

Indian Standardizations Landscape

“Priority Sectors – Automotive, Electrical Equipment including Consumer Electronics, Smart City, ICT

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1. Context

During the start of SESEI phase 2 (January 2013 – March 2016), a comprehensive report on India's complex standardisation landscape was prepared covering priority sectors of the Project covering ICT including Services, Automotive, Electrical Equipment including Consumer Electronics and Machinery. We believe that the report had provided readers with fundamental understanding of the Indian Standardisation system, their scope and functioning including details about various players in the entire eco system contributing towards the making of **"Indian Standards"**.

During the course of the SESEI phase 2, India also witnessed social and political developments which shall have a long term impact on its economy, industries and technological growth & development.

The largest & longest election in the country's history took place during mid-2014 and according to the Election Commission of India, 814.5 million people were eligible to vote, with an increase of 100 million voters since the last general election in 2009, making this as the largest-ever election in the world, running in nine phases from 7th April to 12th May 2014 for 543 parliamentary constituencies of India.

The new government at helm, announced massive projects of national importance namely Swachh Bharat (Clean India), Start up India, Skill Development for the Youth, Building 100 Smart Cities, "Make in India" Campaign and many more. Its foremost agenda is to create conducive policy and investment environment for the industries, generate new employment opportunities and give more emphasis on the skill sector development.

On the global front, India is the only economy standing among the much-touted BRICS, with estimates suggesting that the country has overtaken China as the world's fastest growing economy. At a time when major global economies are shrinking against the backdrop of a strong US dollar and falling commodity prices, India remains one of the few bright spots with its economic growth expected to reach 7.6 per cent this year 2017, higher than the 7.2 per cent of year 2014, when new Govt. under the leadership of Mr. Modi took over. India has also replaced China as the top destination for foreign investment (FDI) last year, largely on account of the push from the Modi government to increase manufacturing in the country.

"The make in India" campaign is being hailed as the game changer, promising to make India as a manufacturing hub for the world. To make this vision possible, all ministries are making necessary policy changes, bringing legislations and announcing various new schemes, pilot projects, funding and technology acquisition announcements.

In this context, revised report on **"Indian Landscape around Standardizations, Policy, R&D and Innovation"** is our endeavour to provide you with the recent policy announcements, legislation/ACT amendments and modifications as carried out by the Indian government to strengthen the Standards activities in India.

2. Executive Summary

A detailed report on the standardization landscape in India was prepared by SESEI during the last phase of the Project (SESEI-2). This report immensely facilitated the Project Partners and stakeholders to understand and identify the complex standardization ecosystem in India as well as the important players around the Project priority sector covering ICT including Services, Automotive, Electrical Equipment including Consumer Electronics and Machinery.

India has dynamically modified, and transcended into a fastest growing economy owing to various reforms, policy changes, and new vision of the Indian Government. As per the World Bank's latest edition of [Global Economic Prospects](#), India is the world's fourth fastest growing economy in the world. India's gross domestic product (GDP) grew 7.6 per cent in 2015-16, up from 7.2 per cent a year ago. The full-year growth was fueled by close to 8 per cent growth rate in the fourth quarter of 2015-16, which is the fastest in the world for the January-March quarter. With such a high growth number, India has managed to retain its tag of the world's fastest growing major economy — outpacing even China. In this context as above, and owing to the great reforms and policy changes, it was indispensable to bring this report up-to-date as part of this Project SESEI Phase 3.

In the first section of this report, we have provided details of the **three main standards making bodies of India, i.e. Bureau of Indian Standards (BIS), Telecom Engineering Centre (TEC) and Telecommunications Standards Development Society of India (TSDSI)**. BIS under Ministry of Consumer Affairs is the oldest and the foremost National standardization body in India, and is also a member of Global standardization bodies such as ISO and IEC, whereas TEC is an engineering wing of Department of Telecom, under Ministry of Communication contributes towards ITU (International Telecommunication Union). TSDSI came into existence on 7th January 2014, and is an autonomous 'not for profit' Standards Development Organization for Telecom products and services in India recognized by Department of Telecom, Ministry of Communication, specifically constituted to assist the dynamic Indian telecom sector, bring India specific requirements and knowledge with an objective of contributing to the next generation telecom standards and drive eco-system of IP creation.

India is on a mission mode and is rapidly moving towards economic development. In the 2nd section of this report, we have provided updates on various mission mode measures taken up by the Government of India and is titled as **“New Approach/Initiatives”** around Project Priority Sectors.

To assist the country with its new set out roadmap of development and to create an environment and culture of technology, innovation and standardization, the government has empowered the Bureau of Indian Standards by introducing a **new BIS Act 2016**. The Indian Parliament, passed a bill to replace the 30-year-old Bureau of Indian Standards (BIS) Act and to bring more products and services under the mandatory/voluntary standard regime besides ending the 'Inspector Raj'. The new bill aims to empower the Central Govt. and BIS in promoting a culture of quality of products and services through mandatory or voluntary compliance with Indian standards. The bill also provides for compulsory hallmarking of precious metal articles, widens the scope of conformity assessment,

enhance penalties, make offences compoundable and simplify certain provisions in the old Act. It also proposes recall of the products even if ISI marked, but not conforming to relevant Indian Standards.

In order to stimulate innovation, creativity and entrepreneurship, the **National Intellectual Property Rights (IPR) Policy** is released by the government of India, which is expected to lay down the future roadmap for intellectual property regime in India. The policy aims to incorporate and adapt global best practices, strengthen the Government's research and development organizations, educational institutions, corporate entities including MSMEs, start-ups and other stakeholders, create an innovation-conducive environment and stimulate creativity and innovation across sectors, facilitate a stable, transparent and service-oriented IPR administration in the country.

The Commerce and Industry Ministry floated a discussion paper on **standard essential patents (SEP)** and their availability on **fair, reasonable and non-discriminatory (FRAND)** terms. An essential patent or standard essential patent is a patent that claims an invention that must be used to comply with a standard. The discussion paper, floated by the Department of Industrial Policy and Promotion (DIPP), aims to sensitize the stakeholders, concerned organization and citizens towards need and importance of regulating SEPs as well as facilitating their availability at FRAND terms.

The **Automotive Mission Plan 2016-26 (AMP 2026)** shares the vision and responsibility to become the engine of the "Make in India" programme and contribute towards the "Skill India" programme.

India has also set a goal to produce and sell only electric cars by 2030, chiefly aiming to reduce the petroleum import bill and running cost of vehicles, while simultaneously reducing air pollution with attendant health benefits and cutting greenhouse gas emissions. The **National Electric Mobility Mission Plan 2020 (NEMMP 2020)** is one of the most important and ambitious initiatives undertaken by the Government of India that has the potential to bring about a major shift in the automotive and transportation industry in the country. In support of this NEMMP 2020, Government has also launched the scheme namely **Faster Adoption and Manufacturing of (Hybrid &) Electric Vehicles (FAME India)**.

Electricity is one of the most critical components of infrastructure crucial for the economic growth and welfare of the country. The existence and development of adequate infrastructure is essential for sustained growth of the Indian economy. Electricity demand in the country has increased rapidly and is expected to rise further in the years to come. Ministry of Power is conscientious of the aggressive role it needs to play to ensure availability of sustainable energy to achieve goals set for the country.

The Ministry of Power has set a target of 1,229.4 billion units (BU) of electricity to be generated in the financial year 2017-18, which is 50 BU's higher than the target for 2016-17. The annual growth rate in renewable energy generation has been estimated to be 27 per cent and 18 per cent for conventional energy. India has moved up 73 spots to rank 26th in the World Bank's list of electricity accessibility in 2017.

In order to integrate technological advancement development, deployment of Smart Grids in India is being carried out through India Smart Grid Task Force (ISGTF) and India Smart Grid Forum (ISGF) under the aegis of Ministry of Power (MoP). A Smart Grid Vision and

Roadmap for India was approved by the Ministry of Power in August 2013 which envisaged the launch of a **National Smart Grid Mission (NSGM)** having its own resources, authority, functional & financial autonomy to plan and monitor implementation of the policies and programmes. NSGM is in place now and the major activities under NSGM are development of smart grid, development of micro grids, consumer engagements and training & capacity building etc. NSGM entails implementation of a smart electrical grid based on state-of-the-art technology in the fields of automation, communication and IT systems that can monitor and control power flows from points of generation to points of consumption. Ministry of Power in conjunction with India Smart Grid Task Force had shortlisted 14 Smart Grid Pilot Projects and 1 Smart City R&D Platform at different geographical locations in India which are currently under implementation.

Ministry of Heavy Industries & Public Enterprises also launched the **Indian Electrical Equipment Industry Mission Plan 2012-2022**, for the rapid development of the domestic electrical equipment industry and to enhance its competitiveness. The Mission Plan seeks to steer, coordinate and synergies the efforts of all stakeholders to accelerate and sustain the growth of the domestic electrical equipment industry.

