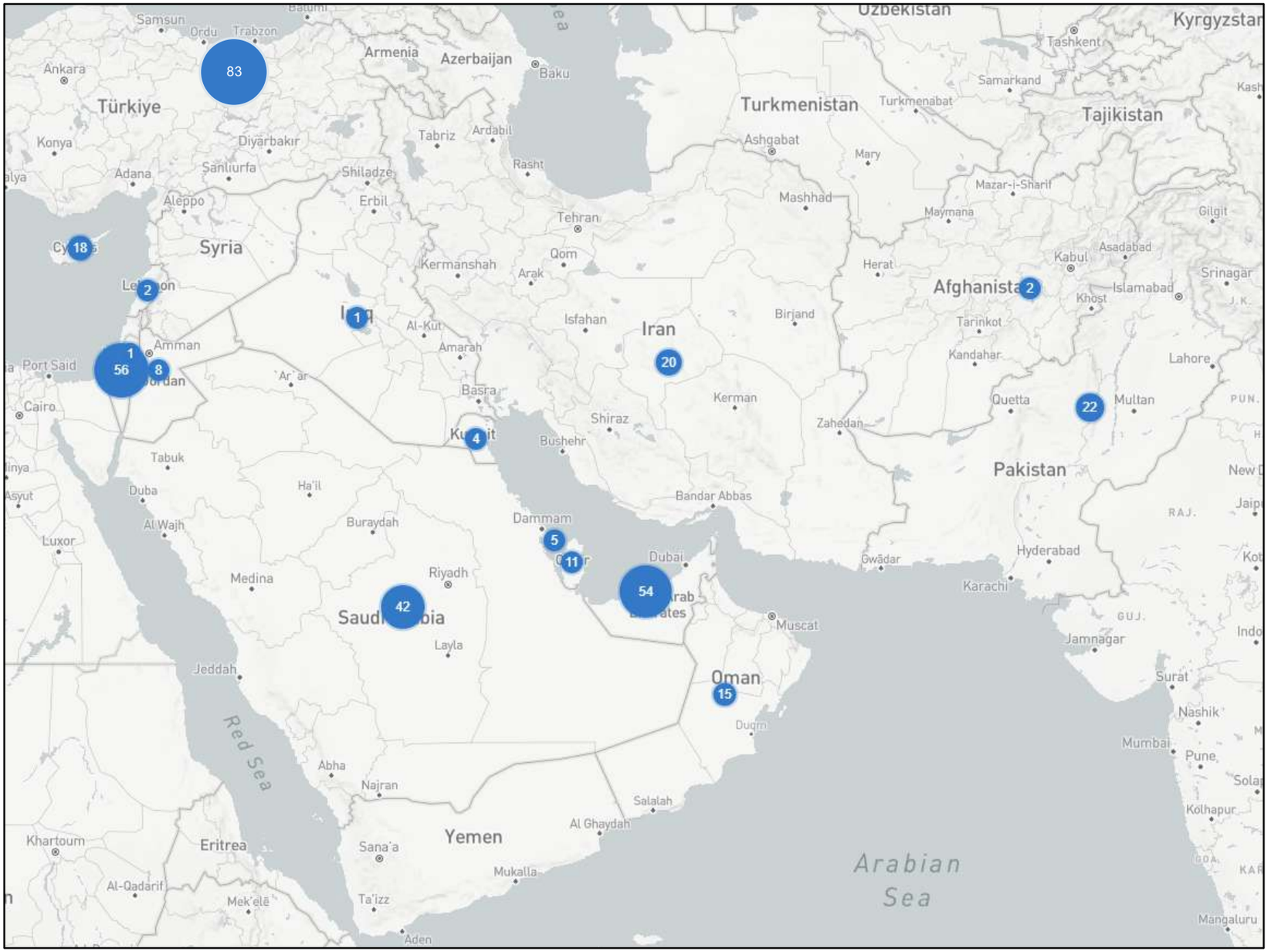


Source: IEA

Major data centres are located in key cities across Africa

Source: DataCenterMap

Data centres are likewise located in key conurbations throughout the Middle East (including near new nukes)



