

India's Startup Ecosystem

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India's Startup Ecosystem: Building a Deep-Tech Future for India

Context

India's Commerce and Industry Minister recently criticized the country's startup ecosystem for being too focused on **consumer-oriented sectors** such as food delivery and e-commerce. He emphasized the urgent need for Indian startups to **transition towards deep-tech innovations**, which are crucial for long-term strategic goals, national security, and technological sovereignty.

Overview of India's Startup Ecosystem

- **Third-Largest Startup Ecosystem Globally**

India is home to **over 100 unicorns**, making it the **third-largest startup ecosystem** after the US and China.

In **2023**, India added **more than 20 unicorns**, predominantly in **logistics, fintech, and ed-tech** sectors.

- **Strong Government Support**

Policy initiatives like **Startup India, Digital India**, and the **IndiaAI Mission** have been instrumental in fostering startup growth.

Recent efforts include:

- A **₹10,000 crore Deep-Tech Fund**
- The **India Semiconductor Mission**

- **Young and Talented Workforce**

With **over 65% of the population below 35**, India has a strong base of **young, tech-savvy professionals**.

The country produces **more than 1.5 million engineers annually**, contributing significantly to the tech sector.

- **Global Recognition of Indian Talent**

Prominent Indian-origin tech leaders like **Sundar Pichai** (Google) and **Satya Nadella** (Microsoft) exemplify India's global tech leadership.

Indian entrepreneurs are leading startups in **AI, cybersecurity, and fintech** across the world.

- **Improving Digital Infrastructure**

India's digital public infrastructure, including **UPI**, **Aadhaar**, and **BharatNet**, has laid the foundation for digital innovation.

In **2023**, India processed **over 100 billion UPI transactions**, showing widespread adoption.

Challenges in India's Startup Ecosystem

- **Excessive Focus on Consumer-Tech**

Most unicorns cater to short-cycle, **B2C models** such as food delivery and quick commerce, which lack deep technological innovation.

- **Limited Investment in Deep-Tech**

Although deep-tech funding rose **78% year-on-year in 2024**, total investment remained at just **\$1.6 billion**, significantly lower than the funding in China and the US.

- **Risk-Averse Venture Capital Environment**

Indian venture capitalists often prioritize **quick returns**, avoiding long-gestation projects. In contrast, US investors back **long-term ventures** like **SpaceX** and **OpenAI**.

- **Weak Academia-Startup Collaboration**

There is inadequate integration between **universities and startups**, leading to limited R&D output.

Indian universities rarely feature in global innovation or patent rankings.

- **Regulatory Bottlenecks**

Despite the removal of the **Angel Tax**, startups still face:

- **High compliance burdens**
 - **Exit challenges** for investors
 - **Delays in IP registration and funding clearance**
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Way Forward

- **Increase R&D Expenditure**

India currently spends **less than 1% of GDP** on R&D. This needs to be raised to at least **2%** to compete globally.

By comparison:

- **China spends 2.6%**
- **US and Germany spend over 3%**

- **Strengthen Academia-Industry Linkages**

Create **Centres of Excellence** in AI, quantum computing, and semiconductor research.

Link premier institutions like **IITs** with startups in **defence-tech**, **biotech**, and **space-tech**.

- **Revamp STEM Education and Upskilling**

Introduce early training in emerging fields through the **National Deep Tech Startup Policy (NDTSP) 2023**, focusing on **AI**, **robotics**, and **semiconductor design**.

- **Facilitate Long-Term Capital Access**

Encourage **patient capital** from sovereign wealth funds and long-horizon VC funds.

The **₹10,000 crore Deep-Tech Fund** should be **scaled and deployed strategically**.

- **Simplify Regulatory Framework**

Introduce fast-track processes for **IP rights**, **patent approvals**, and **FDI clearances**.

Adopt a **mission-mode approach** inspired by models like **NASA-DARPA** to support breakthrough innovations.

Conclusion

India's startup ecosystem has achieved remarkable growth in consumer-centric innovation, but it must now transition to deep-tech to secure its **strategic interests** and **technological leadership**. With a combination of **policy reforms**, **R&D investment**, **educational overhaul**, and **supportive capital structures**, India has the potential to lead in **next-generation technologies** and emerge as a global innovation powerhouse.