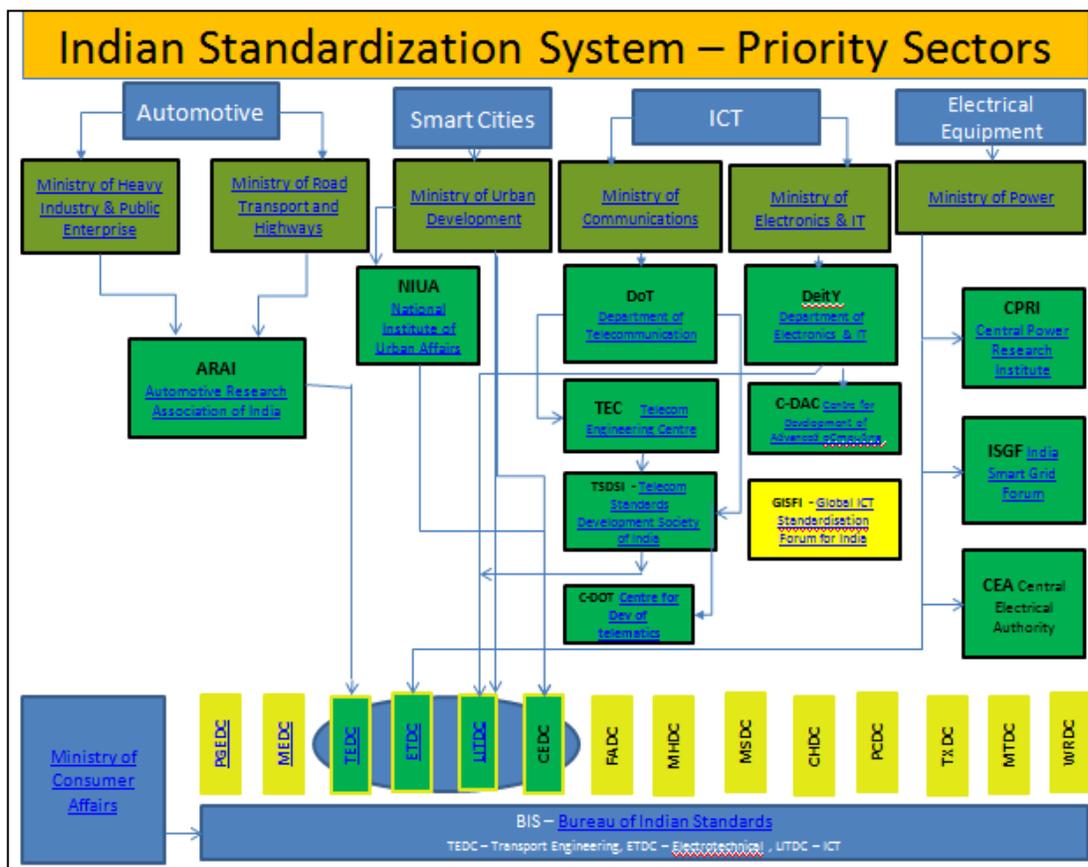
The Department of Heavy Industry under the Ministry of Heavy Industries and Public Enterprises has issued the **National Capital Goods Policy** with a clear objective of increasing production of capital goods from present 12% to 20% of total manufacturing activity by 2025 and raising direct and indirect employment from the current 8.4 million to 30 million. The Policy will help in realizing the vision of 'Building India as the World class hub for Capital Goods'. It will also play a pivotal role in overall manufacturing as the pillar of strength to the vision of 'Make in India'.

The **100 Smart Cities** project has been received enthusiastically by the Indian Cities and State governments. Ministry of Urban Development (MoUD) has already selected ninety (90) cities through a detailed three-tiered bidding process and eligibility criteria. The Smart City Mission will be operated as a Centrally Sponsored Scheme (CSS) and the Central Government proposes to give financial support to the Mission to the extent of Rs. 48,000 crores (6.6 Billion Euro) over five years i.e. on an average Rs. 100 cr (1 Billion) per city per year. Details of the important bodies engaged in the Smart City project are provided as part of this landscape report in section 5.3.

The **Indian landscape on standardization** is quite complex, and needs better understanding of the various bodies and Ministries involved. Typically there are many players both from the government as well as from the Industry associations, who play a key role and contribute towards the process of formulating standards. A complete section is devoted to the important stakeholders and players covering Ministries, Governmental Bodies, and Industry Associations etc. in each of the project priority sector.

The policies and legislations are defined by the concerned Union Ministry, however in reality this means that even within a ministry, several departments may be involved in standards and regulations within their area of competence. Participation from academia, concerned trade association representatives and select relevant private sector experts in the standardization process is equally important.

In summary the whole standards and regulation regime, unlike European Standardizations, is thus an inter-departmental, inter-ministerial, administration controlled process although formally all adhere to ISO, IEC standards and WTO-TBT agreements and guidelines. The Indian Standardizations Landscape report as detailed below provides a great insight into the Indian standardization system.



3. Indian Standardization Bodies

3.1. Bureau of Indian Standards (BIS)

The Ministry of Consumer Affairs, Food and Public Distribution are a Union / Central government ministry of India, playing a pivotal role in the standardization. The Ministry is headed by a minister of Cabinet rank. The Ministry of Consumer Affairs of India, Food and Public Distribution are divided into two parts:

- Department of Food and Public Distribution
- Department of Consumer Affairs;

The Department of Consumer affairs administers the policies for Consumer Cooperatives, Monitoring Prices, availability of essential commodities, Consumer Movement in the

country and Controlling of statutory bodies like **Bureau of Indian Standards (BIS)** and Weights and Measures.

Bureau of Indian Standards (BIS), the National Standards Body has been successfully promoting and nurturing standards movement within the country since 1947. The Bureau of Indian Standards, the National Standards Body of India became functional as a statutory body under the Bureau of Indian Standards Act, 1986 with effect from 1 April It took over the functions of the erstwhile Indian Standards Institution (ISI) with an enlarged scope and enhanced powers for harmonious development of activities of standardization, marking and quality certification of goods and for matters connected therewith or incidental thereto. Keeping in view, the interest of consumers as well as the industry, BIS is involved in various activities as given below:

1. Standards Formulation
2. Certification: Product, Hallmarking and Systems
3. Foreign Manufacturers Scheme
4. Registration Scheme
5. Testing & Calibration Services
6. Sale of Indian Standards and other publications
7. International Activities
8. I-Care Activities (for consumer and industry)
9. Promotional Activities
10. Training Services
11. Information services
12. Financial: Resources - Mobilization and utilization
13. Trade Facilitation Cell
14. Library Services

BIS has its Headquarters at New Delhi and its 05 Regional Offices (ROs) are at Kolkata (Eastern), Chennai (Southern), Mumbai (Western), Chandigarh (Northern) and Delhi (Central). Under the Regional Offices are the Branch Offices (BOs) located at Ahmedabad, Bangalore, Bhubaneswar, Bhopal, Coimbatore, Dehradun, Faridabad, Ghaziabad, Guwahati, Hyderabad, Jaipur, Kochi, Lucknow, Nagpur, Parwanoo, Patna, Pune, Rajkot, Raipur, Durgapur, Jamshedpur and Vishakhapatnam, which offer certification services to the industry and serve as effective link between State Governments, industries, technical institutions, consumer organizations etc. of the respective region.

BIS *acts as* an umbrella organization that oversees the development of Indian Standards (IS). Its management board consists of 25 members, representing both Central and State governments, Members of Parliament, Industry Associations, Scientific and Research Institutions, Consumer Organizations, representative of Farmers Interests and Central/State Public Sector enterprises.

The BIS standardization process for the development of Indian Standards (IS) follows the ISO/IEC standards and WTO/TBT guidelines. BIS's role is to coordinate inputs from various public sector stakeholders to its technical committees which are then commented by the private sector representatives (experts and industry association representatives). Since

1968 BIS has been organizing training programme on standardization for nominees of developing countries every year in the month of October.

Standards Formulation

The biggest challenge before BIS, as an apex body of formulating standards, is to be seen as a Centre of excellence in bringing about qualitative changes in its functioning and relationship with different stakeholders. BIS with more than 500 qualified technical and scientific personnel and more than 25000 experts voluntarily associated with standardization activity, has made a very significant and valuable contribution to the orderly growth of the country's economy. BIS has so far formulated over 19000+ standards in various technology areas, which help the industry in upgrading the quality of their goods and services.

The changing scenario of globalization has necessitated the formulation and implementation of new standards, interaction with the industrial houses and service operators and generation of awareness amongst the consumers.

As a policy, the standards formulation activity of BIS has been harmonized with the relevant guidelines as laid down by the International Organization for Standardization (ISO). BIS, being a signatory to the 'Code of Good Practice for the preparation, adoption and application of standards' has also accordingly aligned its standards formulation procedure.

BIS Technical Division Councils

BIS does not make technical regulations however there are technical regulations issued by various Ministries which demand compliance to various BIS standards as mandatory. Technical regulations are issued by various departments under different ministries of Government of India or by different empowered regulators.

