NEXT IAS

DAILY EDITORIAL ANALYSIS

TOPIC

INNOVATION IN INDIA: AS GREATEST EQUALISER

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Context

- Recent innovation in India — particularly digital innovation — has emerged as a powerful equaliser, transforming governance, empowering citizens, and redefining access to opportunity.

Need of Innovation in India

- Innovation is the engine that can drive inclusive growth, global competitiveness, and sustainable development. It offers:
    - Scalable solutions to public service delivery;
    - Efficient use of resources in agriculture, energy, and manufacturing;
    - Empowerment of youth and entrepreneurs through digital tools;
    - Global competitiveness in emerging technologies like AI, biotech, and clean energy;
- According to the NITI Aayog, innovation has already played a transformative role in India's **Green, White, and Blue revolutions**—lifting millions out of poverty and creating new livelihoods.

India's Innovation Ecosystem

- **Global Innovation Index (2025)** of WIPO ranks **India at 38th**, made a steady climb from 39th in 2024, 48th in 2020 and 81st in 2015;
- **1st rank** among **lower-middle-income economies** and **1st in Central and Southern Asia** for innovation performance;
- Strong performance in ICT services exports, venture capital received, and unicorn creation;

Innovation in India as an Equaliser

- **Digital India and Connectivity**: Digital India **mission** has expanded internet access to remote villages, making education, healthcare, and financial services accessible to all.
- **JAM Trinity & India Stack:**
    - **Jan Dhan**: 53+ crore bank accounts, bringing the unbanked into the formal economy.
    - **Aadhaar**: 142 crore digital identities; simplified verification, enabled e-KYC at just ₹5.
    - **Mobile (UPI)**: 55 crore+ users; 20 billion transactions worth ₹24.85 lakh crore in Aug 2025 alone.
- **Technology for Citizens:**
    - **PM-KISAN**: Direct income support to 11 crore farmers.
    - **DigiLocker**: 57 crore users, 967 crore documents securely stored.
    - **E-Services**: From tax filing to traffic checks, everyday processes are simplified.
    - **Education Technology**: **Tools like DIKSHA and SWAYAM** are democratizing access to high-quality learning content.
- **Governance and Accountability:**
    - **PRAGATI**: PM-led monthly video conferences for real-time project monitoring.
    - **Direct Benefit Transfer**: Saved over ₹4.3 lakh crore by eliminating leakages.
- **Space and Global Leadership:**
    - **Mars Orbiter Mission**: World's most cost-effective Mars mission.
    - **Chandrayaan-3**: First to land on Moon's South Pole.
    - **ISRO**: 104 satellites in one launch; satellites launched for 34 nations.
    - **CoWIN**: Managed 200 crore vaccine doses with precision and transparency.
- **Manufacturing and Innovation:**
    - Stepwise approach from assembly to advanced semiconductor design.
    - India now designs cutting-edge chips (2nm, 3nm, 7nm).
    - Investments in fabs, packaging, chemicals, and gases to build a full ecosystem.

- **Infrastructure with Intelligence:**
  - **PM Gati Shakti**: Integrated GIS mapping of roads, rail, ports, and airports.
  - **IndiaAI Mission**: 38,000 GPUs at one-third global cost; datasets for AI innovation.
  - **AIKosh**: Supports development of indigenous AI in Indian languages and sectors.
- **Engineering Marvels:**
  - **Statue of Unity**: 182m tall, world's tallest statue, transforming Kevadia into a tourism hub.
  - **Chenab Bridge & Himalayan Tunnelling**: Engineering breakthroughs in connectivity.
  - **Pamban Bridge**: Modern replacement for century-old structure.

Innovation in Governance and Public Policy

- **Municipal and Rural Innovation**: Institutional innovations like **e-governance, citizen charters, and transparent municipal funds** allocation have improved accountability at the grassroots level.
- **Equalising Opportunities for Women and Marginalised Groups**: Government initiatives in **STEM promotion, entrepreneurship funds for women, and tribal innovation hubs** are providing equal footing for historically disadvantaged communities.
- **Healthcare Innovation**: Telemedicine platforms and government health schemes like Ayushman Bharat Digital Mission are reducing geographical barriers to quality healthcare, especially in underserved regions.
- **Grassroots Innovation Movements**: The National Innovation Foundation has documented thousands of grassroots ideas, proving that innovation is not confined to laboratories but thrives in villages too.

Case Study on Gujarat

- **Jyotigram Scheme (2003):** Used feeder separation technology to provide 24×7 rural power.
  - Revived rural industries, slowed groundwater depletion, and enabled women's education.
  - Investment of ₹1,115 crore recovered within 2.5 years.
- **Solar Panels on Narmada Canal (2012):** Generated 16 million units annually, powering 16,000 homes.
  - Reduced water evaporation, showcasing dual benefits of energy and conservation.
  - Adopted later by the USA and Spain.
- **Governance through Technology:**
  - **e-Dhara** digitised land records.
  - **SWAGAT** enabled citizen access to the Chief Minister via video conferencing.
  - **Online tenders** curbed corruption and boosted transparency.

Challenges to Innovation as an Equaliser in India

- **Digital Divide:** Rural and low-income communities still face limited access to high-speed internet, digital literacy, and tech infrastructure, despite rising smartphone penetration.
- **Gender Gaps**: Women often face barriers in accessing technology-driven opportunities.
- **Startup Focus:** Many Indian startups **prioritize consumer convenience** (e.g., food delivery, quick commerce) **over deep-tech or grassroots innovation**.
- **Low R&D Orientation:** India's education system often emphasizes rote learning over creativity and problem-solving. It stifles innovation from the ground up.
  - Innovators often struggle to move from prototype to market due to lack of funding, testing facilities, and mentorship in **NITI Aayog's Atal Innovation Mission.**
- **Unequal access to quality education:** Technology in education has not yet bridged the gap between urban and rural learners.
  - **ASER data** shows that while smartphone access has increased, meaningful learning outcomes remain uneven.

- **Lack of Skill:** Indian industry often **prioritizes low-cost labor over technological advancement.**
  - Over 70% of manufacturing workers are in small, unregistered enterprises with minimal exposure to innovation.
  - A large portion of India's workforce lacks job security, social benefits, or access to upskilling, making it harder to participate in or benefit from innovation.
- **State-level Disparities:** The **India Innovation Index** reveals wide **gaps in innovation capacity** between states, with southern and western states outperforming others.

Conclusion

- Innovation in India is indeed the **greatest equaliser**—transforming education, health, governance, and economy by bridging divides and creating new opportunities.
- While challenges persist, sustained policy support, grassroots participation, and inclusive design ensure that innovation is not just about economic growth but about social justice and empowerment.

Source: IE

Daily Mains Practice Question
Q. Discuss how innovation has emerged as a tool for social and economic equalisation in India. Evaluate the role of government initiatives, digital infrastructure, and grassroots innovation in bridging the urban-rural and rich-poor divide.