

GOVERNMENT OF INDIA
MINISTRY OF ELECTRONICS AND INFORMATION TECHNOLOGY
RAJYA SABHA
UNSTARRED QUESTION NO. 2938
TO BE ANSWERED ON: 20.12.2024

STEP TAKEN TO ADVANCE SEMICONDUCTOR MANUFACTURING FACILITIES

2938. SHRI PRAMOD TIWARI:

Will the Minister of Electronics and Information Technology be pleased to state:

- (a) whether there is any proposal to prepare a semiconductor workforce of technicians, engineers and Research and Development (R&D) experts;
- (b) if so, the details thereof;
- (c) the steps taken or proposed to be taken to advance semiconductor manufacturing facilities;
- (d) the investments made in this sector so far;
- (e) whether there is any proposal to set up a semiconductor research centre; and
- (f) if so, the roadmap prepared for electronics sector?

ANSWER

MINISTER OF STATE FOR ELECTRONICS AND INFORMATION TECHNOLOGY
(SHRI JITIN PRASADA)

(a), (b), (e) and (f): Government is focused on its objective of building the overall semiconductor ecosystem and ensure that, it in-turn catalyses India's rapidly expanding electronics manufacturing and innovation ecosystem. The following steps have been taken for development of semiconductor workforce and R&D:

- (i) A committee was constituted with the representatives from Semiconductor Industry, Academia and Government to develop a roadmap and set goals and target for "India as a Semiconductor Talent Nation". Based on the committee report, All India Council for Technical Education (AICTE) has launched the new curriculum for B.E./B. Tech in Electronics Engineering (Very Large-Scale Integration (VLSI) Design and Technology), Diploma in Integrated Circuit (IC) manufacturing and Minor Degree in Electronics Engineering (VLSI Design and Technology), as a step towards creation of Talent pool in Semiconductor domain.
- (ii) To create the skilled manpower for chip design, Government has launched Chips to Start-up (C2S) Programme, an umbrella capacity building programme with an outlay of Rs. 250 Crore for 5 years in the year 2022 at 113 academic organizations (including 100 academic institutions/ R&D organizations and 13 startups/ MSMEs) spread across the country. The C2S Programme aims to generate 85,000 industry-ready manpower at B.Tech, M.Tech, and PhD levels specialized in semiconductor chip design, VLSI and embedded system design areas and create vibrant fabless chip design ecosystem in the country. Further, the manpower for R&D in semiconductors is being trained at the Centers for Nano Technology available at 6 IITs and IISc. These facilities are being leveraged by Post Graduate and Research students for their research work.
- (iii) Government supports R&D projects for design & development of semiconductor chips tailored for strategic & societal needs at academic institutions, research organizations, and startup companies. Some of these initiatives includes but not limited to the following- design, development, and fabrication of a range of 32-bit/ 64-bit multi-core microprocessors, chipsets for NavIC (Navigation with Indian Constellation) receivers, and Digital Programmable Hearing Aids (DPHA) using indigenous processors,

Photonics/ Quantum Chips, among other applications. These initiatives have also resulted in generating start-ups in chip design area.

- (iv) Up to 2.5% of the outlay of the semiconductor manufacturing schemes under Semicon India programme is earmarked for meeting the R&D, skill development and training requirements for the development of semiconductor ecosystem in India.

(c) and (d): Government has approved Semicon India programme with a total outlay of Rs 76,000 crore for the development of semiconductor and display manufacturing ecosystem in the country. This programme provides:

- i. Fiscal support of 50% of the project cost on *pari-passu* basis for setting up of Silicon Complementary Metal-Oxide-Semiconductor (CMOS) based Semiconductor Fabs in India.
- ii. Fiscal support of 50% of Project Cost on *pari-passu* basis for setting up of Display Fabs in India.
- iii. Fiscal support of 50% of the Capital Expenditure on *pari-passu* basis for setting up of Compound Semiconductors / Silicon Photonics (SiPh) / Sensors (including Micro-Electro-Mechanical Systems) Fab/ Discrete Semiconductor Fab and Semiconductor Assembly, Testing, Marking and Packaging (ATMP) / Outsourced Semiconductor Assembly and Test (OSAT) facilities in India.
- iv. Product Design Linked Incentive of up to 50% of the eligible expenditure subject to a ceiling of ₹15 Crore per application and also “Deployment Linked Incentive” of 6% to 4% of net sales turnover over 5 years subject to a ceiling of ₹30 Crore per application for incentivising chip design.

Government has also approved modernisation of Semi-Conductor Laboratory, Mohali. Besides, MoU for cooperation in development of semiconductor ecosystem have been signed with Singapore, USA, European Union and Japan.

Applied Materials has set up a collaborative engineering centre in Bengaluru with an investment of 400 million dollars over 4 years. This engineering centre is focused on development and commercialisation of technologies for semiconductor manufacturing equipment. AMD has established its largest global design center, AMD Technostar, in Bengaluru. This centre is focused on the design and development of semiconductor technology including 3D stacking, artificial intelligence, and machine learning.

India is well on its path to create a robust semiconductor ecosystem in the country. 5 semiconductor units with cumulative investment of Rs 1.52 Lakh Crore have been approved under the Semicon India Programme.

17 semiconductor design companies are being supported under the Design Linked Incentive Scheme. Additionally, 48 semiconductor design companies have been approved for access of the EDA tools made available by National EDA Tool Grid setup at ChipIN Centre at C-DAC Bengaluru.

The approved semiconductor manufacturing facilities under Semicon India Programme are expected to generate direct employment of about 25,000 advanced technology jobs and about 60,000 indirect jobs.
