CPEC 2.0 and Pakistan's Digital Future:

AI Expansion, Smart Cities, and the Emerging Question of Technological Sovereignty

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"Technology is best when it brings people together." — Matt Mullenweg

China Pakistan Economic Corridor (CPEC) was initially focused on construction of roads, energy plants and industrial infrastructure, but now it is in a more complex and strategic stage, known as "CPEC 2.0." This new phase reflects a shift in priorities from physical to digital transformation, where artificial intelligence, cloud computing, 5G networks, and data-driven governance systems are becoming central pillars of cooperation between Pakistan and China.

CPEC since its Launch in 2015 has been one of the largest bilateral development frameworks in the region, which is projected to invest more than $60 billion in the energy, transport and infrastructure sector. So far the large energy projects part of CPEC have provided thousands of MWs to the national grid of Pakistan and eased the chronic power crisis that used to tend to hamper industrial development of Pakistan. The motorways and industrial and ports like Gwadar have also revolutionized the country's trade and connectivity routes as well as outside Pakistan.

However, as physical infrastructure projects mature, digital infrastructure is getting more of a focus. In recent years, official dialogues between Islamabad and Beijing have also been paying greater attention to cooperation in the area of artificial intelligence research, smart cities, and digital governance and vocational training in new technologies. It is a component of the China's wider technological vision, the "Digital Silk Road", which seeks to further deepen China's digital cooperation with its partner countries overseas, the "Semiconductor Silk Road", which aims to strengthen China's cooperation with its semiconductors partner countries, and the "AI Silk Road", which aims to boost China's cooperation with other countries in the field of artificial intelligence.

A policy analyst describes this transformation as a "structural shift from concrete infrastructure to algorithmic infrastructure, with data as the new strategic resource". This new paradigm extends beyond governance systems related to roads and energy infrastructure, and is being increasingly digitalized in platforms that govern information, public services and security systems.

One of the most visible expressions of this transformation is the development of "smart city" projects in urban major cities of Pakistan. Often include the deployment of artificial intelligence (AI) technologies that are used by law enforcement for surveillance, traffic control, biometric identification and central command and control systems. These are being increasingly used to monitor traffic and tracking and logging vehicle travel in Islamabad, Lahore and Karachi and to improve the urban security operations.

Advocates for these technologies argue that they can improve administrative efficiency and strengthen public safety in rapidly growing cities. A governance expert explains, "Urban centers in developing countries require digital tools to manage scale, complexity, and security challenges that traditional systems can no longer handle effectively." At the same time, these systems represent a deeper integration of AI-driven governance models that have already been widely deployed in parts of China.

This is a significant aspect of the Digital Economy in Pakistan. With software development, freelance web sites and outsourcing services the country has reportedly seen an annual increase in IT exports to $2.5-3.5 billion. Pakistan, however, is one of the fastest growing freelance economy countries as thousands of professionals are working in the online international markets. Therefore, it has now become a significant economic asset of Pakistan.

Within this context, CPEC 2.0 is increasingly being linked to digital capacity-building, including AI training centers, technical education partnerships, and research collaboration in emerging technologies. Other policy issues have been addressed for digital corridors, expanding the fiber optic grid and developing cloud infrastructure. A technology development expert notes, "Artificial intelligence and digital infrastructure cooperation could enable Pakistan to leapfrog traditional industrial stages if implemented with domestic capacity-building at its core."

China's role in this transformation is particularly significant due to its global leadership in areas such as facial recognition, telecom equipment manufacturing, and large-scale digital governance systems. Chinese companies such as Huawei and ZTE have already played major roles in Pakistan's telecommunications infrastructure, while surveillance and smart city technologies have been deployed in multiple urban projects.

However, alongside these developments, concerns over data sovereignty, digital dependency, and long-term strategic autonomy are becoming increasingly prominent. Critics argue that deep reliance on foreign-built digital systems could create structural vulnerabilities. A digital policy researcher warns, "Control over data architecture is equivalent to control over decision-making power in the digital age."

Key concerns include reliance on foreign cloud systems, limited transparency in AI algorithms, cyber security risks, and the potential for vendor lock-in in critical infrastructure. These concerns are amplified by the fact that global technology ecosystems are becoming increasingly fragmented due to geopolitical competition between major powers, particularly the United States and China.

Pakistan's IT sector is also deeply integrated with Western markets, especially in North America and Europe, where a large share of software exports, outsourcing contracts, and freelance income originates. This creates a complex strategic balancing challenge for policymakers, as alignment with one digital ecosystem may affect access to others. An international technology analyst notes, "Countries positioned between competing technological blocs must ensure interoperability and diversification to avoid long-term strategic constraints."

Another emerging dimension of CPEC 2.0 is its potential impact on governance and surveillance systems. AI-powered monitoring tools, predictive analytics, and centralized data platforms are increasingly being used for public safety and administrative decision-making. While these systems may enhance efficiency, they also raise questions about privacy, civil liberties, and institutional oversight in digital governance.

Experts emphasize that Pakistan's long-term digital success will depend not only on infrastructure imports but on domestic innovation capacity. Investment in local AI research, cyber security frameworks, data protection legislation, and advanced technical education is seen as essential for sustainable development. A development economist summarizes this

perspective by stating, “Technology transfer without local innovation capacity risks creating dependency rather than development.”

To conclude, the CPEC 2.0 is an opportunity and turning point for Pakistan. It is the basis for the modernization via artificial intelligence, smart infrastructure, digital governance systems and new challenges in issues of sovereignty, control and technological independence. The focus should be on digital transformation as a driver that boosts and not hinders Pakistan's autonomy for the future.

While technology will be a crucial part of the success in CPEC 2.0, as one strategic analyst mentions, “The success of the CPEC 2.0 will not be judged according to the technological advances the CPEC is introducing, but how well Pakistan will be able to retain the ownership, control and creative power of the systems that shape its digital future.”