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# Session Outcome Document

## AI and Energy for Sustainable Digital Development: Governance, Infrastructure, and Global Cooperation

Organized by the EnergyPact Foundation

Thursday 9 July 2026, 17:00–17:45

Session link: https://www.itu.int/net4/wsis/forum/2026/Agenda/Session/421

### Key Issues Discussed

- The AI-energy paradox: AI is simultaneously the fastest-growing source of energy demand — data center electricity consumption reached approximately 480 TWh in 2025, growing 17% in a single year, with projections reaching 945 TWh by 2030 — while also offering tools to optimize the energy systems it depends on.
- The physical cost of AI infrastructure: power grids in several countries are already saturated, water consumption in data centers is significant (U.S. data centers alone consume roughly 1% of Lake Geneva's total water volume annually), and at night, when renewables are unavailable, demand is met by fossil fuels — meaning AI's actual carbon footprint is systematically underreported.
- The rebound effect: efficiency gains per AI task are real but immediately absorbed by growth in usage. Every technological advance is outpaced within months by new demand, making efficiency necessary but insufficient without governance frameworks to cap or steer consumption.
- The question of restraint and intent: not every use case requires AI. Deploying AI without a clear answer to "what problem are we actually solving?" creates unnecessary dependency, increases attack surfaces, and undermines resilience. The most resilient AI may be the AI you choose not to use.
- Digital sovereignty and concentration of power: approximately 70% of global cloud infrastructure is controlled by three companies; more than 50% of global computing power is concentrated in one country; and the EU estimates its dependency on non-EU digital infrastructure at above 80%. This concentration creates both soft power risks (language, values, cultural framing of AI models) and hard power risks (the ability of one country or company to disable another's critical systems).
- Governance as a learning organization: existing regulatory frameworks were designed for 19th-century governance speeds and cannot keep pace with AI's rate of change. Governance must evolve from static compliance to a dynamic, collective capacity to learn, measure, and adapt — with standards, metrics, and accountability distributed across the entire value chain.
- Education and data literacy: responsible AI deployment requires that citizens, policymakers, and engineers understand what AI is, what it costs, and what it replaces. Educating future generations is necessary but not sufficient — today's decision-makers must develop the same literacy urgently.

## Key Outcomes of the Session

- The session established a shared diagnostic framework — the AI-energy nexus — structured around five interconnected dimensions: the core tension between AI as load and AI as tool; infrastructure under strain; resilience and the case for restraint; governance as a collective learning challenge; and digital sovereignty as a precondition for a stable and inclusive digital order.
- Practical solutions were identified: liquid cooling technologies (including NVIDIA's closed-circuit hot-water cooling systems) can significantly reduce water and energy consumption in data centers; AI-responsive grid management (demonstrated in a UK pilot involving Emerald AI, NVIDIA, Nebius, National Grid, and EPRI) shows that data centers can shift from energy consumers to active participants in grid stabilization.
- A key reframing was proposed: data is easier to transport than electricity. Bringing compute to where clean energy, cool climates, and spare grid capacity already exist — rather than building energy infrastructure around existing data centers — represents a structural opportunity to reduce AI's environmental footprint.
- The session produced a shared call to action: build the awareness, the literacy, and the governance capacity to ensure that AI scales responsibly — not just more efficiently.

## Key Recommendations and Forward-Looking Actions

- Establish standardized metrics for AI's energy and water footprint, aligned with ITU's Green Digital Action initiative, so that the true cost of AI infrastructure is visible, comparable, and accountable across jurisdictions.
- Require use-case justification before AI deployment in public infrastructure and critical systems: the burden of proof should be on demonstrating necessity, not on justifying restraint.
- Accelerate the transition to AI-responsive grid infrastructure by enabling data centers to participate actively in grid stabilization — through demand flexibility, co-location with renewable energy sources, and energy storage integration.
- Develop and implement governance frameworks capable of evolving at the speed of the technology they regulate — moving from static compliance models to dynamic, multi-stakeholder learning organizations that distribute accountability across designers, operators, regulators, and users.
- Prioritize digital sovereignty as a governance objective: nations and communities must conduct structured assessments of which critical systems require sovereign infrastructure and governance, and act accordingly — including reducing dependency on a small number of hyperscalers where systemic risk is high.