NEXT IAS

DAILY EDITORIAL ANALYSIS

TOPIC

REALISING FULL POTENTIAL OF DIGITAL PUBLIC INFRASTRUCTURE

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Context

- Recent adoption of the **Global Digital Compact (GDC) at the UN Summit** marks the beginning of a period of global multi-stakeholder cooperation in digital governance, highlighting the need to carefully manage and regulate the deployment of **Digital Public Infrastructures (DPIs)**.

About the Digital Public Infrastructure (DPI)

- It encompasses the foundational digital systems and services that enable efficient, inclusive, and transparent public service delivery. It refers to the shared digital systems and services that support public service delivery at scale.
- It includes digital identity systems, payment platforms, data exchange frameworks, and other foundational technologies, and characterised by its interoperability, open standards, societal scale, and robust governance frameworks.

Foundational Elements of DPI

- **Digital Identification Systems:** Programs like Aadhaar in India that provide a unique digital identity for citizens.
- **Payment Infrastructure:** Platforms like Unified Payments Interface (UPI) in India that facilitate secure and efficient digital payments.
- **Data Exchange Solutions:** Frameworks that enable secure and standardised exchange of data between different entities.

Guiding Principles of a 'Good DPI'

- **Uphold the Citizens' Relationship with the Market and State:** The digital infrastructure must remain neutral and prevent undue influence that could disrupt the balance between citizens, markets, and governance.
- **Safeguard Citizen Empowerment and Privacy:** A consent-based system should be implemented to protect personal data and empower citizens in how their information is used.
- **Prevent Lock-In by Monopolies:** Interoperability is crucial to prevent digital monopolies from trapping citizens within proprietary platforms.
- **Techno-Legal Regulation:** A techno-legal framework combining technology and legal oversight is essential to ensure ethical innovation and secure digital practices while upholding citizens' rights.
- **Public-Private Innovation Collaboration**: Encourage collaborative innovation between the public and private sectors while ensuring that the public good is prioritised over corporate monopolistic interests.

Scenario in India

- India boasts the highest number of digital transactions, surpassing even the combined figures of the US, China, and Europe. The digital economy is booming, projected to reach a staggering $1 trillion by 2025.
  - This growth is fuelled by a massive internet user base, with over 759 million Indians actively connected, with a significant portion residing in rural areas.
- With the **world's largest digital identity programme, Aadhaar,** and the highest volume of real-time digital payments (last recorded at 14.96 billion for the month of August), **India** has been at the **forefront of global dialogues on DPIs.**
- **Bank accounts** for adults increased from 25% in 2008 to more than 80% in the past six years, with women owning 56% of these accounts.
  - The value of digital transactions reached nearly 50% of India's nominal GDP in 2022-23, and enabled access to credit through pre-sanctioned loans on UPI.
- Similarly, the **Unified Payments Interface (UPI)** is witnessing exponential growth, expected to reach a billion transactions daily by 2026.
- The government's programmes like the *National Optical Fibre Network (NOFN), Digital India, National Broadband Mission, and National Data Centre Policy* have laid the groundwork for a robust digital infrastructure.

- The Bharat Net Project, with its ambitious goal of connecting villages through high-speed internet, serves as a prime example.
  - **Broadband connectivity** has also seen a significant leap, reaching over 93% of Indian villages.
- The **World Bank's ID4D (Identity for Development)** is supporting nearly 60 countries, **G2Px (Digitising Government-To-Person Payments)** is in 35 countries, and India's not-for-profit initiative **Modular Open Source Identity Platform (MOSIP)** is working with 11 countries.
  - **Estonia's e-Residency program** has fostered a digital nation, providing global entrepreneurs with access to its digital infrastructure.