Source: DataCenterMap

In May, OpenAI announced its plan to build a 1 GW AI computing cluster in the UAE

- The deal is a partnership with Oracle, Nvidia, Cisco, SoftBank, and G42, a UAE-based AI startup backed by Microsoft
- 200 MW of the 1 GW is expected to go live in Abu Dhabi in 2026
- The UAE believes US tech giants will want servers running near users in Africa and India, slightly shaving off the time it takes to transmit data there

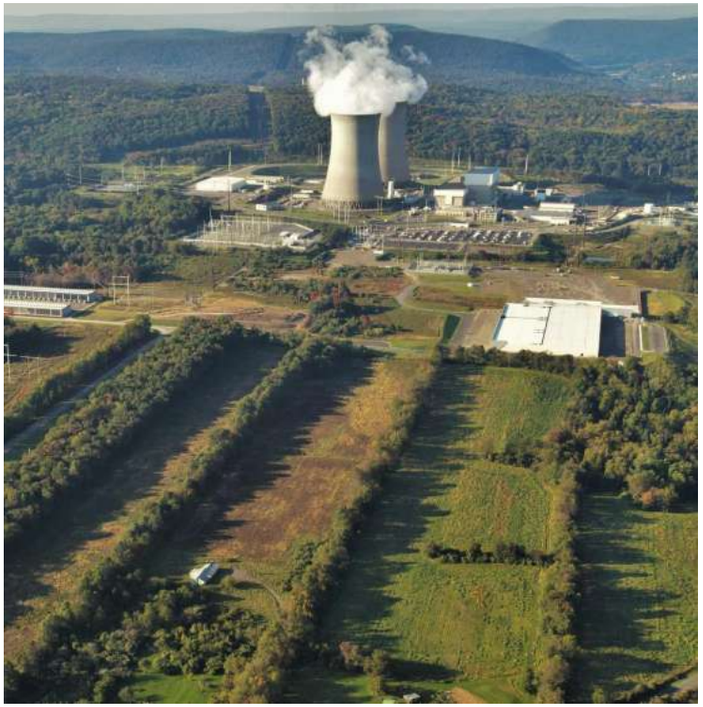
Source: OpenAI, WSJ, Axios

In terms of data centre electricity consumption (TWh), the MEA region is small but growing fast

	2020	2023	2024	2030
World	269	361	416	946
Africa	**1.1**	**1.3**	**1.4**	**2.9**
Middle East	**1.1**	**1.3**	**1.4**	**3.0**
Central and South America	1.5	1.5	1.7	3.3
North America	112	158	187	434
Europe	57	66	68	113
Asia Pacific	93	128	150	378

Source: IEA

A variety of “hyperscaler-nuke partnerships” have begun to emerge globally, especially in the USA



Constellation, Meta Sign 20-Year Deal for Clean, Reliable Nuclear Energy in Illinois (June 2025)

Microsoft deal propels Three Mile Island restart, with key permits still needed

By Reuters

September 21, 2024 12:58 PM EDT · Updated 6 months ago

ENERGY

Oracle is designing a data center that would be powered by three small nuclear reactors

PUBLISHED TUE, SEP 10 2024·3:54 PM EDT | UPDATED TUE, SEP 10 2024·4:11 PM EDT

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SHARE

Google and Kairos Power team up for SMR deployments

Tuesday, 15 October 2024

Amazon signs agreements for innovative nuclear energy projects to address growing energy demands

