

National Policy on Electronics 2018

(NPE 2018)

Government of India

Ministry of Electronics and Information Technology

National Policy on Electronics 2018

Subject: “National Policy on Electronics 2018” (NPE 2018) for the Electronics System Design and Manufacturing (ESDM) Sector of India

1. PREAMBLE

1.1. Electronics Industry is the world’s largest and fastest growing Industry and is increasingly finding applications in all sectors of the economy. World over, Electronics is recognized as a meta-resource. The Government attaches high priority to electronics hardware manufacturing and it is one of the important pillars of both “Make in India” and “Digital India” programmes of Government of India. Besides the economic imperative, focus on electronics hardware manufacturing up to the Chip level is required due to the growing security concerns. The ESDM industry is of strategic importance as well. India is a signatory to the Information Technology Agreement (ITA-1) of WTO and Free Trade Agreements (FTAs) with various countries/ trading blocs such as ASEAN, Korea and Japan. However, the electronics hardware manufacturing sector faces lack of level playing field vis-à-vis competing nations on account of several disabilities which render domestic electronics hardware manufacturing uncompetitive. These *inter-alia* include lack of adequate infrastructure, supply chain and logistics; high cost of finance; inadequate availability of quality power; inadequate components manufacturing base; limited focus on R&D by the industry and high degree of market access, leading to limited value addition.

1.2. Recognizing the electronics sector’s unique dynamics, significant opportunity, and structural challenges, the Government of India notified the National Policy on Electronics in 2012 (NPE 2012), which provided a road map for the development of electronics sector in the country. The policy is holistic, investor-friendly and market-driven, and focused on upgradation of infrastructure, providing incentives to offset disabilities, promoting innovation and human resource development. Schemes such as Modified Special Incentive Package Scheme (M-SIPS) to provide financial incentives across the ESDM value chain to compensate for disability

costs in manufacturing; Electronics Manufacturing Clusters (EMC) for providing world-class infrastructure and logistics; Mandating Safety Standards; rationalization of Tariff structure and providing preference to domestically manufactured electronic products in Government procurement under the aegis of the Public Procurement Order 2017, are under implementation. As a result, ESDM industry has witnessed upward growth in India and has the potential to become a vehicle of economic growth and development.

- 1.3. In order to compensate for disadvantages in domestic manufacturing, a scheme called Modified Special Incentive Package scheme (M-SIPS) was launched in 2012. The scheme provides for capital subsidy of 25% for Electronics Industry located in non-SEZ area and 20% for those in SEZ areas. As on September 30, 2018, 265 applications with proposed investment of Rs.61,925/- crore have been received under M-SIPS, out of which 188 applications with proposed investment of Rs.40,922/- crore have been approved. So far, the investment of Rs.8,335/- crore has been made by 139 applicants.

In order to overcome disadvantages due to infrastructure, a scheme called Electronics Manufacturing Clusters (EMC) was also launched in 2012 which encouraged entities, including State Government entities, to provide good quality infrastructure within a cluster. Under the scheme, 50% of the project cost for Greenfield EMC and 75% for Brownfield EMC is given by the Ministry of Electronics and Information Technology as grant. So far, 20 Greenfield EMCs and 3 Brownfield EMC projects have been sanctioned with the project outlay of Rs.3,898/- crore, including Rs.1,577/- crore from Government of India. Under this scheme, 3,565 acres of land has been developed in Electronics Manufacturing Clusters with likely investment of about Rs.54,836/- crore by the manufacturers.

In order to promote startups and innovation, a scheme called Electronics Development Fund (EDF) was launched. EDF is a fund of funds which invests in Venture funds, which in turn invests in ventures. At least 50% of the corpus has to be invested in Ventures working in ESDM sector. Under the scheme, 13 daughter funds have been approved with EDF commitment of Rs.857/- crore. These funds are expected to invest Rs.6,951/- crore of corpus in startups.

