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# Powering the Future: The Semiconductor and AI Revolution

***15 August, 2025***

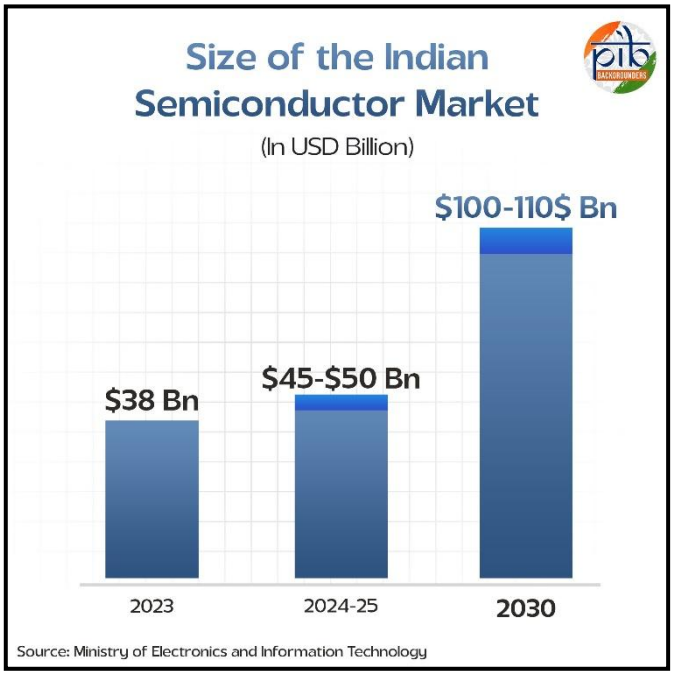
Prime Minister Narendra Modi at his Independence Day address on 15th August, 2025:

- Today semiconductors have become a power in the whole world. 50-60 years ago, the very idea of semiconductor was stuck.
- Our government has advanced the work on semiconductors in mission mode.
- Six different semiconductor units are being established on the ground and we have already given green signal to four new units
- By the end of this year, Made In India semiconductor chips will be available in the market.

## Introduction

Semiconductors are fundamental to today's digital economy, powering everything from smartphones and automobiles to defense and medical devices. India has made remarkable progress in strengthening its semiconductor ecosystem, driven by the vision of Aatmanirbhar.

With the launch of the India Semiconductor Mission and an outlay of **₹76,000 crore**, several fabrication and design facilities have been established, propelling the country towards technological leadership and reduced import dependence. Recent government approvals and investments signify India's emergence as a global hub for electronics and semiconductor manufacturing, underscoring its commitment to self-reliance and innovation.




## Major Milestones

- **2021:** Union Cabinet approved the India Semiconductor Mission (ISM) with a ₹76,000 crore outlay to boost fabrication, design, and manufacturing.
- **2023–2025:** Rapid setup of major facilities by domestic and foreign firms with significant investments. Total approved projects under ISM reaches to **10** with cumulative investments of around **Rs.1.60 lakh crore in 6 states.**
- **2025:** India inaugurated its first centers for advanced 3-nanometer chip design in Noida and Bengaluru, an Indian first.
- At the Global Investors Summit 2025, it was announced that India's **first indigenous**

**semiconductor chip** would be ready for production this year. Five production units are under construction, signalling a significant milestone for domestic capability.

- Madhya Pradesh has made a significant stride in the IT and electronics sector with the inauguration of its first IT campus, backed by an investment of ₹150 crore over the next six years.
- In July 2025, Netrasemi, a startup supported under the government's chip design scheme, has received Venture Capital (VC) investment of **₹107 crore**. The company is working on making chips for smart vision, CCTV cameras, and Internet of Things (IoT) applications.
- In fabrication, India is moving from traditional Silicon based semiconductors to the latest Silicon Carbide based semiconductors. In design, the roadmap is to introduce the more advanced 3D Glass packaging technology. Such technology is critical for sectors like defence systems, missiles, radars & rockets in space.

## India's Semiconductor Ecosystem: Approved Plants

| Date | Company | Location | Investment | Output Capacity |
|---|---|---|---|---|
| **JUN 2023** | Micron Technology | Sanand, Gujarat | ₹22,516 crore | ATMP Facility, with phased ramp-up. |
| **FEB 2024** | Tata Electronics (TEPL) in partnership with Powerchip Semiconductor Manufacturing Corp (PSMC) of Taiwan | Dholera, Gujarat | ~₹91,000 crore | 50,000 wafers/month |
| **FEB 2024** | CG Power & Industrial Pvt Ltd in partnership with Renasas and Stars | Sanand, Gujarat | ~₹7,600 crore | 15 million chips/day |
| **FEB 2024** | Tata Semiconductor Assembly and Test Pvt Ltd (TSAT) | Morigaon, Assam | ₹27,000 crore | 48 million chips/day |
| **SEPT 2024** | Kaynes Semicon Pvt Ltd | Sanand, Gujarat | ₹3,307 crore | 6.33 million chips/day |
| **MAY 2025** | HCL-Foxconn JV | Jewar, Uttar Pradesh | ₹3,700 crore | 20,000 wafers/month (36 M units/yr) |

