مجموعة سلامة الفكرية للسياسات والأعمال

SALAMA Policy & Business Intellectual Group

The AI Governance for National Competitiveness

Aligning Innovation, Blockchain, and Energy

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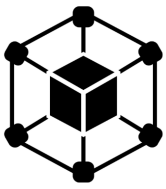

Artificial Intelligence (AI) is becoming the new foundation of national competitiveness — driving productivity, innovation, and strategic influence. Yet, as AI systems scale, their governance — not just their capability — determines who leads the next global economy.

Countries that institutionalize trust, blockchain, and energy efficiency into their AI ecosystems are attracting investment, accelerating innovation, and mitigating risk.

This policy brief explores how AI governance can serve as a catalyst for sustainable competitiveness. The challenge of balancing AI's massive energy consumption with its potential to revolutionize energy efficiency and climate goals.

1. The New Race: Governing Intelligence, Not Owning It

The global AI race is shifting from who builds the most advanced models to who governs them responsibly.

According to the World Economic Forum (2024), over 60% of global GDP is now exposed to AI-driven transformation — but only 28% of countries have enacted comprehensive AI governance frameworks.

The United States integrates voluntary safety commitments and energy accountability into AI deployment.

The EU AI Act sets a precedent for risk-based, human-centered regulation.

The UAE's National AI Strategy 2031 embeds ethics and sustainability at the core of competitiveness.

Singapore's AI Governance Framework demonstrates how flexible governance attracts foreign investment and talent.

The future of competitiveness will not depend solely on who innovates faster — but on who governs smarter.

2. The AI Governance–Competitiveness Nexus

Trust as Economic Capital - Global investors and markets now assess AI trustworthiness as a criterion for competitiveness. The OECD (2024) finds that countries with robust AI governance frameworks attract up to 25% more AI-related foreign direct investment (FDI) than those without. Transparency, explainability, and data ethics are now drivers of economic growth, not just moral obligations.

Governance as Innovation Infrastructure - Regulatory predictability boosts innovation confidence. Startups in countries with clear AI sandboxes (UAE, UK, Singapore) grow 30–40% faster on average due to reduced compliance uncertainty. Governance accelerates innovation when it provides clarity, agility, and collaboration — turning ethical constraints into competitive catalysts.

Competing on Values - AI systems increasingly reflect national values. Countries exporting "trustworthy AI" are also exporting governance influence — shaping digital norms, trade standards, and diplomatic relationships. Responsible governance thus becomes a form of soft power, defining how nations project credibility in a digital world.

3. The Energy–AI Governance Paradox

According to the International Energy Agency (IEA, 2024) Data centers already account for 2% of global electricity use, projected to double by 2026 due to AI workloads. Training a single large language model can consume up to 5 GWh — equivalent to the annual power consumption of 400 U.S. homes.

AI-related emissions could triple by 2030, offsetting many nations' net-zero gains. However, AI is also the key to solving the energy crisis; It can optimize smart grids, forecast renewable generation, and enable energy-efficient industrial automation.

This duality — the AI Energy Paradox — demands a governance model that integrates energy accountability into AI competitiveness, which need an AI Energy Governance Model that includes:

Energy Transparency - Mandate disclosure of AI model energy use and carbon footprint. Introduce national energy audits for high-impact AI systems.

Sustainable Infrastructure - Incentivize green data centers powered by renewable energy. Promote localization of compute resources to reduce transmission loss.

AI for Energy Optimization - Invest in AI systems that enhance energy efficiency (smart grids, dynamic pricing, predictive maintenance). Reward AI models that contribute to national sustainability KPIs.

Global Reporting Standards - Support global frameworks for AI energy impact reporting, aligned with IEA Net Zero Scenario and OECD Green Transition Guidelines.

4. The Strategic Intersection of AI, Blockchain, and Crypto

As nations design governance frameworks for the next digital era, the convergence of AI, blockchain, and crypto-assets is emerging as one of the most strategically important frontiers.

This intersection unlocks new mechanisms of trust, transparency, automation, and economic value creation, but it also introduces governance challenges requiring integrated regulatory thinking.

Blockchain as a Trust Anchor for AI Systems

Blockchain's immutable ledger and decentralized validation provide a foundation for verifiable AI systems, especially in high-risk domains.

- Ensures transparent data provenance for training datasets.
- Records model lifecycle, updates, and audits on an immutable chain.
- Enables real-time verification of AI outputs in critical sectors (healthcare, finance, public services).

Governance Implication: Countries can leverage blockchain to institutionalize AI transparency and accountability, reducing risks of bias, manipulation, and opaque decision-making.