- 1.4. The global electronics production is estimated to be USD 1,740 Billion in 2017, growing at a CAGR of 5%. Indian electronics hardware production has increased from INR 1,90,366 crore in 2014-15 to an estimated INR 3,87,525 crore (~USD 59 Billion) in 2017-18, registering a Compound Annual Growth Rate (CAGR) of 26.7%, as against a growth rate of 5.5% in 2014-15. India's share in the global hardware electronics production is 3.4%. The share of domestic electronics production in India's GDP is 2.3%. The import of electronic goods was of the order of USD 53 Billion in 2017-18. With the demand for electronics hardware expected to rise rapidly to about USD 400 Billion by 2023-24, India cannot afford to bear a huge foreign exchange outgo on import of electronics alone. Therefore, promoting domestic electronics hardware manufacturing, with high value addition is of critical importance.
- 1.5. The production of Mobile Handsets, LCD/ LED TVs and Light Emitting Diode (LED) Products in the country has gone up significantly, and over the last few years, the demand of aforesaid electronic products is increasingly being met out of domestic production. The production of LCD/ LED TVs has gone up from 0.87 crore units in 2014-15 to 1.6 crore units in 2017-18. The production of Light Emitting Diode (LED) Products has gone up from INR 2,172 crore in 2014-15 to INR 9,630 crore in 2017-18. However, the value addition continues to be low in the absence of a vibrant components manufacturing ecosystem in the country. The Phased Manufacturing Programme (PMP) for mobile handsets and related sub-assemblies/ components manufacturing has been implemented with the objective of progressively increasing the domestic value addition for establishment of a robust Cellular mobile handsets manufacturing eco-system in the country. As a result, India has rapidly started attracting investments into this sector and Cellular mobile handsets manufacturing has emerged as a flagship sector in the electronics manufacturing space. In 2017-18, the production of Cellular mobile handsets reached approx. INR 1,32,000 crore, compared to INR 18,900 crore in 2014-15. Production of Cellular mobile handsets in volume terms reached 225 million units in 2017-18, as compared to production of 60 million units in 2014-15. 118 units manufacturing Cellular mobile handsets and their parts/ components have been set

up in the country during the last three years, resulting in estimated employment to about 4.5 lakh persons (direct and indirect).

- 1.6. Implementation of the Schemes/ Programmes under the aegis of NPE 2012 has successfully consolidated the foundations for a competitive Indian ESDM value chain. The Government now seeks to build on that foundation to propel the growth of ESDM industry in the country. The NPE 2018 is conceived against the aforesaid backdrop and will provide the requisite framework for the same.

2. VISION

To position India as a global hub for Electronics System Design and Manufacturing (ESDM) by creating an enabling environment for the industry to compete globally.

3. MISSION

- 3.1. Promote domestic manufacturing in the entire value-chain of ESDM, including core components and materials to increase the domestic value addition and reduce dependence on import of electronic goods by focusing on scale, skill and technology.
- 3.2. Strengthen India's linkages with global trade, integrate with global value chains and build facilitative programmes and incentive framework to boost Indian ESDM exports.
- 3.3. Develop capacities for manufacture in all sub-sectors of electronics, including semiconductor wafer fabrication and display fabrication (FAB) facilities and create a vibrant, dynamic and self-reliant Fabless Chip Design ecosystem in the country.
- 3.4. Build a risk-management ecosystem to promote and create a framework for a comprehensive Start-up ecosystem with focus on development of products, key components and technologies based on emerging technological landscapes.

- 3.5. Promote ease of manufacturing by introducing new/ innovative fiscal incentives and augmenting the existing ones for the ESDM Industry.
- 3.6. Ensure effective protection to the domestic ESDM Industry from dumping of electronics goods.
- 3.7. Promote R&D to develop electronic products for the domestic as well as global markets.

4. OBJECTIVES

- 4.1. Promote domestic manufacturing in the entire value-chain of ESDM for economic development to achieve a turnover of USD 400 Billion by 2025. This shall include targeted production of 1.0 Billion mobile handsets by 2025, valued at USD 190 Billion (approx. Rs.13 lakh crore), including 600 Million mobile handsets valued at USD 110 Billion (approx. Rs.7 lakh crore) for export.
- 4.2. Improve ease-of-doing-business for the ESDM Industry.
- 4.3. Encourage Industry-led R&D and Innovation in all sub-sectors of Electronics.
- 4.4. Support a comprehensive Start-up ecosystem in emerging technology areas such as 5G, IoT, Artificial Intelligence, Machine Learning, etc., and their applications in areas such as Defence, Agriculture, Health, Smart Cities and Automation, with special focus on solving real-life problems.
- 4.5. Provide support for significantly enhancing availability of skilled manpower in the ESDM sector.
- 4.6. Provide support for export led growth, including significantly enhancing economies of scale in electronics manufacturing.
- 4.7. Develop core competencies in all the sub-sectors of Electronics, including *inter-alia* Electronic components and Semiconductors, Telecommunication equipment,

Medical electronics, Defence Electronics, Automotive electronics, Industrial Electronics, Strategic Electronics, etc., and Fabless Chip Design.