BIS is engaged in formulation of Indian Standards for the following sectors:

- Production & General Engineering
- Chemicals
- Civil Engineering
- Electronics and Information Technology
- Electro-technical
- Food and Agriculture
- Mechanical Engineering
- Management and Systems
- Medical Equipment and Hospital Planning
- Metallurgical Engineering
- Petroleum Coal and Related Products
- Transport Engineering
- Textile

- Water Resources

Each of these sectors has a Division Council to oversee and supervise its work as detailed below.

BIS with more than 500 qualified technical and scientific personnel and more than 25000 experts voluntarily associated with standardization activity, has made a significant and valuable contribution to the growth of the country's economy.

So far over 19,000+ standards have been formulated in different technology areas.

1. Production and General Engineering Division Council (PGEDC):

Standardization in the field of basic and production engineering such as engineering drawings, screw threads, fasteners, transmission devices, weights and measures, engineering metrology, bearings, gears, horology, machine tools, hand tools, cutting tools, pneumatic tools and fluid power system including automation in manufacturing and robotics.

- Composition of Technical Committee details is available at <http://www.bis.org.in/sf/comppgd.pdf>
- Program of Work Details are available at <http://www.bis.org.in/sf/pow/pgd.pdf>

2. Civil Engineering Division Council (CEDC):

Standardization in field of civil engineering including structural engineering, building materials and components; planning, design, construction, and maintenance of civil engineering structures; construction practices; safety in building but excluding those subjects which are specifically related to river valley projects.

- Composition of Technical Committee details is available at <http://www.bis.org.in/sf/compced.pdf>
- Program of Work Details are available at <http://www.bis.org.in/sf/pow/powced.pdf>

3. Chemical Division Council (CHDC):

Standardization in the field of chemicals and chemical products including paints and related products, glass and ceramic wares, paper and stationery items, leather and footwear, soaps and detergents, photographic and electroplating materials, lac and lac products, thermal insulation materials, industrial gases, explosives and pyrotechnics, nuclear material, chemical hazards, water quality, environmental protection and industrial safety (to the extent of their aspects relating to activity of the chemical division).

- Composition of Technical Committee details is available at <http://www.bis.org.in/sf/compchd.pdf>
- Program of Work Details are available at <http://www.bis.org.in/sf/pow/CHD.pdf>

4. Electro-technical Division Council (ETDC):

Standardization in the field of electrical power generation, transmission, distribution and utilization equipment; and insulating materials, winding wires, measuring and process control instruments and primary and secondary batteries.

- Composition of Technical Committee details is available at <http://www.bis.org.in/sf/competd.pdf>
- Program of Work Details are available at <http://www.bis.org.in/sf/pow/etd.pdf>

5. Food and Agricultural Division Council (FADC):

Standardization in the field of food and agriculture including food processing, agricultural inputs, and agricultural machinery.

- Composition of Technical Committee details is available at <http://www.bis.org.in/sf/compofad.pdf>
- Program of Work Details are available at <http://www.bis.org.in/sf/pow/fad.pdf>

6. Electronics and Information Technology Division Council (LITDC):

Standardization in the field of electronics and telecommunications including Information Technology same as CEN-CENELEC activities in ICT sector.

- Composition of Technical Committee details is available at <http://www.bis.org.in/sf/compltd.pdf>
- Program of Work Details are available at <http://www.bis.org.in/sf/pow/powlitd.pdf>

7. Mechanical Engineering Division Council (MEDC):

Standardization in the field of mechanical engineering including mining, boilers, pressure vessels, refrigeration and air conditioning, material handling, chemical engineering and other general engineering such as compressors, gas cylinders, oil and gas burners, water-well drilling, pump sets educational instruments and equipment.

- Composition of Technical Committee details is available at <http://www.bis.org.in/sf/medcomp.pdf>
- Program of Work Details are available at <http://www.bis.org.in/sf/pow/med.pdf>

8. Management and Systems Division Council (MSDC):

Standardization in the field of basic standards of relevance to all division councils, quality management including quality systems (also covering manufacturing and service sectors) statistical quality control (SQC), management and productivity, documentation and information systems and publication and graphic technology.

- Composition of Technical Committee details is available at <http://www.bis.org.in/sf/compmsd.pdf>
- Program of Work Details are available at <http://www.bis.org.in/sf/pow/msd.pdf>

9. Metallurgical Engineering Division Council (MTDC):

Standardization in the field of metallurgy and metallurgical engineering including ferrous and non-ferrous metals, alloys and their products, ores and minerals, foundry, refractories, powder metallurgy, heat-treatment, corrosion protection, metallic and non-metallic coatings (excluding paints, pigments, and enameling) and welding (excluding electrical welding equipment).

- Composition of Technical Committee details is available at <http://www.bis.org.in/sf/compmtd.pdf>
- Program of Work Details are available at <http://www.bis.org.in/sf/pow/powmtd.pdf>

10. Petroleum, Coal and related Products Division Council (PCDC):

Standardization in the field of petroleum, natural gas, coal and coal related products, alcohols, dye-intermediates, natural and synthetic perfumery materials, cosmetics, fertilizers, plastics, rigid and semi-rigid and flexible plastic containers, rubber, adhesives, toys and sports goods.

- Composition of Technical Committee details is available at <http://www.bis.org.in/sf/compccd.pdf>
- Program of Work Details are available at <http://www.bis.org.in/sf/pow/pcdpow.pdf>

11. Transport Engineering Division Council (TEDC):

Standardization in the field of transport engineering including air, water, road and rail transport; diesel engines for stationery application and ISO freight containers, transport packaging etc.

- Composition of Technical Committee details is available at <http://www.bis.org.in/sf/compted.pdf>
- Program of Work Details are available at <http://www.bis.org.in/sf/pow/ted.pdf>

12. Textile Division Council (TXDC):

Standardization in the field of textiles covering natural and man-made fibers and their products, geotextiles, dyestuffs, textile auxiliaries and textile machinery.

- Composition of Technical Committee details is available at <http://www.bis.org.in/sf/comptxd.pdf>
- Program of Work Details are available at <http://www.bis.org.in/sf/pow/txd.pdf>

13. Water Resources Division Council (WRDC):

Standardization in the field of Water Resources development to include the activities covering utilization of water resources for irrigation, drinking water as well as ground water development. In case of drinking water, the work shall be confined to making the water available to the municipal authorities.

- Composition of Technical Committee details is available at <http://www.bis.org.in/sf/compWRD.pdf>

- Program of Work Details are available at <http://www.bis.org.in/sf/pow/wrdpow.pdf>

14. Medical Equipment and Hospital Planning Division Council (MHDC):

Standardization in the field of medical equipment including all types of surgical instruments, electro-medical equipment, surgical dressings, anesthetic and rehabilitation equipment, artificial limbs, biological stains, veterinary surgery instruments, dentistry, laboratory instruments and equipment and hospital planning.

- Composition of Technical Committee details is available at <http://www.bis.org.in/sf/MHDCOMP.pdf>
- Program of Work Details are available at <http://www.bis.org.in/sf/pow/MHDPOW.pdf>

The Work Programme, besides giving scope of Division Council and Sectional Committees, contains committee wise position of standards published and draft standards (like preliminary, wide circulation and finalized draft standards) at different stages of preparation.

BIS Regional & International Participation

International Cooperation and Agreements

BIS as the National Standards Body of India has been participating in International Standardization activities and projecting India's interest during various stages of the development of International Standards. BIS has been actively participating in the activities of International Organization for Standardization (ISO) and the International Electrotechnical Commission (IEC). A sizeable number of Indian Standards have been harmonised with ISO/IEC Standards to facilitate acceptance of Indian products in the International Market.

BIS has also entered into MoUs with NSBs of many countries.

BIS and ISO

BIS is a founder member of **International Organization for Standardization (ISO)** and continues to take active part in its activities.

BIS as a member of ISO:

- has periodically served as a member of the ISO Council and was present as its member for 2012-13 term.
- has periodically served as a member of the ISO Technical Management Board (TMB) and is at present its member for 2013-15 term
- participates in its Policy Development Committees on Developing Country Matters (DEVCO), Committee on Conformity Assessment (CASCO), and Committee on Consumer Policy (COPOLCO)

India is a participating 'P' member in 311 Technical committees as well as Subcommittees and observer member 'O' member on 305 of ISO which are of interest to India. BIS participates in the international standardization activity through corresponding National Mirror Committees. Participation in ISO work is done through correspondence as well as participation in meetings, whenever necessary and by voting through electronic voting system.