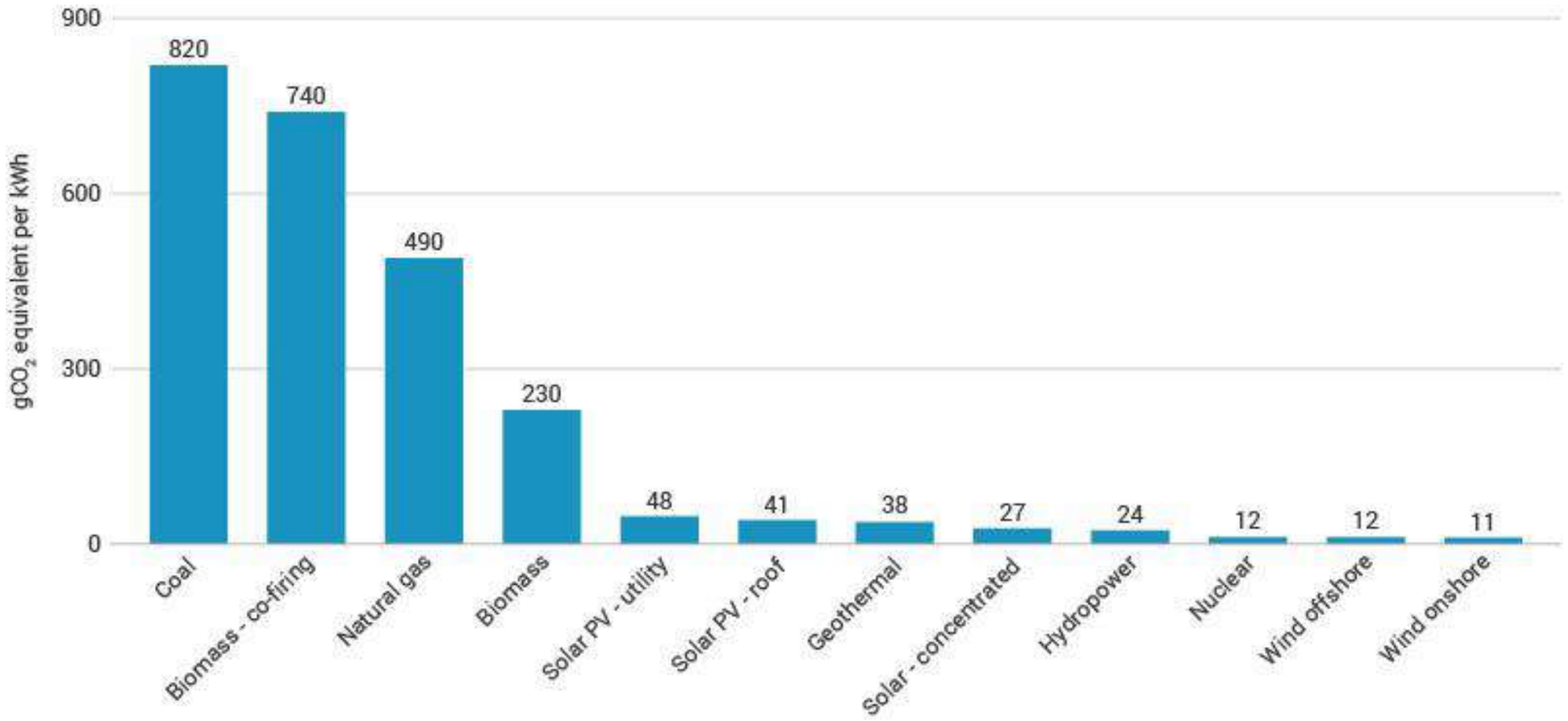
New Small Modular Reactor agreements are part of Amazon’s plan to transition to carbon-free energy.

AI advancements and cloud computing needs will both drive future data centre demand and likely spur further partnerships

Sources: Talen Energy, Microsoft, Google, Oracle, Constellation Energy

Nuclear is low-carbon and (especially since COP-28) is recognized as a key contributor to net-zero

- Nuclear power plants produce no greenhouse gases during operations
- During its lifecycle, nuclear produces around the same carbon emissions per unit of electric output as wind and one-third the emissions of solar
- Cost is being addressed through development of Small Modular Reactors (SMRs)



Source: World Nuclear Association

Because it delivers continuous green power without batteries, nuclear is uniquely suited to data centres