Crypto-Economic Models that Align Stakeholders and Incentivize Safety

Tokenized incentives and decentralized governance frameworks introduce new models for:

- Funding open, transparent, safety-oriented AI research;
- Enforcing responsible behavior in AI ecosystems;
- Empowering global, decentralized communities to participate in AI oversight.

- Examples include decentralized compute markets, token-governed data-sharing cooperatives, and crypto-enabled mechanisms for model auditing.

Governance Implication: Forward-looking national policies can position countries as hubs for responsible AI-token ecosystems, attracting Web3 innovators and AI startups seeking transparent governance.

Digital Identity, Data Ownership, and Citizen-Controlled Data Markets

Blockchain-based digital identity systems paired with AI services allow individuals to maintain:

- Personal data ownership,
- Consent-based data sharing,
- Portable reputation and credentials.
- Crypto-enabled micro-payments also unlock data-as-an-asset models where citizens are compensated for sharing anonymized datasets used to train AI systems.

Governance Implication: Governments can create citizen-centric data governance ecosystems where privacy, control, and economic benefit are embedded by design.

Financial Stability and the AI–Crypto Policy Interface

- AI is increasingly used in algorithmic trading, AML monitoring, risk scoring, and fraud detection within crypto markets.

  Strong governance frameworks must ensure:
- Responsible AI use in financial automation,
- Transparent crypto-asset regulation,
- Monitoring of AI-driven market manipulation.

Governance Implication: A coordinated policy approach — covering AI + blockchain + digital assets — strengthens financial stability and market integrity.

5. Policy Levers for Competitive AI Governance

National AI Governance Council - Establish a cross-sector body that integrates AI policy and data ethics, ensuring whole-of-government alignment.

Risk-Based, Energy-Aware Regulation - Adopt tiered regulation distinguishing between low-risk and high-impact AI systems — adding an energy intensity criterion alongside traditional ethical risk assessments.

AI System Registry with Energy Disclosures - Mandate registration of all large-scale AI systems, including model energy usage, training carbon footprint, and data provenance.

AI Sandboxes for Green Innovation - Create regulatory sandboxes specifically for AI in energy optimization, incentivizing pilots that reduce national energy consumption or emissions.

Blockchain-Enabled Transparency for AI Systems – Leverage blockchain to record AI model updates, data provenance, audit trails, and decision logs, ensuring traceability, tamper-resistance, and trust in high-impact AI applications.

Crypto-Economic Incentives for Responsible AI – Explore token-based mechanisms that reward safe AI development, enable decentralized compute markets, and support citizen-governed data sharing while maintaining financial stability and compliance.

International Interoperability - Participate in global frameworks such as:
UN High-Level Advisory Body on AI (for governance harmonization), OECD AI Policy Observatory

Regional Leadership: The MENA Opportunity - The Middle East is rapidly emerging as a laboratory for AI governance.

UAE: Its National AI Strategy 2031 and the newly formed AI Council emphasize responsible deployment and energy efficiency — aligning with its Net Zero 2050 strategy.

Saudi Arabia: Through SDAIA and Vision 2030, the Kingdom is investing in AI for smart cities and sustainable energy management.

Qatar: Its AI Policy Framework focuses on human-centered and energy-resilient digital transformation.

6. Policy Recommendations

Adopt a Risk- and Impact-Based AI Regulatory Framework:

Implement adaptive regulation that evaluates AI systems by risk, societal impact, and economic value, ensuring proportional oversight that accelerates innovation safely.

Mainstream AI Literacy and Societal Readiness

Launch national programs that build AI literacy for policymakers, educators, and citizens, strengthening trust and enabling informed public participation in AI deployment.

Develop Integrated Governance for the AI–Blockchain–Crypto

Create regulatory guidelines that address digital identity, decentralized compute, token incentives, and crypto-market stability to ensure transparent and interoperable AI ecosystems.

Embed Energy Accountability into AI Governance Models

Mandate disclosure of AI energy use, incentivize renewable-powered compute infrastructure, and align AI growth with national sustainability and net-zero commitments.

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With more than 20 years of experience, George Salama, the "Salama - Policy & Business Intellectual Group" Executive President, is a seasoned international technology advisor, and a diplomat at heart.

Twitter's Regional Director - Public Policy from 2016 to 2022, where he reinforced Twitter's presence in the MENA region and beyond, led strategic engagement with leaders, governments, policy makers, regulators, law enforcement, civil society and media. George enabled significant policy reforms that served the business evolution and sustainability.

Before joining Twitter, George was the head of Public Policy for SAMENA Telecom Council, an ICT Industry Council based in the UAE, where he was in responsible of setting up, executing the council's policy plan and business strategies and shaping the ICT industry growth.

Prior to that, George served with the Egyptian Government, National Telecom Regulatory Authority (NTRA), where he was in charge of International Technical Coordination and Internet Public Policy.

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