Presently BIS also holds the Secretariat responsibilities of 2 Technical Committees and 6 subcommittees of ISO. The committees for which BIS holds the Secretariat are as follows:

ISO/TC 34/SC 7:	Spices & Condiments
ISO/TC 113:	Hydrometry
ISO/TC 113/SC 1:	Velocity area methods;
ISO/TC 113/SC 6:	Sediment transport
ISO/TC 120:	Leather
ISO/TC 120/SC 1:	Raw hides and skins, including pickled pelts
ISO/TC 120/SC 2:	Tanned leather
ISO/TC 120/SC 3:	Leather products

BIS and IEC

India started taking part in IEC from 1911. BIS took over the responsibility of Indian National Committee of IEC in 1949 from Institution of Engineers. Since then BIS is actively participating in the activities of the **International Electrotechnical Commission (IEC)**. BIS has constituted Indian National Committee (INC) of IEC. This Committee performs various responsibilities as member body of IEC Council. BIS has participation status in 65 Technical Committees and observer status in 86 Technical Committees.

MoUs and MRAs

BIS is also actively involved in the Regional and Bilateral Cooperation Programmes pertaining to standardization, testing, certification, training etc. In this regard, BIS has signed 21 MoU in the fields of standardization and conformity assessment and is in the process of having such an arrangement with several other countries. In addition, BIS has also signed MRA with Pakistan and Sri Lanka.

MoU's

Sl. NO	Country	Organization
1.	Afghanistan	Afghan National Standardization Authority (ANSA)
2.	Bangladesh	Bangladesh Standard and Testing institution (BSTI)
3.	Bhutan	Royal Govt of Bhutan
4.	Egypt	Egyptian Organization for Standardization (EOS)

5.	France	Union Technique de l'Electricite (UTE)
6.	Germany	DIN (Duetsches Institut fur 8.Normung)
7.	Germany	DKE German Commission for Electrical, Electronic and Information Technologies of DIN & VDE
8.	Ghana	Ghana Standards Bureau (GSB)
9.	Greece	Hellenic Organization for Standardization
10.	Israel	Standards Institution of Israel (SII)
11.	Iran	Institute of Standards and Industrial Research (ISIRI)
12.	Mauritius	Mauritius Standards Bureau (MSB)
13.	Nigeria	Standards Organization of Nigeria (SON)
14.	Slovenia	Slovenian Institute for Standardization (SIST)
15.	UAE	Emirates Authority for Standardization and Metrology (ESMA)
16.	USA	American National Standards Institute (ANSI)
17.	USA	Tripartite agreement with BIS, ANSI & CII
18.	Ukraine	The State Committee of Ukraine for Technical Regulation and Consumer Policy.
19.	Uzbekistan	Agency for Standardization, Metrology and Certification of Uzbekistan
20.	---	International Organization for Standardization (ISO)
21.	India, Brazil, & South Africa (IBSA)	Govt.-to-Govt. Agreement.

MRAs

Sl. NO	Country	Organization
1.	Pakistan	Pakistan Standards & Quality Control Authority (PSQCA)
2.	Sri Lanka	Sri Lanka Standards Institution (SLSI)

BIS is also actively participates in the Regional Cooperation activities such as the activities of South Asia Regional Standards Organization (SARSO) and the Pacific Asia Standards Congress (PASC). As part of its regional co-operation Programmes BIS has established SARSO (South Asian Regional Standards Association) with objectives as; a) Coordination & Cooperation between SAARC countries in standards & Conformity Assessment b) Develop harmonized standards c) Facilitate intra-regional trade d) Promote MRAs on conformity assessment.

BIS also participate and follow India-Brazil-South Africa (IBSA) Dialogue Forum. <http://www.ibsa-trilateral.org/>

BIS WTO-TBT Enquiry Point:

The Government of India, Ministry of Commerce has designated BIS as the WTO-TBT Enquiry Point under the Agreement on Technical Barriers to Trade of the World Trade Organization (WTO) to answer all reasonable inquiries from other members and interested parties concerning standards, technical regulations and conformity assessment procedures.

As an obligation under the Agreement on Technical Barriers to Trade (TBT Agreement) of World Trade Organization (WTO), member countries of the WTO are required to report to the WTO, all proposed technical regulations that could affect trade with other Member countries. For India, Ministry of Commerce notifies the proposed technical regulations, Standards & Conformity Assessment Procedures to WTO, Geneva. Parties in other member countries wishing to make comments on the above notifications can obtain copies of the text from the Enquiry Point.

As an initiative to serve the national stakeholders, the WTO-TBT Enquiry point also provides the interested organizations and individuals an opportunity to review and comment on notifications of other members which can affect their trade interests, by electronically disseminating the TBT Notifications to the national stakeholders.

The number of the concerned TBT Notification should be stated in the request. Comments on the documents should be sent to the Enquiry Point as soon as possible preferably a fortnight before the expiry of the period of comments. The comments would be communicated to the Ministry of Commerce for onward transmission to the concerned Government.

For more details about the WTO-TBT Enquiry Point and to see WTO-TBT Notifications please [click here](#)

BIS Product Certifications:

The Product Certification Scheme of BIS aims at providing Third Party Guarantee of quality, safety and reliability of products to the customer. Presence of ISI certification mark, known as Standard Mark, on a product is an assurance of conformity to the specifications. The conformity is ensured by regular surveillance of the licensee's performance by surprise inspections and testing of samples, drawn both from the market and factory. The manufacturer is permitted to self-certify the licensed products after ascertaining its

conformity to the Standard. Through its surveillance operations, the Bureau maintains a close vigil on the quality of certified goods. The certification scheme operates through a network of 34 Branch Offices set up in State capitals or major industrial towns and 5 Regional Offices overseeing the work of the Branch offices.

Although, the scheme itself is voluntary in nature, the Government of India, on considerations of public health and safety, security, infrastructure requirements and mass consumption has enforced mandatory certification on various products through Orders issued from time to time under various Acts. While BIS continues to grant licenses on application, the enforcement of compulsory certification is done by the notified authorities.

Under separate arrangements with statutory agencies, some products have been placed under special certification schemes of lot or batch inspection carried out by BIS inspecting officers. A majority of gas cylinders, regulators and valves are certified through such schemes. There are three types of product certification scheme:

1. Domestic Manufacturers Certification Scheme
 - i. Normal Procedure
 - ii. Simplified Procedure
2. Foreign Manufacturers Certification Scheme
3. ECO Mark Scheme

Domestic Manufacturers Certification Scheme

The applicant has the option to choose any of the following two procedures for grant of BIS license:

Normal Procedure: The applicant is required to submit the filled in application along with required documents and requisite fee to the Branch Office under whose jurisdiction the manufacturing unit is located. Subsequently, after recording of the application, a preliminary factory evaluation is carried out by BIS officer to ascertain the capability of the applicant/manufacturer to produce goods according to the relevant Indian Standard and to verify the availability of complete testing facility and competent technical personnel. Samples are tested in the factory and also drawn for independent testing. Grant of license is considered by BIS provided the samples pass during independent testing, preliminary evaluation is satisfactory and the applicant agrees to operate the defined Scheme of Testing & Inspection and pay the prescribed marking fee. By this procedure the license is expected to be granted within 4 months of recording of application by BIS and 6 months in case of all India first license for a product. For more information please click [here](#)

Simplified Procedure: In this procedure, the applicant is required to submit test report(s) from specified laboratories along with the application. Grant of license is considered provided the verification visit is found to be satisfactory and the applicant agrees to implement the defined scheme of testing and inspection and pay the prescribed marking fee. Sample(s) is (are) drawn during the verification visit for independent testing, but the conformity of this sample does not form a pre-condition for grant of license. However, the test result is used for review purpose. For more information please click [here](#)

Foreign Manufacturers Certification Scheme

Bureau of Indian Standards (BIS) has been operating a Foreign Manufacturers Certification Scheme (FMCS) since the year 2000 under [BIS Act, 1986 and Rules & Regulations](#) framed there under and Regulation 3 and 4 of the BIS (Certification) Regulations, 1987.

Under FMCS, license is granted to a Foreign Manufacturer for use of Standard Mark on a product that conforms to an Indian Standard. The standards may be under mandatory or voluntary certification. [Click here](#) to locate your standards. [Click here](#) for list of items under mandatory certification.

The Scheme is applicable for grant of license for all [products](#) except [Electronics & IT Goods notified by DeitY](#).

The license is granted by Foreign Manufacturers Certification Department (FMCD) located at BIS Headquarters, New Delhi. The BIS license is granted for a location where the product is manufactured and tested as per relevant Indian Standard(s) and Standard Mark is applied on the product conforming to such Indian Standard(s).

NOTE: BIS is operating a separate Compulsory Registration Scheme (CRS) for Electronics & IT Goods for the product categories notified by the Department of Electronics & Information Technology (DeitY). Click [here](#) to read more about CRS. Click [here](#) for list of product categories under CRS.

ECO Mark Scheme

Besides the normal product certification scheme, BIS also grants licenses to environment friendly products under a special scheme and awards the ECO MARK to such products. These products should conform to additional requirements specified in the Indian Standards to qualify. The procedure for grant of license is same as that of Domestic Manufacturers.

