



SEMICONDUCTOR INDUSTRY IN INDIA

The Union Cabinet has approved **4 new semiconductor projects** in **Odisha, Punjab, and Andhra Pradesh** under the **India Semiconductor Mission (ISM)**, raising the total to **10 projects across 6 states**.

India's Semiconductor Market: Trends & Opportunities

PARAMETER	DETAILS
Consumption Size	USD 52 bn (2024-25) → USD 103.4 bn by 2030 at 13% CAGR
Major Demand Segments	Mobile handsets, IT & industrial electronics (~70% revenue)
Import Dependence	FY16-24: Imports surged — ICs (+2,000%), memory chips (+4,500%), amplifiers (+4,800%); China supplies ~ 1/3
India's Edge	<ul style="list-style-type: none">2nd largest 5G smartphone market (13% global share)Strong demand: 5G, AI, digital devicesGlobal partnerships with US, JapanBoost from Semicon India programme
Global Dominance	Taiwan, South Korea, Japan, China, US

India Semiconductor Mission (ISM)

⌘ **Launched (2021)** under **MeitY**, to reduce import dependence & integrate India in global value chains.

⌘ **Objectives:**

- ❖ Set up **fabs, packaging & testing (ATMP/OSAT)** units
- ❖ Promote **chip design startups** & indigenous IP
- ❖ Train engineers & attract global investments

Key Schemes under ISM

⌘ **Semiconductor Fabs Scheme** – Up to **50% support** for fabs

⌘ **Display Fabs Scheme** – Up to **50% support** for AMOLED/LCD fabs

⌘ **Compound Semiconductors & ATMP/OSAT Scheme** – 50% support for MEMS, sensors, photonics, packaging

⌘ **Design Linked Incentive (DLI) Scheme** – Offers ₹15 crore support per firm for design startups and MSMEs.

RELATED CHALLENGES	WAY FORWARD
Infrastructure & Innovation: High fab costs, weak research, dependence on imported components & IP	Boost R&D & indigenous IP , support startups & product design
Skilled Workforce Gap: Shortfall of 2.5–3.5 lakh professionals by 2027	Specialized training programs , build skilled workforce
Global Competition: Dominance of Taiwan, South Korea	Chip diplomacy , focus on niche tech like MEMS & sensors
Environmental & Regulatory: Hazardous chemicals, high energy use, complex regulations & policy uncertainty	Incentives & policy support , encourage private sector participation

RBI'S FREE-AI COMMITTEE REPORT

RBI has released **FREE-AI (Framework for Responsible and Ethical Enablement of AI)** Committee Report to guide AI adoption in India's financial sector.

Existing Challenges

- ❧ **Model Bias & Black-box Risk:** AI models can inherit bias and lack interpretability
- ❧ **Third-Party & Vendor Dependence:** Over-reliance on cloud providers or external vendors raises risks
- ❧ **Regulatory Gaps & Liability Concerns:** Unclear responsibility for AI outcomes
- ❧ **Cybersecurity Threats:** Data poisoning, deepfakes, and adversarial inputs
- ❧ **Ethical & Consumer Protection Risks:** Algorithmic bias, privacy violations, and exclusion of vulnerable groups

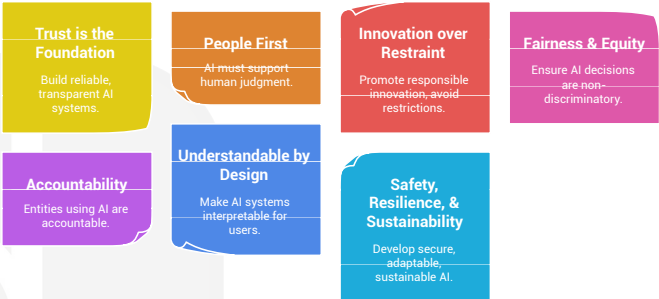
Significance of AI in Finance

- ❧ **Revenue Growth:** ₹8 lakh crore projected investment in financial services by **2027** due to AI.
- ❧ **Efficiency & Personalization:** Automates tasks like **loan processing**, enabling faster and accurate decisions.
- ❧ **Financial Inclusion:** Uses **alternative data** (e.g., utility bills, GST) to assess credit for underserved borrowers.
- ❧ **Digital Infrastructure:** Enhances platforms like **Aadhaar** and **UPI** with adaptive financial services.
- ❧ **Risk Management:** Enables **fraud detection**, early warnings, and better decision-making.
 - ❖ E.g., **J.P. Morgan** reduced fraud and cut account rejections by **15–20%**.
- ❧ **Tech Synergies:** Combines with **quantum computing** and **privacy tech** for improved security and performance.

