Executive Summary of the Guide to Best Practices on Sustainable Blockchain and AI

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This guide provides a concise framework for the responsible and sustainable use of **blockchain and artificial intelligence (AI)**, aligned with European digital transformation policies and the objectives of the European Green Deal. It analyses the environmental impact of these technologies, particularly in terms of energy consumption, carbon footprint, and the intensive use of digital infrastructures, and proposes practical measures to mitigate these effects.

A core focus of the document is the adoption of **energy-efficient architectures and consensus mechanisms**, highlighting alternatives to Proof of Work such as Proof of Stake and Proof of Authority, as well as the transition towards renewable-powered and optimized digital infrastructures. At the same time, the guide emphasizes the role of AI in improving efficiency, reducing waste, and supporting better decision-making across key sectors.

The guide strongly promotes **low-impact AI and blockchain integration**, encouraging approaches such as federated learning, edge computing, and lightweight AI models. These strategies reduce large-scale data transfers, enhance privacy, and limit reliance on centralized data centers, while positioning blockchain primarily as a trusted layer for traceability and auditing.

In conclusion, the document outlines technical, sustainability, and governance recommendations supported by real-world use cases in areas such as energy, agriculture, mobility, and healthcare. Overall, it demonstrates that blockchain and AI can effectively support sustainable development when designed and governed with efficiency, transparency, and environmental responsibility in mind.