The Government of India has instituted this scheme for labeling of environment friendly products to be known as ECO Mark. The scheme is being administered by the Bureau of Indian Standards. So far the following product categories have been identified for coverage under this scheme:

- a) Soaps and Detergents;
- b) Paints;
- c) Paper;
- d) Plastics;
- e) Cosmetics;
- f) Textiles;
- g) Batteries;
- h) Wood Substitutes;
- j) Propellants and Aerosols;
- k) Food Items (edible oils - including Vanaspati, Tea and Coffee);
- m) Electrical and Electronics Goods;
- n) Packing/Packaging Materials;

- p) Lubricating/Speciality Oils;
- q) Drugs;
- r) Foods Preservatives and Additives; and
- s) Pesticides.
- t) Leather

The Scheme is being operated on a national basis and provides certification and labeling for house-hold and other consumer products which meet certain environmental criteria along with quality requirements prescribed in relevant Indian Standards for the product. For the implemen-tation of the scheme, BIS is responsible for the following functions:

- I. Assessment of the product for ECO Mark, certification of the product for award of ECO Mark.
- II. Renewal, suspension and cancellation of the licence.
- III. Products certified as eligible for the ECO Mark shall also carry the ISI Mark (except for leather) for quality, safety and performance of the product and shall be licensed to carry the ECO Mark for a prescribed time period after which it shall be reassessed.
- IV. Undertaking inspections and taking samples for analysis of any material or sub-stance in relation to which the BIS - ECO Mark has been used as may be necessary for proper implementation of ECO Mark. For this purpose the Standard Mark of Bureau would be a single mark having a combination of the ISI Mark and the ECO Logo which is illustrated below:

BIS STANDARD MARK & ECO LOGO



To operate the scheme, BIS has included additional requirements for ECO Mark in the concerned Indian Standards. The terms and conditions governing operation of the licenses including fees shall be as per the Bureau of Indian Standards Act, Rules and Regulations framed thereunder. Marking fee would be separate - one with and the other without ECO Mark requirements. Similarly two types of schemes of testing and inspection have been prepared, one incorporating the additional requirements of the ECO Mark and the other for BIS Certification against Indian Standards.

Product Specific Information (PSI)

- [Requirement to be Compiled with by the Applicant of Packaged Drinking Water for grant of BIS License according to IS 14543:2004](#)
- [Steel & Steel Products Testing Equipments list](#)
- [Tyres Test Equipments list](#)

- [Operating Manual for Product Certification 2004](#)
- [Amendments to OMPC 2004](#)

Compulsory Registration Scheme

Ministry of Electronics & Information Technology (MeitY) had notified "Electronics and Information Technology Goods (Requirement for Compulsory Registration) Order, 2012" on 3 Oct 2012 for fifteen categories of electronics products. [Another 15 product categories](#) were added by MeitY under this order on 13 Nov 2014. [Click here](#) for list of product categories.

As per the Order, no person shall manufacture or store for sale, import, sell or distribute goods which do not conform to the Indian standard specified in the order. Manufacturers of these products are required to apply for registration from Bureau of Indian Standards (BIS) after getting their product tested from BIS recognized labs.

Bureau of Indian Standards (BIS) then registers the manufacturers under its registration scheme who are permitted to declare that their articles conform to the Indian Standard (s). The registered manufacturers are then allowed to use the words "Self-declaration - Conforming to IS ... (corresponding Indian Standard number) along with R-XXXXXXX (Registration number) and/or put the Standard Mark notified by the Bureau.

[Indian language support for Mobile Phones](#) was notified on 24 October 2016 by MeitY.

Bureau of Indian Standards (BIS) is operating Compulsory Registration Scheme (CRS) for Electronics & IT Goods as per the provision of Chapter IVA of THE BUREAU OF INDIAN STANDARDS RULES, 1987 for the product categories notified by MeitY.

Registration Department located in BIS Head Quarters at New Delhi is granting Registration under Compulsory Registration Scheme. Surveillance of products under CRS is carried out by MeitY. [Click here](#) to read more about CRS.

3.2. Telecommunication Standards Development Society for India (TSDSI)

Absence of Standardization Body was being felt strongly in the telecom standardization arena in India. It was articulated that a standards development organization (SDO) for telecom will help Indian companies to develop standards for the telecom products and services to meet India specific requirements, which is expected to promote indigenous R&D and manufacturing. The developmental process will also help in creating Indian IPRs. With the development of new national standards, India will be in a position to influence various international telecom Standards Development Organizations and Forums in the development of global standards and in the inclusion of Indian IPRs in them. At the 17th meeting of Global Standards Collaboration (GSC-17), held at Jeju Island, Republic of Korea from 13 to 16 May 2013, Ms. Rita Teotia, Additional Secretary of the Department of Telecommunications, Ministry of Communications and Information Technology, India attended GSC-17. On the platform of GSC, she shared information on the establishment of the "Telecom Standards Development Society, India (TSDSI)". On 7th November 2013 TSDSI was officially launched by the Minister of Communications & IT. Formally,

Telecommunications Standards Development Society, India (TSDSI), came into existence on 7th January 2014, with an objective of contributing to the next generation telecom standards and drive eco-system of IP creation. TSDSI has been constituted as an autonomous 'not for profit' Standards Development Organization for Telecom products and services in India. It is registered as a society under the Societies Registration Act XXI, 1860 and is recognized by the Department of Telecommunications, Govt. of India as India's Telecom SDO.

TSDSI is now an SDO that aims at developing and promoting India-specific requirements, standardizing solutions for meeting these requirements and contributing these to international standards, contributing to global standardization in the field of telecommunications, maintaining the technical standards and other deliverables of the organization, safe-guarding the related IPR, helping create manufacturing expertise in the country, providing leadership to the developing countries (such as in South Asia, South East Asia, Africa, Middle East, etc.) in terms of their telecommunications-related standardization needs. A consensus based approach is followed towards standards development by involving all stake holders - Government, Academia and Industry. TSDSI follows the principles of Openness, Transparency, Fairness, Consensus and Due Process in conducting its activities. It maintains technology neutrality and provide a uniform playing field for all of its members. The TSDSI is not for profit legal entity in Public-Private Partnership (PPP) mode with participation from all stake holders including Government, service providers, equipment vendors, equipment manufacturers, academic institutes, and research labs.

TSDSI's objective is to contribute to next generation telecom standards and drive ecosystem of IPR creation. [TSDSI's 44 members](#) include top telecom service providers, manufacturers, software solution providers, R&D organizations, academia, industry associations, PSUs and government department.

Copy of Brochure is available [here](#)

TSDSI Governing Structure

General Body & Governing Council

The General Body, constituted by the authorized representatives of all member organizations of TSDSI, is the apex decision making body of TSDSI.

While General Body is the apex decision making body of the TSDSI, the Governing Council (GC) steers and governs it in the intervals between the General Body meetings. The GC consists of 16 elected and 5 Government nominated members. GC has representation from all eight verticals of the telecom sector. Two GC members are elected from each telecom vertical. The members of the GC, except those nominated by the Government of India, are elected by the General Body.

The Governing Council has a Chairperson and a Vice-Chairperson who are elected by the General Body from amongst the members of the Governing Council.

The Governing Council is assisted by a Secretariat headed by a Director General.

Functions of TSDSI

- Develop standards to support new requirements based on research & innovation in the domain of telecommunications/ICT in India.
- Distil new items of research for standardization after analyzing prevalent standards for applicability to the India centric requirements.
- Take Indian requirements to global standards organizations;
- Creating and Safe-guarding related IPRs;
- Helping create standards based manufacturing expertise in the country;
- Enforce a strictly methodical & transparent, open-to-all-members [Industry, Government,
- Academia] process while generating standards.
- Represent the views of its membership to DoT and other Government bodies on matters concerning policy, regulatory and standardization issues in the field of telecom
- Providing guidance and leadership to developing countries (such as in South Asia, Africa, Middle East, etc.) for their telecommunications related standardization needs

Standardization @ TSDSI

All technical activities are driven by member organizations of TSDSI. They bring perspective of end-users, service providers (providing ICT based services to end-users), service partners (supporting service providers for provisioning of ICT services as system integrators or management of services), innovators and policy makers. Standardization activities are triggered by technology innovations, market needs, regulatory and policy interventions. A member organization can initiate a proposal for study or for creation of a standard. These proposals are discussed by members in the relevant technical group and approved as a study or work item.

Motivation for bringing standardization proposals vary across stakeholders and can be mutually conflicting. The SDO is expected to provide a platform to its members for considering and debating on each of the proposals on merit, as well as supporting promotion of IPs of its members on FRAND terms. TSDSI provides a platform to the creators as well as consumers of standards to engage in discussions and evolve mutually acceptable standards.

The Standardization Process flow of TSDSI is described below:

All technical activities are conducted in specific Study Groups (SGs). These groups, may have dedicated work groups (WGs) to work on identified study and/or standardization items. A member organization can subscribe to any technical group (SG or its WG) and participate in its proceedings.