RBI's Recommendations (FREE-AI Report)

- ❧ Use AI Innovation Sandbox (like **GenAI Digital Sandbox**) with tools for bias detection and explainability
- ❧ Establish high-quality financial sector data infrastructure as part of digital public infrastructure, integrated with AI Kosh
- ❧ Implement AI red teaming (periodic and trigger-based tests)
- ❧ Establish incident reporting systems for real-time threat response
- ❧ Structured training programs for AI governance and risk mitigation at all levels within institution

7 Sutras for AI Adoption



WILDFIRES IN SOUTHERN EUROPE

Wildfires hit Albania, Greece, Italy, Portugal, Spain, and Turkey, causing deaths and mass evacuations.

Wildfires = Unplanned, unwanted wild land fire (including unauthorized human-caused fires).

Control Tools

- **Pink Fire Retardant:** Ammonium phosphate slurry; contains toxic metals like chromium, cadmium
- **Bambi Bucket:** Helicopter-mounted container for targeted water drops in inaccessible areas




CATEGORY	CAUSES	POSSIBLE SOLUTIONS
Climatic & Geographic	<ul style="list-style-type: none">• Hot, dry Mediterranean climate with low humidity and dry winds (e.g. Sirocco) highly vulnerable• Climate change: dry spells, heat waves, erratic monsoon, El Niño	<ul style="list-style-type: none">• Climate-resilient forestry• Fuel load reduction• Green firebreaks
Anthropogenic Drivers	<ul style="list-style-type: none">• Slash-and-burn practices• Agricultural expansion, tourism, infrastructure projects• Waste mismanagement	<ul style="list-style-type: none">• Prescribed burning• Community & tribal participation with training and incentives• Eco-sensitive development and enforcement of no-go zones


CATEGORY	CAUSES	POSSIBLE SOLUTIONS
Weak Systems & Technology Gaps	<ul style="list-style-type: none"> Inadequate surveillance Outdated response systems Lack of AI-based prediction and poor weather forecasting 	<ul style="list-style-type: none"> Satellite monitoring & drones Real-time alerts for rapid containment AI predictive models

According to ISFR 2021, over 36% of India’s forest cover is fire-prone, with 2.81% extremely and 7.85% very highly fire-prone, while ISFR 2023 reports a sharp surge in incidents in Himachal Pradesh (1,339%), Jammu & Kashmir (2,822%), and Uttarakhand (293%).


EFFECTS OF FOREST FIRE




Biodiversity Loss
E.g., 17 million animals died in Brazil (2020)




Economic Loss
Property and agriculture damage



Pollution
Co2, PM2.5, methane emissions



Soil & Water
Degradation of natural resources



Human Health
Respiratory issues and stress

CESS AND ITS ROLE IN UNION FINANCE

CAG flagged a ₹3.69 lakh crore shortfall in transferring cess collections to their designated funds, highlighting lapses in utilisation of such levies.

ASPECT	TAX	CESS	SURCHARGE
Constitutional Basis	Article 265 + entries in Union/ State/Concurrent Lists (e.g., Entry 82, 54, 97)	Article 270	Article 271
Purpose & Usage	General revenue; used for general govt. Expenditure	Levied for a specific purpose; must be used only for that	Additional revenue for Union; no earmarking
Levied On	Income, production, etc.	On existing taxes/duties (add-on)	On tax amount (add-on)
Credited To	Consolidated Fund of India (CFI)	CFI	CFI
State Sharing (Divisible Pool)	✓ Shared with States	✗ Not shared	✗ Not shared
Examples	Income Tax, GST, Corporate Tax	Education Cess, Swachh Bharat Cess, Krishi Kalyan Cess	Income Surcharge (on income > ₹50 lakh)

INCOME TAX BILL, 2025 PASSED

Parliament passed the **Income Tax Bill, 2025**, replacing the **Income Tax Act, 1961**.

Key Provisions

- ⌘ **Tax Year:** Unified tax year from **1st April to 31st March**, replacing ‘assessment year’ and ‘previous year’.
- ⌘ **Access to Electronic Data:** Requires anyone with electronic data to assist tax officers and share passwords, including for social media or email if needed. Officers can override access codes if passwords aren’t given.
- ⌘ **Nil TDS Certificate:** Can be sought in advance by those with zero liability.
- ⌘ **AMT (Alternate Minimum Tax) for LLPs** aligned with current provisions of the IT Act.
- ⌘ **No TCS will apply to Liberalised Remittance Scheme (LRS) remittances for education** purposes financed by financial institutions.

SHRESTH

Union Health Ministry launched the **State Health Regulatory Excellence Index (SHRESTH)**, developed by **CDSCO (Central Drugs Standard Control Organization)**.

- ⌘ **Purpose:** Virtual gap assessment tool for states to evaluate their drug regulation maturity, aiming for uniform drug safety, quality, and efficacy.
- ⌘ **Global Alignment:** Aligns with **WHO’s Global Benchmarking Tool (GBT) Maturity Level 3 (ML3)** (strengthening India’s role as the “Pharmacy of the World”)
 - ❖ India achieved ML3 in 2024.
 - ❖ WHO’s GBT assesses the regulatory maturity (on four levels (ML1–ML4)) of national systems for medicines, vaccines, blood products, and medical devices.