- 4.8. Become a global leader in the Electronics Manufacturing Services (EMS) segment by promoting progressively higher value addition in manufacturing of electronic products.
- 4.9. Provide policy support and special package of incentives for highly capital intensive projects.
- 4.10. Drive indigenization in the microchips used by strategic and critical infrastructure sectors viz., Defence, Space, Atomic Energy, Telecom, Aviation, Power, etc., through design and production of such microchips.
- 4.11. Create specialized governance structures within the Government to cater to specific needs of the ESDM sector, in view of fast changes in technology and business models.
- 4.12. Facilitate cost effective loans for setting up and expansion of electronics manufacturing units.
- 4.13. Promote research, innovation and support to the industry in the areas of packaging, interconnects and micro photonics, as a long term measure to counter the problems posed by the continued use of Silicon, like the limit of scaling and dark Silicon.
- 4.14. Promote research, innovation and support to industry for green processes and sustainable e-Waste management, including safe disposal of e-Waste in an environment friendly manner, development of e-Waste recycling industry and adoption of best practices in e-Waste management.

5. STRATEGY

Ministry of Electronics and Information Technology (MeitY) will coordinate with the concerned Ministries/ Departments to provide incentives to Industry for rapid and robust

expansion of electronics hardware manufacturing within the country. MeitY shall work out details and facilitate decisions by the Government on the measures indicated hereunder:

Creating eco-system for globally competitive ESDM sector

5.1. Create eco-system for globally competitive ESDM sector by incentivizing domestic manufacturing and compensating for disabilities:

5.1.1. Encourage domestic manufacturing of electronic products and their inputs (parts, sub-assemblies and components) for significantly increasing value addition by building a comprehensive ecosystem, covering the entire supply chain, through suitable fiscal interventions, including phased manufacturing programmes and removal of anomalies.

5.1.2. Devise suitable methods for promotion of manufacturing of electronic goods covered under the Information Technology Agreement (ITA-1) of WTO.

5.1.3. Provide suitable Direct Tax benefits, including *inter-alia* investment-linked deduction under Section 35AD of the Income Tax Act for electronics manufacturing sector, for setting up of a new manufacturing unit or expansion of an existing unit.

5.1.4. Replacing M-SIPS scheme with schemes that are easier to implement such as Interest subsidy and Credit default guarantee, etc., in order to encourage new units and expansion of existing units in electronics manufacturing sector.

5.1.5. Provide support for infrastructure development through formulation of a new scheme or suitable modifications in the existing Electronics Manufacturing Clusters (EMC) scheme, for supporting both Greenfield and Brownfield manufacturing clusters. This shall include leveraging the existing/ upcoming industrial clusters/ manufacturing zones/ corridors in

the country, with provision for ready-built factories, for attracting investment in complete value chain of identified verticals.

- 5.1.6. Exempt the import duty on identified capital equipment not being manufactured in the country, to reduce capital expenditure for setting up/ expansion of existing units.
- 5.1.7. Promote a forward looking and stable tax regime, including advance intimation to the industry to plan their investments in the form of Phased Manufacturing Programme (PMP) in various segments of electronics, with a sunset clause.
- 5.1.8. Provide support for Micro, Small and Medium Enterprises in ESDM sector.
- 5.1.9. Levy Cess on identified electronic goods to be considered to generate resources for promotion of certain critical sub-sectors of electronics manufacturing such as semiconductor wafer fabrication and display fabrication units.

Developing and Mandating Standards

- 5.2. Establish Standards setting body in MeitY to develop standards for Electronics (including Components as well as Fabless Industry), IT, e-Governance, etc.
- 5.3. Set up an institutional mechanism within MeitY for mandating compliance to standards for electronics products.
- 5.4. Create/ upgrade Lab infrastructure/ capacity for testing of electronic goods, including cyber security.