1. **Proposal for Standardization Candidates:** A member can bring standardization candidate into TSDSI by submitting a New Item Proposal (NIP) to the relevant Study Group. A NIP may be approved for study/analysis of a problem statement that requires technology solution, in which case it may be accepted as a Study Item

leading to a Technical report. Alternately, if the opportunity for creating a standard is clearly visible, the NIP can get approved as a Work Item leading to a draft standard. All decisions are expected to be taken by “consensus”.

2. **Making of Standards:** Standard is created after conducting a detailed analysis of all prospective candidates for standardization proposed by members. It is the endeavour of members to collaborate with global forums to create globally harmonized standards. India specific requirements are taken to the appropriate global Standards forums for incorporation. Technical Standards (TSs) drafted by the technical groups are presented to the Governing Council and then to the General Body for approval and release. Contributions, approved by the members of the technical group, are incorporated in the target Technical Report/Standard document. Technical Reports (TRs) can be released by the Technical groups after taking approval from the GC.

All Study Groups and their constituent Work Group(s) have a Chair and a Vice Chair each, elected in their individual capacities by the members to moderate/conduct the activities of the group following the principles of openness, transparency, fairness, consensus, and due process.

Work Program of TSDSI

Technical standardization activities are carried out through Study Groups (SG) and Working Groups (WG). At present, they have following Technical Groups:

SG1 Wireless Systems Study Group: This SG is instrumental wireless telecom systems related standardization activities, which are the key-enablers for future communication systems. This group has 3 workgroups described below:

- **WG1-SG1 (RNES) [Radio Network Evolution and Spectrum]:** This work group presently deals with various RAT related research areas, most important of them being, mm-wave, device-t-device communication, cloud RAN, massive MIMO, and new waveform techniques.
- **WG2-SG1 (CN) [Core Network]:** This work group has (Network Function Virtualization) NFV/ Software Defined Network (SDN) as its major thrust areas for research and standardization.
- **WG3-SG1 (5G):** This work group emphasizes on the end-to-end aspect of the 5G technologies.

SG2 Services Study Group: Services play a major factor in driving the CAPEX, OPEX and various other parameters of a network. Currently activities of this study group are being carried out in 2 WGs described below:

- **WG1- SG2 (M2M):** This work group concentrates on M2M-IoT related activities and has identified 11 major verticals since last year where, there is a commendable work progress in some key areas.
- **WG2- SG2 (Indian Languages):** This WG is responsible for the TSDSI standardization activities for Indic user interfaces and encoding methods and representation (fonts,

rendering etc.). The scope includes user terminals, mobile network equipment and applications.

SG3 (Optical Access and Transport): TSDSI needs to ensure that transport issues specific to India like higher rate of fiber failure, higher microwave backhaul to optical backhaul ratio, varied regional environmental conditions, capex and opex constraints are studied and addressed through focused standardization activities under the aegis of separate TSDSI Study Group (SG). It has one Working Group:

- **WG1-SG3 (Backhaul):** TSDSI SG on transport and backhaul shall encompass the development of standards on wireless & wireline backhaul, microwave, optical & packet based backhaul or transport network and Software Defined Network (SDN) infrastructures, NFV, systems, equipment, optical fiber cables, along with the related control plane, network management, performance monitoring & reporting, Synchronization, interfaces, multi-layer optimization techniques, SDN network applications and testing aspects. This encompasses the development of related standards for the last-mile, access, metro, national long distance and submarine/international long distance, data & internet communication networks.

SG4-Security Study Group: The Security group has a broad scope of identification of essential requirements to ensure security assurance for cellular mobile telecom networks in India based on 3GPP SECAM SA3 work as related to fundamental approach, in consultation with various industry stakeholders.

Energy Efficiency Group: The EE group is responsible for evaluating energy performance for telecommunication networks including access, user equipment, aggregation, core which includes underlying transport systems.

Details of various technical activities can be viewed on TSDSI website at <http://www.tdsi.org/standards/>

Collaboration with International and other Forums

TSDSI Alliances: TSDSI has signed cooperation agreements with the following international SDOs:

- Association of Radio Industries and Businesses (ARIB), Japan
- Alliance for Telecommunications Industry Solutions (ATIS), USA
- China Communications Standards Association (CCSA), China
- Continua Health Alliance, USA (IoT in Health)
- European Telecommunications Standards Institute (ETSI), Europe
- Telecommunications Technology Association (TTA), Korea
- Telecommunication Technology Committee (TTC), Japan

TSDSI has also signed a MoU with Global Certification Forum (GCF).

TSDSI is a member of ITU-T SG15 (Networks, Technologies and Infrastructures for Transport, Access and Home).

TSDSI is working with ITU-R SG5 (Terrestrial Communications) to participate actively in IMT2020 activities.

TSDSI has initiated a multi-year cooperation project through European Union with ETSI focusing on the areas of 5G, NFV/SDN and Intelligent Transportation Systems (ITS).

oneM2M Partnership: TSDSI is Partner Type I of oneM2M, one the leading forums driving M2M service layer standards. This entitles TSDSI member organizations to become Individual Members of oneM2M and contribute to standards development in M2M space. Copy of agreement is available [here](#)

Global Standards Collaboration: TSDSI is a constituent SDO of Global Standards Collaboration (GSC) – a voluntary forum of the world’s leading information and communication technologies standards organizations (SDOs). This forum meets once a year to deliberate upon strategic topics in the area of ICT based standardization that has a global impact.

3GPP Membership: TSDSI is one of the 7 Organizational Partners of 3GPP. This entitles TSDSI members to become Individual Members of 3GPP through TSDSI and take their IPR into the global arena. This also enables them to contribute in the development upcoming standards such as 5G. Copy of agreement is available [here](#)

For more information on TSDSI’s a) Rules & Regulation click [here](#) b) Working Procedures click [here](#) c) IPR Policy click [here](#) d) Guidelines click [here](#)

3.3. Telecommunication Engineering Centre (TEC)

The **Telecommunication Engineering Center (TEC)** with its headquarters in New Delhi is a technical body and a nodal agency of the Department of Telecommunications, Ministry of Communications, Government of India responsible for drawing up of standards, generic requirements, interface requirements, service requirements and specifications for telecom products, services and networks. It has four Regional Centres in New Delhi, Kolkata, Mumbai and Bangalore. TEC functions are as below:

- It is a technical body representing the interest of Department of Telecom, Government of India.
- Specification of common standards with regard to Telecom network equipment, services and interoperability.
- Prepare and Publish Generic Requirements (GRs), Interface Requirements (IRs).
- Issuing Interface Approvals, Certificate of Approvals, Service Approvals & Type Approvals.
- Formulation of Standards and Fundamental Technical Plans.
- Interact with multilateral agencies like APT, ETSI and ITU etc. for standardization.
- Develop expertise to imbibe the latest technologies and results of R&D.
- Provide technical support to DOT and technical advice to TRAI & TDSAT.
- Coordinate with C-DOT on the technological developments in the Telecom Sector for policy planning

As mentioned above, the TEC publishes several documents covering interface requirements (IR's), generic requirements (GR's), mandatory regulatory standards covering infrastructure and services. These specifications cover the functional areas of fixed line access, mobile telephony, network, next generation networks, information technology, radio transmission, switching, transmission, service application and other miscellaneous areas of telecom. These various specifications are drawn up through a process of consultation with various stakeholders like vendors, operators, and other interested parties.

A draft specification is first drawn up by the concerned functional division within TEC and circulated amongst various stakeholders. Comments/objections are sought from the interested parties at a common meeting. The revised draft is then formulated incorporating some or all the comments and a final version is arrived at which becomes a public document. The process usually takes several weeks.

Divisions of TEC:

The main divisions / Functional areas;

- **Fixed Access (FA)**
- **Information Technology (IT)**
- **Terrestrial Wireless Access (TWA)**
- **Future Networks (FN)**
- **Telecom Security Assurance (TSA)**
- **Radio (R)**
- **Next Generation Switching (NGS)**
- **Transmission (T)**
- **Internet of Things (IOT)**
- **Green Passport**

TECs has four Regional Centres called RTECs. These are RTECs are responsible for testing and certification of products, equipment, and systems. Each of the RTEC is headed by a Dy. Director General. The coordination of activities of RTECs and issue of certificate is vested with Regional Coordination (RC) Unit at TEC New Delhi headed by a DDG.

In case of Type Approval, Interface Approval and Certificate of Approval, the applicant is required to apply to the respective Regional TEC (RTEC) within whose jurisdiction their manufacturing plant or Registered Office is located.

RTEC Functions:

- Registration of application for Certification & Approval of Telecom Products against GR/IR of TEC/ Applicant's own specifications.
- Carrying out Testing of Telecom Products against the specifications.
- Sale of GR/IR documents.

