

Green AI & Sustainable ICT

Concept Note for a future Position Statement of the IEEE European Public Policy Committee (EPPC)

Introduction

The quick growth of Artificial Intelligence (AI) and more sophisticated ICT infrastructure (i.e., 5G/6G platforms, HPC, edge computing) will bring new opportunities yet placing additional sustainability burdens on power systems. Future demand for power by AI has been projected to increase by up to 10,000×, which may overwhelm energy systems unless mitigating approaches that take advantage of green technology include an emphasis on green practices. The IEEE EPPC notes that there is ongoing debate on whether AI and ICT should be governed separately or as interconnected domains. A joint policy approach, which also considers sustainability and energy efficiency, seems to align better with the EU digital and green transitions, as outlined in the European Green Deal, the AI Act and the Digital Decade.

The importance of Green AI & Sustainable ICT

The EU has set ambitious targets for digitalisation while committing to net-zero climate goals. Green AI and Sustainable ICT provide the necessary link between these two priorities. Without action, Europe risks both rising emissions from digital infrastructure and dependency on unsustainable global supply chains.

Key drivers:

- AI Factories, data centres, and HPC clusters already represent a rapidly growing share of Europe's electricity consumption.
- ICT infrastructure requires significant material inputs, often from fragile global supply chains.
- Rural and underserved regions face risks of exclusion unless climate-neutral digital infrastructure is deployed.

EU policy and regulation context

The EU's Digital Decade targets and the AI Act provide a legal framework to align AI and ICT development with sustainability and ethics. To meet these targets, policies must address not only technological innovation but also the energy efficiency, lifecycle management, and equitable deployment of AI and ICT systems.

Relevant EU initiatives:

- European Green Deal: commitment to climate neutrality by 2050.
- AI Act: establishing risk-based governance for AI.
- Digital Decade targets (2030): including universal gigabit connectivity and advanced digital skills.
- Circular Economy Action Plan: addressing ICT equipment lifecycle.

Policy Goal

Against this backdrop, the IEEE EPPC plans to develop a position statement on Green AI and Sustainable ICT with a view to informing European Union policy making in this domain. The EPPC notes that a sound and balanced EU-wide policy framework for Green AI and Sustainable ICT will enable the EU to reduce the environmental impact of ICT technologies, ensure equitable access, and strengthen Europe's strategic autonomy and global leadership in AI and ICT, in line with the Digital Decade and the AI Act.

Preliminary, not exhaustive list of possible recommendations (linked to the recommendations of the EPPC Position Statement on AI (forthcoming))

Recommendations	Green AI & Sustainable ICT Actions	Expected Impact
<i>R1</i> <i>Treat AI as a</i> <i>General-Purpose</i> <i>Utility</i>	- Mandate use of IEEE P7100 standard for measuring AI's environmental impact - Require AI Factories & HPC centres to be powered by renewable energy - Optimise with energy-efficient AI models and edge computing	- Reduced carbon footprint - Cost savings through energy efficiency
<i>R2</i> <i>Develop</i> <i>Competency</i> <i>Ecosystem</i>	- Launch an EU-wide training in energy-efficient AI & sustainable ICT, including micro-credentials for SMEs - Integrate Green AI ethics into engineering and ICT curricula	- Skilled workforce capable of designing and operating low-impact AI-ICT systems
<i>R3</i> <i>Bridge the Digital</i> <i>Divide</i>	- Ensure climate-neutral high-speed networks in rural areas - Deploy “green edge nodes” to deliver low-latency AI services sustainably	- Equitable access to AI services while lowering environmental costs
<i>R4</i> <i>Achieve Strategic</i> <i>Autonomy</i>	- Localise production of low-power ICT and AI hardware - Implement circular economy practices for ICT equipment - Prioritise EU supply chains for sustainable components	- Reduced reliance on imports - Enhanced resilience and sustainability

Examples of specific actions that would make the recommendations work

- **Policy Integration:** Incorporate recommendations into the AI Act implementation and Digital Decade targets.
- **Pilot Projects:** Establish Green AI demonstration sites co-located with renewable energy sources.
- **Monitoring:** Develop KPIs for lifecycle energy use, emissions, and resource efficiency in AI-ICT systems.
- **Transparency Mechanisms:** Create a central EU registry for renewable-powered AI Factories, green edge nodes, and supply chain dependencies.