Ease-of-doing-Business

- 5.5. Strengthen and leverage Invest India, the National Investment Promotion and Facilitation Agency, which was established as a single window for global

investors, for facilitation of investment in ESDM sector as a one-stop shop for facilitation of investments / businesses, coordination with the State Governments, establishment of Joint Ventures, obtaining speedy approvals by coordinating with the concerned Government agencies on behalf of the investors, and hand-holding them till the manufacturing unit becomes functional.

Industry-led R&D and Innovation

5.6. Encourage Industry-led R&D and Innovation in all sub-sectors of Electronics:

5.6.1. Promote path-breaking research, grass root level innovations and early stage Start-ups in emerging technology areas such as 5G, IoT/ Sensors, Drones, Artificial Intelligence (AI), Machine Learning, Augmented Reality (AR) and Virtual Reality (VR), 3-D Printing, Gaming and Entertainment, photonics, nano-based devices, as well as thrust areas such as Medical Electronics, Defence Electronics, Automotive Electronics, Strategic Electronics, Power Electronics and Automation, having major economic potential, with a special focus on applying the outcomes, including frugal solutions, to solve real-life problems. Towards this, in addition to premier institutes like IITs, NITs, IIITs, and Central Universities, the institutes established in small cities to also be encouraged. Chairs in premium institutions will also be established in order to do focussed research in various aforesaid emerging technology areas and sub areas of electronics.

5.6.2. Provide support for setting up of Incubation Centres/ Centres of Excellence (CoE) and strengthening/ re-orienting the focus areas of the existing Centres to suit the current and future research requirements in the aforesaid emerging technology areas

5.6.3. Provide support for Start-ups in these emerging areas/ technologies, from supporting the concept to development/ prototyping of products, including the complete value chain.

- 5.6.4. Formulate joint strategy and action plan along with Industry, Academia and R&D Organizations to identify core technologies and develop, acquire & pool, Core and Peripheral IPs and make them available to the Industry.
- 5.6.5. Increase Income Tax benefits on expenditure incurred on R&D under Section 35(2AB) of the Income-tax Act for ESDM Industry and to specifically including the "business of electronics system design, including semiconductor design [with Intellectual Property (IP) residing with Indian citizens and Indian companies (i.e. companies with more than 50% equity holding by Indian citizens)]", with no requirement for in-house manufacturing.
- 5.6.6. Provide support for generation of IP and Patents, including IPs and Patents generated through outsourced R&D.
- 5.6.7. Facilitate interaction between academia and industry to create and share IPs/ Prototypes resulting from R&D programs. An agency to provide linkage between academia/ research institutes and industry be identified, such as in first instance, a Centre of Excellence to be setup with the above objective in area of electronics at central level to co-ordinate between academia/ research institutes and electronics industry. After reviewing its progress, more such agencies to be set-up at regional levels.
- 5.7. Academia and freelancer-led R&D and Innovation: Creation of facilities to house best-in-class fabrication, testing and analysis equipment, accessible to students, freelancers and academicians to build, test and improve their prototypes, on payment basis. The rates of such facilities may be controlled and reviewed (and possibly subsidized for important projects) by the Government from time to time.

Human Resource Development

- 5.8. Provide support for significantly enhancing availability of skilled manpower in the ESDM sector:

- 5.8.1. Strengthening/ leveraging the existing manufacturing, research, design and development hubs to carry out designing and innovation in the field of Electronics.
- 5.8.2. Work closely with Private Sector, Universities and other Institutions of learning and to design programmes to ensure availability of adequate skilled manpower to the industry.
- 5.8.3. Provide support for skill development for emerging technology areas such as 5G, IoT/ Sensors, Drones, Artificial Intelligence (AI), Machine Learning, Augmented Reality (AR) and Virtual Reality (VR), 3-D Printing, Gaming and Entertainment as well as thrust areas such as Medical Electronics, Defence Electronics, Automotive Electronics, Strategic Electronics, Power Electronics and Automation at the faculty and student levels.
- 5.8.4. Generate skilled manpower/ research base at Post Graduate/ Ph.D. level to work in emerging technology areas by devising a suitable scheme to support innovation in aforesaid emerging technology areas.
- 5.8.5. Provide support for Indian Ph.D. and Post Doctoral scholars to carry out their research work in foreign institutions, for deputing them to foreign institutions for a period of six months to one year, subject to the condition that they will serve in India for next 5 years.