Electricity source	Construction period	Variable or dispatchable	Global average LCOE (USD/MWh)
Utility solar PV	1-4 years	Variable	60
Wind onshore	2-5 years	Variable	50
Wind offshore	3-7 years	Variable	110
Hydropower	5-15 years	Variable (run-of-river) Dispatchable (reservoir)	80
Conventional geothermal	3-8 years	Dispatchable	80
Nuclear (new)	**5-15 years**	**Dispatchable**	**90**
Nuclear (restart)	**2-5 years**	**Dispatchable**	**60**
Coal	3-6 years	Dispatchable	80
Gas CCGT	2-4 years	Dispatchable	80
Gas GT	1-3 years	Dispatchable	220

Source: IEA

Nuclear power has gained a significant foothold in the Middle East

Operating	Developing Plans	Under Consideration
UAE *Barakah NPP*	**Saudi Arabia** *17 GW by 2040*	**Qatar**
Iran *Bushehr NPP*	**Iraq** *11 GW*	**Oman**
Israel *Heavy water reactor at Dimona*	**Jordan** *SMRs*	

Source: World Nuclear Association, Middle East Eye, Getty Images

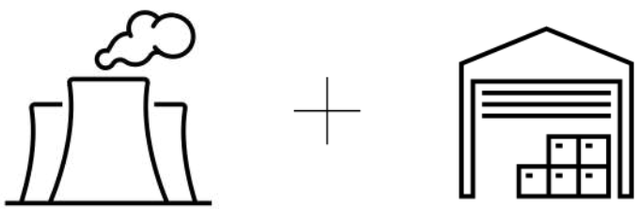
Nuclear power is also gaining traction in Africa

Operating	Construction Scheduled	Developing Plans	Under Consideration
South Africa *Koeberg NPP*	**Egypt** *El Dabaa NPP*	**Uganda** *Construction of two NPPs*	**Nigeria**
Algeria *Research reactors at Draria and Ain Ouessara*	**Morocco** *Triga research reactor*	**Ghana** *Construction of a 1 GW NPP*	**Tunisia**
Egypt *ETRR-2 research reactor*	**Rwanda** *Dual Fluid demonstrator reactor*	**Kenya** *Construction of a 1 GW NPP*	**Zambia**

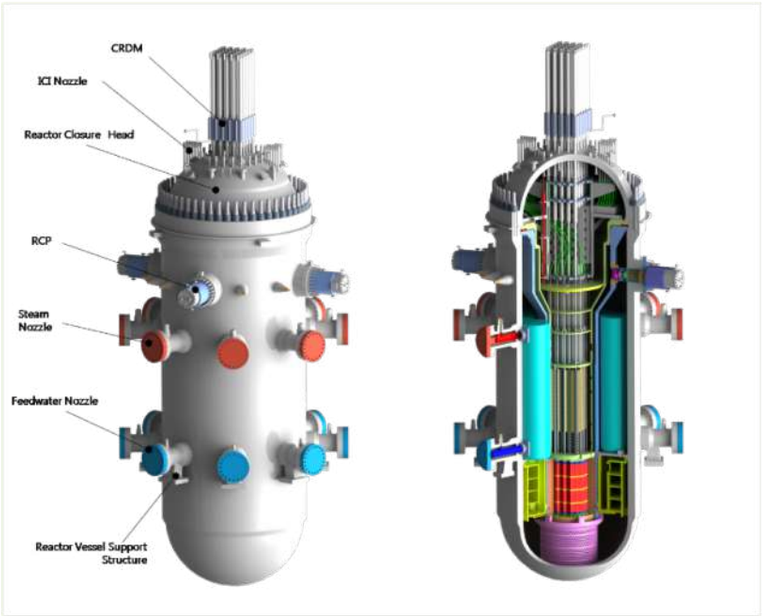
Source: World Nuclear Association, Eskom, Rosatom

Nuke-hyperscaler arrangements fall into several types, each of which is prone to certain disputes