Following Labs are active in TEC:

- [IPv6 Ready Logo Test Lab](#)

- [SAR Lab](#)
- [Next Generation Network \(NGN\)](#)
- [Customer Premises Equipments & Terminals Lab \(CPE & TL\)](#)
- [Control Lab \(CL\)](#)
- [Long Term Evolution Lab \(LTE\)](#)
- [Green Passport Lab \(GP\)](#)
- [Security Lab \(SL\)](#)
- [Applications Lab \(AL\)](#)

Testing and Certification of Telecom Equipment:

The requirements for Interface, Interoperability, Safety, Security and EMI/ EMC prescribed by TEC for telecom equipments connected to Indian telecom network are available in document form as Generic requirements (GR), Interface Requirements (IR) and Standards (SD) and can be purchased from [TEC e-purchase website](#). As an added convenience, hard copies of documents will remain available for sale through RTEC counters on payment of its price on-line through Non-Tax Revenue Portal (NTRP) using link: <https://bharatkosh.gov.in/>. Click [here](#) to see guidelines for payment to TEC for availing various services including payment towards document price.

The Certification of conformance to the aforesaid requirements is done by TEC through its four Regional centres located at Bengaluru, Kolkata, Mumbai and New Delhi. Interested applicants may approach the concerned RTEC under whose jurisdiction their manufacturing plant or registered office is located. The jurisdiction of the RTECs is given as under:-

<i>Regional TEC</i>	<i>Jurisdiction</i>
<u>RTEC, Northern Region</u> New Delhi	Delhi, Rajasthan, Punjab, Haryana, Chandigarh, J&K, Himachal Pradesh, Uttrakhand and Uttar Pradesh
<u>RTEC, Eastern Region</u> Kolkata	West Bengal, Bihar, Jharkhand, Odisha, Assam, Tripura, Meghalaya, Sikkim, Arunachal Pradesh, Manipur, Mizoram, Nagaland, Andaman & Nicobar.
<u>RTEC, Western Region</u> Mumbai	Maharashtra, Gujarat, Daman and Diu, Madhya Pradesh & Chattisgarh, Dadara & Nagar Haveli and Goa
<u>RTEC, Sothern Region</u> Bengaluru	Karnataka, Kerala, Tamilnadu, Puducherry, Lakshadweep and Minicoy, Andhra Pradesh, Telangana.

The procedure and guidelines for Testing and Certification of Telecom equipments by TEC are available in the document 'TEC Certification Procedure' issued under number TEC/CP-001/01/Nov 2015, which has come into effect from 16.11.2015 superseding the previous Approval Procedure No. 005 TAP TEC Issue- MAY 1996 and its associated amendments and instructions. A priced copy of the document is available for download from [TEC e-purchase website](#).

Following Links will provide more information on:

- [Step-by-step Guide for Testing and Certification](#)
- [Guidelines for Payment for Availing Services](#)
- [Download Forms for Testing and Certification \(Form A, Form A1, Form B and Form T\)](#)
- [Testing and Certification Fees](#)
- [Quarterly List of Certificates Issued](#)
- [List of Certificates Withdrawn](#)
- [IPv6 Ready Logo Testing](#)

Network Conformity Standards System & Procedures:

Consequent to the liberalization of the Telecom Sector and subsequent dawn of the NGN era, TEC had to transform itself into an independent technical organization to draw up standards and specifications for seamless inter-working of a multi-operator convergent network supporting multimedia services. Thus TEC was required to redefine its role to benefit the entire telecom industry rather than limiting it to a single incumbent as was traditionally the case before liberalization. Convergence of technologies in the Telecom, IT, Broadcasting, and Entertainment sectors, resulted into horizontal and vertical integration of market segments, and this further prompted the need for change. It is now imperative to ensure seamless working in a converged network capable of carrying multimedia communications and applications. The need to specify Network-Network Interfaces (NNI) and User-Network Interfaces (UNI) in such a network by an independent standards organization is of paramount importance.

TEC was thus driven to adopt a vision consistent with the new demands of a competitive telecom environment wherein it would leverage its capability as a "Centre of Excellence" in telecom to position India as a lead Telecom Knowledge and Manufacturing Hub of Asia Pacific nations, by driving Telecom Standards, Manufacturing Support and Network Building Skill-sets in the interests of this region and market. TEC would now have to deal with visualization and strategic positioning of future telecom sector in India, technological forecasting, assessment, and specification of next generation network elements. Conformity to standards would play a crucial role in the interoperability between network elements and quality of service. With liberalization of telecom, lot of expertise is available with different operators as well as manufacturers and vendors. Adoption of standards and the associated conformity tests would have to be undertaken by TEC through a process of technical consultation by pooling together such industry expertise.

Telecom Commission has recognized the need for network requirement standards and has approved the process of certification in mandatory conformity tests for all equipment. TEC would recognize, as per International best practices, other test labs in India and abroad for the purpose of speedy and efficient testing and certification process. Tests would be carried out routinely by Conformity Assessment Bodies (CAB) duly designated by TEC.

Conformity tests would be related not only to requirements for interface specifications to meet interoperability and interconnectivity needs, but also for EMI/EMC, safety, security and quality requirements. These requirements are known as “Generic Requirements”. Network elements that meet conformity tests for these generic requirements would be eligible to get a “TEC certification of Type Approval” that shall permit their utilization in Indian telecom network.

State-of-the-art testing facilities for evaluation of telecom equipment against mandatory requirements are already being implemented and NGN labs are being setup in TEC. These labs would provide a test bed primarily for finalizing test processes and procedures for standardizing tests. Further, it is envisaged to globalize the process through Mutual Recognition Agreement (MRA) with other countries.

In the light of aforesaid background, role of TEC is to bring together the Telecom Industry to decide the standards that network elements and services would have to conform to in order to make Indian Telecom Network deliver acceptable service in a multi-operator environment at par with global standards. TEC, therefore, has created a more interactive mechanism, which includes all stakeholders, for formulation of Generic Requirements (GR) for network elements, Interface Requirements (IR) for interfaces between different network elements, Service Requirements (SR) for networks and services and Test Schedule and Test Procedures (TSTP) thereof.

Definition and Structure of Document:

- [Generic Requirements](#)
- [Interface Requirements](#)
- [Service Requirements](#)
- [Other Documents](#)

GR/IR/SR formulation mechanism envisages involvement of five major groups, committees, and forum, viz.

- a) [Development Coordination Committee \(DCC\)](#)
- b) [DCC Sub-Committee](#)
- c) [Draft For Comments \(DFC\) Group](#)
- d) [Manufacturers’ Forum \(MF\)](#)
- e) [Core Groups](#)

Document Formulation process:

- [Formulation Procedure](#)
- [Working of Core Group](#)
- [Working of DCC Sub-Committee](#)
- [Working of Draft for Comments \(DFC\) Group](#)
- [Working of Manufacture's Forum](#)
- [Working of DCC](#)
- [Other Processes](#)

Conformity Assessment:

Designation and Recognition of Conformity Assessment Bodies (CAB) and Certification Bodies (CB):

Telecommunication Engineering Centre (TEC) under Department of Telecommunications (DoT), Ministry of Communications and IT, Government of India has been appointed as the Designating Authority (DA) for Telecom Equipment. TEC as DA will be designating Conformity Assessment Bodies (CABs)/ Certification Bodies (CBs) located in India to perform testing and certification of telecom products. The role of TEC as DA is also to recognizing Foreign CABs/ CBs located in the territory of MRA partner to perform testing and certification of telecom products to Indian requirements.

The following documents lay down the procedures and criteria for designating Conformity Assessment Bodies for testing and/or certifying to the MRA partnership requirements. The document also lays down the procedure for recognizing Foreign CABs/ CBs designated by the MRA partners to certify to Indian requirements. To qualify for designation/ recognition, the CABs/ CBs must fulfill the criteria as given in the scheme. TEC as the Designating Authority reserves the right to amend and introduce new requirements to this scheme as and when required.

- **Scheme for Designating Domestic Testing and Certification Bodies for Conformity Assessment of Telecommunication Equipment**
- **Scheme for Recognising Foreign Testing and Certification Bodies for Conformity Assessment of Telecommunication Equipment**

A Conformity Assessment Body (CAB)/ Certification Bodies CBs in India interested in certifying and/or testing of any telecom products to the requirements of a foreign country/custom territory that has entered into Mutual Recognition Agreement or Arrangement with India need to apply to TEC. Similarly, the Foreign CABs/CBs designated by the MRA partner may apply for Recognition for testing and /or certifying the Indian requirements.

At present India has Mutual Recognition Agreement or Arrangement (MRA) with Singapore in Telecom Sector. IDA Singapore has scheme for recognition of CAB / CBs which gives details of their Telecom Specifications and Test Procedure. The details regarding recognition by Singapore is detailed in **“Scheme for Recognizing Foreign Testing and Certification Bodies for Conformity Assessment of Telecommunication Equipment”**. And other details about Singapore on Telecom sector are available at **Infocomm Development Authority (IDA), Singapore**.