Export Promotion

- 5.9. Provide attractive package of incentives for promotion of indigenization and export of electronics, and hence empowering Indian ESDM exporters by facilitating global market access, as under:
 - 5.9.1. Increasing rate of duty drawback for electronics sector.

- 5.9.2. Reimbursement of State levies (ROSL) and other levies for which input tax credit is not available.
- 5.9.3. Permitting duty free import of second-hand capital goods for electronics hardware manufacturing under the Export Promotion Capital Goods (EPCG) Scheme.
- 5.9.4. Entering into Free Trade Agreements (FTAs) with economies such as EU, Africa, South America, etc.
- 5.9.5. Providing support for Brand-building and promoting investment in electronics manufacturing and export of electronic goods.
- 5.9.6. Relaxation of procedure for relocation of electronics hardware manufacturing units, facing cost pressures in other countries, to India.
- 5.9.7. Relaxation of ageing restriction regarding import of electronic goods for repair or reconditioning.

Cyber Security

- 5.10. Enhance understanding of cyber security issues/ concerns, risks and mitigation measures thereof pertaining to electronic products.
- 5.11. For the requirements of Government Sector, an exclusive Government owned testing and evaluation facility to be set up
- 5.12. Promote the use of secure chips by design and systems to reduce cyber security risks.
- 5.13. Promote Start-up eco-system for development of photonics, nano-based devices and cyber security products.

Mega Projects

- 5.14. Provide special package of incentives for Mega Projects which are extremely high-tech and entail huge investments, such as Fabrication (FAB) units (Semiconductors, Display, LED, Solar Cells), including according infrastructure status to these units.
- 5.15. Promote investment in mega facilities abroad, such as an existing FAB facility, including support for setting up of R&D units abroad, where eco-system exists for a particular technology.

Preferential Market Access

- 5.16. Encourage the State Governments to adopt the Public Procurement (Preference to Make in India) Order 2017 (PPO 2017), in procurement of electronic products.
- 5.17. Leverage Government eMarket Place (GeM) to create/ expand the market for domestically manufactured electronic products.

Developing core competencies in the sub-sectors of Electronics

- 5.18. Provide special support for developing core competencies in the following sub-sectors:

5.18.1. Promotion of Fabless Chip Design Industry

5.18.1.1. Enable a multi-fold growth of Indian fabless chip design industry by providing requisite support in form of Electronic Design Automation (EDA) tools and FAB support for early-stage startups.

5.18.1.2. Provide support under the PPO 2017 to indigenously designed Integrated Circuits, Module-on-Chips, System-on-Chips, Semiconductor IP licenses, all associated systems and application

software products including software IP licenses, where IP is resident in India.

5.18.1.3. Provide support for Indian fabless industry through Venture Capital (VC) funding and through positive market intervention, driven through a dedicated nodal agency, including establishing “India Fabless Semiconductor Venture Fund” to directly invest in early-stage seed capital and venture equity capital exclusively in Indian fabless semiconductor companies with special focus on companies creating indigenous semiconductor-centric IPs.

5.18.1.4. Set up Incubation Centres/ Centres of Excellence (CoEs) in the country which shall provide necessary EDA tools, IPs, Prototypes and ATMP facilities required for start-ups.

5.18.1.5. Broaden the VLSI Design base in the country by including larger number of colleges and institutions with close industry interaction/ participation.

5.18.1.6. Provide export incentives for Fabless chip design companies.

5.18.2. Promotion of Medical Electronic Devices Industry

5.18.2.1. Promote R&D through PPP model with the funding support from Industry and Government with specific focus on critical components/ sub-assemblies.

5.18.2.2. Support systems for commercialization of technologies available with Academic/ R&D Institutions through exclusive / non-exclusive mechanisms.

5.18.2.3. Create infrastructure for carrying out test, evaluation, accreditation and compliance by setting up new laboratories and

upgrading the existing laboratories, including subsidized access of these facilities to MSMEs.

