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2025: INDIA'S TECH TRANSFORMATION YEAR

India's Economic Milestones and Future Outlook

1. In 2025, India will reach two major economic milestones:
 - Becoming a \$4 trillion economy.
 - Surpassing Japan to become the fourth-largest economy globally.
2. Future progress toward becoming the third-largest global economy will depend on India's ability to effectively harness emerging technologies.
3. McKinsey's 2024 report highlights 18 technology areas that could contribute \$29 trillion to \$48 trillion globally by 2040, emphasizing the transformative potential of technological advancements.

Economic Potential of Emerging Technologies

1. **Production Benefits:**
 - Encouraging the production of emerging technologies fosters innovation, creates new job opportunities, and reduces dependency on imports.
 - In a globally connected world, network effects lead to significant economic gains and global dominance. This is evident in sectors like semiconductors and e-commerce, where a few dominant players capture a major share of the market.
2. **Usage Benefits:**
 - Utilizing new technologies enhances operational efficiency, increases productivity, and drives innovation, generating multiplier effects that benefit the overall economy.

India's Vision for Becoming a 'Product Nation'

1. India aims to transform into a "Product Nation" in 2025 by:
 - Allocating approximately ₹1 trillion to private sector research and development (R&D).



- Developing governance frameworks and implementation modalities to ensure the success of this initiative.
2. Key policy reforms to support this transformation include:
- Opening up R&D across various sectors, including defense, atomic energy, and deep-water technologies, while removing bureaucratic hurdles from legacy institutions.
 - Establishing government procurement policies to encourage innovation.
 - Prioritizing the creation of a highly skilled workforce in emerging technologies such as quantum computing, cybersecurity, and space technologies.
 - Promoting global branding and export of indigenous industry products through bilateral and multilateral partnerships.
 - Reforming standard-setting processes to ensure they are industry-led and backed by legislative frameworks.

Key Technology Roadmap for 2025

1. Artificial Intelligence (AI):

- AI, including generative AI, is critical for driving development in healthcare, education, and agriculture.
- Accelerate the empanelment of vendors for 10,000 graphics processing units (GPUs) to strengthen AI infrastructure.
- Prioritize AI applications in defense and security while promoting AI startups.
- Develop foundational AI models for agriculture, healthcare, education, and sanitation, making them accessible at subsidized rates.
- Enable startups to build localized AI models by providing API-based access to India's diverse data assets.

2. Cybersecurity and Forensics:

- India's rapid digital adoption has increased vulnerabilities, necessitating stringent cybersecurity regulations with penal provisions across critical sectors such as power, transportation, healthcare, aviation, and oil and gas.
- Implement the Digital Personal Data Protection (DPDP) Act, 2023, early in 2025.
- Expand digital forensics by notifying private labs as authorized examiners of electronic evidence and supporting the development of indigenous forensic tools.

3. Quantum Technologies:



- Designate a nodal ministry to oversee the adoption of quantum technologies in key sectors like defense, healthcare, telecommunications, space, and finance.
- Roll out quantum key distribution and post-quantum cryptography solutions based on indigenous capabilities through a time-bound action plan.
- Develop quantum-safe satellite communication capabilities to ensure secure communication.

4. Exploiting Data Wealth:

- Leverage India's status as one of the world's largest data producers by expanding the Account Aggregator (AA) model in finance and adapting it for education and healthcare.
- Address the shortage of high-quality geospatial data by completing nationwide geospatial data compilation and universalizing initiatives like PM Gati Shakti.
- Begin the implementation of PM Underwater Gati Shakti to tap into the blue economy by creating smart maritime zones for sustainable use of marine resources.

5. Cloud Computing:

- India accounts for only 1.6% of the global cloud compute market despite generating 20% of the world's data.
- Aim to capture 5% of the global cloud infrastructure market by 2030 through aggressive government policies, potentially creating a \$100 billion industry.
- Expand data center capacity to capitalize on rising AI-driven cloud demand.

6. Digital Competition:

- Develop a legislative framework in 2025 to address issues of digital monopolies while balancing innovation with consumer welfare.
- Remove restrictive bureaucratic controls to foster competition in the digital economy.

7. Air Mobility:

- India's drone industry has made significant advancements, with startups working on indigenous drone-taxi designs.
- Although rules for vertiports and air-taxi standards have been notified, introducing an automated unmanned traffic management system in 2025 is essential to ensure safe and efficient operations.

8. Semiconductors:



- Several semiconductor fabrication (fab) projects have been announced across various states in India.
- Focus in 2025 should be on implementing these projects, operationalizing backend fabs, and incentivizing the ecosystem for the supply of chemicals, gases, substrates, and consumables to improve economic viability.

9. Space Technologies:

- Finalize satellite spectrum allocation to enable satellite-based communication services.
- Disburse the ₹1,000 crore venture fund to promote space-tech startups.
- Transfer ISRO's small-scale launch vehicle technology to private industry to encourage private sector participation in the space sector.
- Formulate schemes to promote satellite usage for commercial and defense purposes.

Role of Government Policies in Technology Advancement

1. Government intervention is critical for driving technology adoption by creating infrastructure, providing financial support, reducing adoption costs, and enhancing skills.
2. The success stories of Aadhaar and UPI highlight the transformative impact of well-designed government policies on widespread technology adoption.

Conclusion

1. The year 2025 will be a turning point for India's technological progress, with multiple initiatives and reforms expected to drive innovation and economic growth.
2. By focusing on emerging technologies and adopting forward-looking policies, India can unlock its full economic potential and secure a leading position in the global economy.

Source: https://www.business-standard.com/opinion/columns/unlocking-india-s-economic-potential-key-tech-policy-priorities-for-2025-125010901355_1.html

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