Type of Arrangement	Potential Disputes
Signing a **PPA** with an **existing NPP**	- Pricing Disputes - Performance Guarantees - Force Majeure Claims
Signing a **PPA** with a **new NPP**	- Construction Delays - Technology and Compliance Issues - Financing and Cost Overruns
Colocation with an **existing NPP**	- Resource Adequacy Impact - Shared Infrastructure Costs - Regulatory Compliance
Colocation with a **new NPP**	- Construction Delays - Regulatory Licensing Delays - Technology Integration Issues



Every new or restarted NPP—historically prone to controversy—represents a potential source of disputes

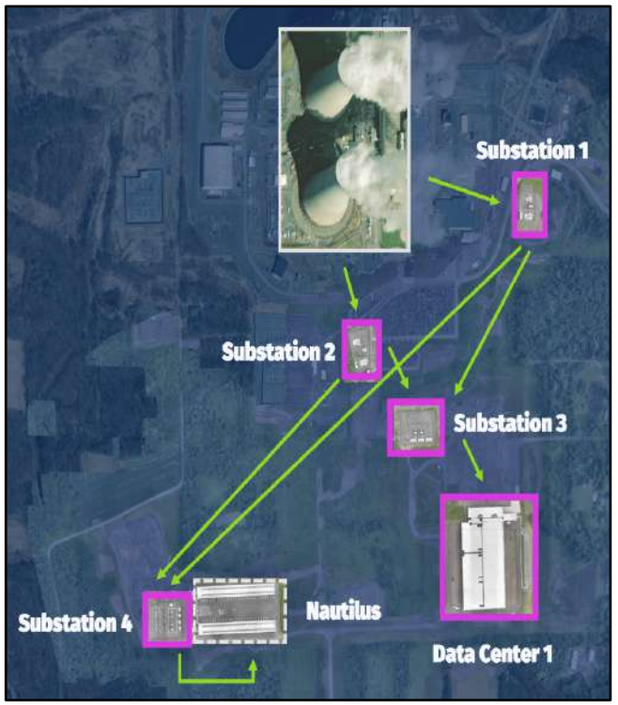


- Construction delays, cost overruns
- Cost-sharing mechanisms
- Issues related to intellectual property
- Export controls and sanctions
- Contested regulatory proceedings
- Financing matters
- Tax credits, subsidies, state aid
- Safety, waste disposal, spent nuclear fuel management
- Nuclear non-proliferation
- Long-term plant performance

Sources: World Nuclear Association, American Nuclear Society

The co-location of low-carbon generation and data centres may generate a wide variety of new disputes

- Generation resource adequacy (especially during peak periods)
- Transmission system impacts
- Shared infrastructure costs
- Regulatory compliance and licensing
- Technology integration (nuclear, storage, renewables)
- Long-term plant performance
- Construction delays and cost overruns
- Power purchase agreement (PPA) pricing disputes
- Financing disputes
- *Force majeure* claims



Sources: Talen Energy, Data Center Dynamics

Arbitral institutions are adapting to meet the needs of disputes related to “energy transition” projects

Arbitration offers several key generic advantages over other dispute-resolution mechanisms:

- Flexibility
- Confidentiality
- Global enforceability

The ICC has implemented a number of major changes tor reflect the new environment:

- Leveraging specific scientific and technical expertise
- Granting interim measures when necessary to protect the environment
- Exercise discretion to permit third-party participation

INTERNATIONAL COURT OF ARBITRATION®

20.6% of all new cases registered with the ICC International Court of Arbitration in 2023 were energy-related

Key takeaways

- **AI advancements and growing cloud computing needs** are projected to drive future demand for electric power by data centres globally, **including in the Middle East and Africa**
- While this will drive electric power demand in the short term (especially), demand from **electric vehicle adoption, crypto mining, industry electrification and high-tech manufacturing** are all expected to continue sustaining this trend in the longer term
- This dramatic growth in electric power demand is spurring rapid deployment of low-carbon generation, especially **co-located renewables (paired with storage) and nuclear** (both new and restarted NPPs)
- **A wide variety of disputes is already emerging** in the areas of resource adequacy, availability of backup generation, and cost-sharing of transmission assets
- Some **recent changes in arbitral institutions** may increase their effectiveness in resolving nuke-data centre disputes

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