5.18.2.4. Set up common testing facilities in the existing manufacturing hubs/ zones/ clusters.

5.18.2.5. Provide support for Start-ups through common manufacturing facilities, open labs programme, etc.

5.18.2.6. Provide support for manufacturing of specific critical components/ sub-modules for medical electronics devices such as Magnets, RF amplifiers, Scintillators, X-ray and Computed Tomography (CT) tubes, Medical Lasers, Detectors, etc.

5.18.2.7. Provide support for skill development/ enhancement of the manpower required for the industry, including international harmonization efforts for practice of skills in medical electronics.

5.18.2.8. Institution of Phased Manufacturing Programme (PMP) for medical electronic devices.

5.18.3. Promotion of Automotive Electronics Industry and Power Electronics for Mobility

5.18.3.1. Provide support for R&D and concept-to-market innovation for next generation solid-state batteries and power electronics for Electric Vehicles (EVs), Drones, Intelligent transportation system, Personal safety devices/ systems and Automation.

5.18.3.2. Focus on IP creation in India at sub-system level by providing financial support to start-ups.

5.18.3.3. Set up a Centre of Excellence (CoE) on Open Engineered Controls, Electronics and Software (CES) for EVs.

5.18.3.4. Promote exports through ‘Make-in-India’ branding programme, marketing incentives and country specific initiatives and export incentives.

5.18.3.5. Institution of Phased Manufacturing Programme (PMP) for automotive electronic products.

5.18.4. Promotion of Strategic Electronics Industry

5.18.4.1. Promote capacities for sourcing ESDM in strategic and core infrastructure sectors, viz., Defence, Atomic Energy, Space, Railways, Power, Telecommunications, etc.

5.18.4.2. Create long-term partnerships between domestic ESDM industries with the strategic sectors for domestic sourcing of electronic goods.

5.18.4.3. Set up individual core teams, preferably from the Public Sector Undertakings, for being imparted training and subsequent transfer of technology (ToT) on core technologies [antenna design, signal processing card design, electromagnetic interference (EMI) / electromagnetic compatibility (EMC) proofing, etc.], which are repetitively used to design solutions for the strategic electronics sector.

Promotion of Electronic Manufacturing Services (EMS) Industry

5.19. Promote following key activities under EMS, for creation of requisite component manufacturing eco-system in the country:

5.16.1. Engineering and design of PCBs.

5.16.2. PCB assembly, including sub-assemblies.

5.16.3. Functional testing.

5.16.4. Maintenance services such as warranty and repair services, etc.

5.16.5. Product and component design

Promotion of Assembly, Testing, Marking and Packaging (ATMP) Industry

5.20. Providing policy support for Assembly, Testing, Marking and Packaging (ATMP) lines for select Semiconductor ICs, including Memory Chips, on security grounds

Other Measures

5.21. Promote Eco-park in each State for processing e-Waste in environmental friendly manner in PPP mode to integrate formal and informal operators.

5.22. Facilitate warehousing of components and raw materials to reduce the lead time and make them available just-in-time for electronics manufacturing/ fabless chip design units, including start-ups.

5.23. Source, stockpile and promote exploration and mining or acquiring mines of Rare Earth metals in foreign countries/ continents (such as in Africa and Australia) required for electronics manufacturing.

5.24. MeitY shall formulate and implement appropriate schemes for promotion of electronics hardware manufacturing, as required from time to time.

5.25. Develop an index for indicating status and growth of electronics manufacturing industry in the States and bring out a periodic report indicating ranking of States.

5.26. Develop a mechanism for National-level Market Research reports on performance, impact assessment of Policy interventions for their continuation

and/or mid-course correction, trends, emerging areas, etc., on a periodic basis, including models for successful innovation for all sub-sectors of Electronics.

6. State Support

6.1 States to play a proactive role in promotion of electronics manufacturing by providing conducive environment to promote investments.

7. Governance Structure

7.1 Create institutional mechanism for implementation of various schemes/ programmes under the Policy, such as constituting a High Level Advisory Committee to review the implementation status and provide strategic recommendations/ decisions from time to time.

8. Power to Amend the Policy

8.1. Notwithstanding anything contained in the foregoing paras, MeitY with the approval of Competent Authority, may review and amend various aspects of this Policy from time to time, depending upon the experience gained during implementation, market dynamics, feedback from Stakeholders, etc.