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|---|---|---|---|---|
| **AUGUST 2025** | SicSem Private Limited | Bhubaneshwar, Odisha | ₹2,066 crore | 60 thousand wafers per year; ATMP capacity: 96 million Units/year |
| **AUGUST 2025** | 3D Glass Solutions Inc. | Bhubaneshwar, Odisha | ₹1,943 Cr | Glass panels: 70 Thousand units/year; ATMP : 50 million units/ year |
| **AUGUST 2025** | CDIL (Continental Device) | Mohali, Punjab | ₹117 Cr | 158 million units /year |
| **AUGUST 2025** | ASIP (Advanced System in Package Technologies) | Andhra Pradesh | ₹468 Cr | 96 million units /year |

### Training tomorrow's Experts

- New curriculum by All India Council for Technical Education (AICTE) for VLSI Design & Technology, Integrated Circuit (IC) manufacturing.
- Developing **85,000 skilled manpower** in semiconductor design sector & providing EDA tools to design semiconductor chips, over 10 years.
- **45,000+ students from 100 institutions** enrolled so far.
- Skilled Manpower Advanced Research and Training (SMART) Lab at NIELIT Calicut to train **1 lakh engineers nation-wide with 44,000+ engineers** already trained.
- Collaboration with industry and universities such as Lam Research, IBM and Purdue University.
- C2S program: **278 academic institutions and 72 start-ups** have been given EDA tools, as of August 2025.
- **60 thousand students benefitted**, as of August 2025.
- **20 chips from 17 institutions** fabricated so far; showing India's push for indigenous R&D.

**SEMICON India**: (Sept 2–4, New Delhi)- a flagship event organised in partnership with SEMI (Semiconductor Equipment and Materials International). The platform brings together global industry leaders, policymakers, academia, and startups to foster investment, dialogue, and strategic partnerships. will unite global leaders, academia, and industry to drive collaboration, research, and supply chain advancements.

These achievements reflect India's determined, multi-pronged effort to achieve Aatmanirbharta, reduce external dependencies, and emerge as a global semiconductor powerhouse.

## Milestones on India's Road to AI Self-Reliance

India has a strong information technology ecosystem. It generates annual revenues of more than **250 billion dollars and provides employment to more than 6 million people.** Global rankings such as Stanford AI rankings place India among the top countries in AI skills, capabilities, and policies to use AI. India is also the **second-largest contributor to GitHub A**I projects, showcasing its vibrant developer community.

### AI Compute & Semiconductor Infrastructure

- **₹10,300 crore allocated** under IndiaAI Mission (2024–2029) to strengthen AI capabilities.

**Key Launches Under IndiaAI Mission**

- **AIKosha: IndiaAI Datasets Platform** with 1400+ datasets, 217+ AI models, and secure access.
- **AI Compute Portal** offering **34,381 GPUs** up to 40% subsidy.
- **AI Competency Framework** for public officials to enhance AI skills.
- **iGOT-AI** personalized AI learning platform for government officers.
- **IndiaAI Startups Global Acceleration Program** with Station F, Paris.
- **IndiaAI Innovation Challenge** shortlisted 30 AI solutions from 900+ entries.
- **FutureSkills Fellowship** expanding AI training to IITs, NITs, and Tier 2–3 Data Labs.

- MeitY is hosting open-source **AI models on the AIRAWAT infrastructure** at CDAC-Pune. Three LLAMA family models are now deployed and accessible to developers via paid APIs.
- High-end compute facility with **34,381 GPUs**; one of the largest globally.
- Open GPU marketplace for affordable access by startups, researchers, and students.
- Indigenous GPU development planned within 3–5 years.
- **₹100/hour subsidised GPU access** vs. $2.5–$3/hour globally.

## Open Data & Centres of Excellence (CoE)

- IndiaAI Dataset Platform to host the largest collection of anonymised datasets.
- **Three AI CoEs in Healthcare, Agriculture, Sustainable Cities**; ₹500 crore for CoE in Education.
- **Five National CoEs for AI skilling** in collaboration with global partners.

## Indigenous AI Models & Language Technologies

- Development of foundational AI models, LLMs (Large Language Model) & SLMs (Small Language Model) tailored to Indian needs.
- Digital India BHASHINI for Indian language translation & voice access.
- BharatGen world's first government-funded multimodal LLM initiative.
- **Sarvam-1, Chitralekha, and Hanooman's Everest 1.0** for multilingual AI applications.

## AI Integration with Digital Public Infrastructure (DPI)

- AI-powered crowd & transport management at **Mahakumbh 2025 using DPI platforms**.
- Bhashini-powered multilingual chatbot integrated with police & railways.

## AI Talent & Workforce Development

- AI education expansion across UG, PG & Ph.D. programs; fellowships for top AI research.
- **AI labs in Tier 2 & Tier 3 cities** to decentralise innovation.
- India ranks 1st in global AI skill penetration; 263% talent growth since 2016.
- **AI industry projected at USD 28.8B by 2025** with 1M AI professionals by 2026.

### AI Adoption & Industry Growth

- 80% Indian firms view AI as a core priority; 69% increasing tech investments in 2025.
- **GenAI startup funding grew 6x in Q2 FY25** to USD 51M.
- AI aiding SMB revenue growth; 93% report increased revenues from AI use.

### Pragmatic AI Regulation

- Techno-legal approach focusing on safeguards for deep fakes, privacy & cybersecurity.
- Funding top institutions to develop AI ethics & safety frameworks without overregulation.

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