DPI and the Agenda for Sustainable Development 2030

- **Eradicating Poverty (SDG 1):** DPI facilitates direct benefit transfers and social protection programs, ensuring that financial aid reaches the most vulnerable populations efficiently and transparently.
- **Quality Education (SDG 4):** Digital learning platforms and resources enabled by DPI provide equitable access to quality education, especially in remote and underserved areas.
- **Gender Equality (SDG 5):** DPI promotes gender equality by providing women with access to digital financial services, healthcare, and educational resources, thereby empowering them economically and socially.
- **Decent Work and Economic Growth (SDG 8):** By fostering digital entrepreneurship and innovation, DPI creates new job opportunities and drives economic growth.
- **Industry, Innovation, and Infrastructure (SDG 9):** DPI underpins the development of resilient infrastructure, promotes inclusive industrialization, and fosters innovation.
- **Reduced Inequalities (SDG 10):** DPI ensures that marginalised communities have access to essential services, reducing inequalities in access to healthcare, education, and financial services.

Key Challenges Associated With DPI

- **Privacy and Security Concerns:** Ensuring the protection of personal data and preventing cyber threats is paramount. Privacy violations, identity theft, and data-driven manipulation are significant risks.
- **Interoperability:** Creating systems that can seamlessly interact with each other is crucial. This involves standardising protocols and ensuring compatibility across different platforms and services.
- **Digital Divide:** Bridging the gap between those with access to digital technologies and those without is a major challenge. It includes addressing issues of affordability, digital literacy, and infrastructure availability in remote areas.
- **Institutional Change:** Implementing DPI requires significant changes within public institutions, including updating policies, training staff, and adapting to new technologies.
- **Big Data Governance:** Managing and utilising large volumes of data responsibly is critical. This involves establishing clear guidelines for data collection, storage, and usage to ensure transparency and accountability.
- **Funding and Investment:** Securing adequate funding and investment for DPI projects is essential. This includes not only initial setup costs but also ongoing maintenance and upgrades.

Realising the Full Potential of DPI: Strategic Steps

- **Integrating Impact Assessments:** To ensure that DPI initiatives are effective and inclusive, it is crucial to integrate impact assessments into their design. It involves evaluating the social, economic, and environmental impacts of DPI projects from the outset.
  - By doing so, policymakers can identify potential issues early and make necessary adjustments to enhance the benefits and mitigate any negative consequences.
- **Ensuring Data Privacy and Security:** As DPI systems handle vast amounts of sensitive data, ensuring robust data privacy and security measures is paramount. It includes implementing strong encryption standards, regular security audits, and transparent data governance policies.
  - Protecting user data not only builds trust but also safeguards against potential misuse and cyber threats.

- **Promoting Inclusivity and Accessibility:** For DPI to be truly transformative, it must be accessible to all segments of society, including marginalised and underserved communities. It requires designing user-friendly interfaces, providing digital literacy programs, and ensuring affordable access to digital services.
  - Inclusivity should be a core principle in the development and deployment of DPI.
- **Fostering Public-Private Partnerships:** Collaboration between the public and private sectors can accelerate the development and adoption of DPI. Public-private partnerships can leverage the strengths of both sectors, combining public oversight and private innovation to create scalable and sustainable digital solutions.
  - Such collaborations can also attract investment and drive technological advancements.
- **Continuous Innovation and Adaptation:** The digital landscape is constantly evolving, and DPI must adapt to keep pace with technological advancements. This requires a commitment to continuous innovation, including regular updates to infrastructure, adoption of emerging technologies, and fostering a culture of experimentation and learning.
  - Policymakers should encourage research and development to explore new possibilities for DPI.

Conclusion and Way Forward

DPI Impact Assessments: 3Ds Approach

- **Design:** Integrate impact assessment mechanisms into DPI design.
  - Ensure systems can collect data for continuous feedback.
- **Data:** Make data available through trusted, well-governed mechanisms.
  - Balance data availability with privacy to ensure high-quality assessments.
- **Dialogue:** Foster dialogue among stakeholders: third-party assessors, policymakers, private sector, and civil society.
  - Establish engagement protocols for participative governance and improved accountability.

Realising the full potential of Digital Public Infrastructure requires a multifaceted approach that prioritises impact assessments, data privacy, inclusivity, public-private partnerships, and continuous innovation.

- By addressing these key areas, India can harness the power of DPI to drive sustainable development, enhance public services, and improve the quality of life for its citizens.

Mains Practice Question

[Q] What are the Digital Public Infrastructures (DPIs)? In your opinion, what are the significant challenges and opportunities in leveraging DPIs to achieve its maximum potential for societal and economic development?

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