- [List of CABs Designated by India](#)
- [List of CABs Recognized by India](#)

Technical Documents Published:

- [Generic Requirements \(GR\): 523;](#)
- [Interface Requirements \(IR\): 65;](#)
- [Service Requirements \(SR\) covering Conformance, Interoperability, EMI/EMC, Network Security, Safety and Health: 13;](#)
- [Standards \(SD\): 22;](#)

National Working Groups:

National Working Group (NWG) are formed corresponding to ITU-T Study Groups. The various NWG's formed in TEC are as follows:

NWG	Subject
5	Environment and climate change.
9	Television and sound transmission and integrated broadband cable networks.
11	Signaling requirements, protocols and test specifications.
12	Performance, QoS and QoE
13	Future networks including mobile and NGN
15	Optical transport networks and access network infrastructures
16	Multimedia coding, systems and applications
17	Security

M2M Working Groups:

Network (NT) cell of DoT is working on framing policy on M2M communication. TEC had been assigned the task to undertake studies through stakeholders and finalize Indian specific standards/specifications and also to make contributions in International Standardization effort. To begin with, five multi stake holders Working Groups as detailed below were formed in TEC in March 2014. Working Groups are having members from TEC, DoT, Telecom Service Providers (TSPs), OEMs, R&D organizations, Vertical Industries, MNCs, IT / ITes, Semiconductor industries and standardization bodies(ETSI, TSDSI, BIS etc).

- a. M2M Gateway and Architecture
- b. Power
- c. Automotive
- d. Health
- e. Safety and Surveillance

Following new working groups have been created in June-2015

- I. Security (End to End security of M2M domain)
- II. Smart Cities
- III. Smart Homes
- IV. Smart villages and Agriculture
- V. Smart Environment (Environment monitoring and and Pollution Control)
- VI. Smart Governance

Frame of Reference for the working Groups was prepared and approved in the JWG meeting. (Click [here](#))

Technical Reports (Release 1 and Release 2) of M2M working groups (Click [here](#)).

4. New Approach / Initiatives (Project Priority Sectors)

During the last few years India is adopting a new approach and initiatives towards economic and social development of the country. The new vision and approach of the Government of India is evident in the various new policy announcements and initiatives introduced by the various Ministries under the Government of India. **Few of these new initiatives are briefed below in this sector of the report.**

4.1 New Bureau of Indian Standards (BIS) Bill 2016

The Parliament had passed the Bureau of Indian Standards (BIS) Bill, replacing the 30-year old Bureau of Indian Standards Act, clearing the path to bring more products under the voluntary/mandatory standard regime. The Bill replaced 1986 act to include goods, services and systems, with services being introduced for the first time under the Act. The Bill recognizes BIS as a National Standards body with international recognition to represent country in several multilateral & bilateral forums. One of the prominent highlights of the

bill is that it gives the BIS the authority and power to withdraw sub-standard products from the market. The bureau may recall goods or articles which are already out for sale or supply. The Bill allows the central government to notify certain goods, articles, etc. which will need to compulsorily carry a standard mark - if it thinks them to be necessary for (i) public interest or for the protection of human, animal or plant health, (ii) safety of the environment, (iii) prevention of unfair trade practices, or (iv) national security. For a copy of Bill please click [here](#)

Key takeaways of the BIS Bill:

1. **A boost for Make in India and the manufacturing sector:** With the industry battling for reviving the manufacturing sector, strengthening the services sector, the product/service offerings have to be best in class with no compromise on safety, quality and performance - these have to be cornerstones of Make in India. A focus by the manufacturers on 'basics' (safety, quality and performance) is necessary both in the short term (to get a ticket to the export market) and the long run (to enable creation of healthy, sustainable business and industry). This theme is applicable for larger industries/companies as well as the SME sector. Adopting and implementing global standards in India (whether voluntarily by the industry or mandatorily, e.g., by the industry or Government) is an essential first step to create such level playing fields.

Self-certification/declaration: Pushes the Make in India agenda.

2. **Mandatory certification of certain goods:** The Bill allows the central government to notify certain goods, articles, etc. which will need to compulsorily carry a standard mark - if it thinks them to be necessary for (i) public interest or for the protection of human, animal or plant health, (ii) safety of the environment, (iii) prevention of unfair trade practices, or (iv) national security.

The Bill for the first time introduced the concept of conformity assessment with multiple certification bodies; this will ensure easy implementation and upholding desired levels of consumer safety and product quality. The penalties for substandard product/service (holding the top management responsible, the risk of product recall, etc.) will ensure focus on quality.

The introduction of the concept of multiple third party certification bodies can provide a means of a more cost-effective administration and oversight for the government, faster time-to-market for manufacturers' goods, and upholding desired levels of consumer safety and product quality.

3. **This is good for the consumer:** It is imperative to understand that standards and quality play an important role in consumer protection and enhancing quality of life. Whether it is technology products, automobiles or the healthcare, private players will have to be accredited with world class/Indian standards. In the medium-to-long term, expect that only quality products will make it to supermarket shelves and our homes. The products that lack the expected global/Indian standards will be recalled; the resolution of consumer grievances will be speeded up, with potential

consequences for the manufacturer/service provider. This will enable a better quality of life in the 21st century India.

4. **BIS enhanced authority of Power:** One of the prominent highlights of the bill is that it gives the BIS the authority and power to withdraw sub-standard products from the market. The bureau may recall goods or articles which are already out for sale or supply. This will be done if the Bureau is convinced that the goods or articles do not conform to the requirement of a particular standard.

The Bill provides a framework for the government to look at standards, quality and performance from all perspectives (consumer, manufacturing, Make in India) and categorise products and services into mandatory, voluntary and self-declaration schemes. The Bill also enables the regulator to act together with law enforcement agencies to ensure complete program implementation, thereby providing the government with powers necessary in the interest of the consumer, environment or the country.

Conclusion: The Government's flagship initiatives of Make in India, Digital India, Smart Cities, etc. are already catapulting the economy onto a higher growth trajectory. That given, one of the most imperative criteria for the success of these programs would be a robust regulatory and compliance framework, with time playing a key role. The BIS Bill 2016 couldn't have come at a better time. It is a landmark Act that would help pave the way forward for a safer India - an India where consumers step up to demand and enjoy better quality products, where the manufacturers realise the importance of quality and standards and use it as a level playing field to compete in the global market and take India towards its rightful place. The Bill creates the opportunity.

4.2 BIS Rules, 2017

The Bureau of Indian Standards Act, 2016 was notified on March 22, 2016, (hereinafter referred to as the "Act"). In furtherance to the notification, the Ministry of Consumer Affairs, Food and Public Distribution (hereinafter referred to as the "Ministry"), vide notification number S.O. 3295(E) has brought the Act in force with effect from October 2017. Further, the Ministry, vide notification number G.S.R 1266(E). dated October 13, 2017, has notified the Bureau of Indian Standards Rules, 2017 (hereinafter referred to as the "Rules"). These rules have been notified in supersession of the Bureau of Indian Standards Rules, 1987, except Chapter IV A mentioned herein, and the Bureau of Indian Standards (Appointment, Terms and Conditions of Services of Director General) Rules 1987. Indian Standards "Indian Standards" means the standard including any tentative or provisional standard established and published by Bureau of Indian standards , (hereinafter referred to as the "BIS"), in relation to any goods, article, process, system or service, indicative of the quality and specification of such goods, article, process, system or service. Indian Standard includes

- I. Any Standard adopted by the bureau
- II. Any Standards established and published , or recognised, by Bureau established under the Bureau of Indian Standard Act, 1987 which was in force immediately before the commencement the Act

According to the Rules, the Bureau shall establish Indian Standards in relation to any goods, article, process, system or service and reaffirm, amend, revise and withdraw Indian Standards so established as may be necessary. If standard is being established on the request of the Central Government or the Regulator which is emerging from or has an impact on national policy, the Central Government or the concerned Regulator shall be consulted to ensure that the Standard is consistent with such policy. [Read more/download](#)

4.3 BIS Conformity Assessment Regulations, 2017

BIS Conformity Assessment Regulations, 2017 framed under the provisions of the new Bureau of Indian Standards Act, 2016. These will be required for grant of License to use or apply a Standard Mark on any article or goods notified under the Conformity Assessment Schemes specified in Schedule-I of these Regulations, application shall be made to the Bureau, if the articles or goods conform to an Indian Standard or specified requirements. The manner, fee, terms and conditions for grant, operation, suspension, renewal, non-renewal and cancellation of such Licenses are as specified in these Regulations. [Read more/download](#)

4.4 National Intellectual Property Rights Policy

The Union Cabinet approved the [National Intellectual Property Rights \(IPR\) Policy](#) that will lay the future roadmap for intellectual property in India. The Policy recognizes the abundance of creative and innovative energies that flow in India, and the need to tap into and channelize these energies towards a better and brighter future for all.

The National IPR Policy is a vision document that aims to create and exploit synergies between all forms of intellectual property (IP), concerned statutes and agencies. It sets in place an institutional mechanism for implementation, monitoring and review. It aims to incorporate and adapt global best practices to the Indian scenario. This policy shall weave in the strengths of the Government, research and development organizations, educational institutions, corporate entities including MSMEs, start-ups and other stakeholders in the creation of an innovation-conducive environment, which stimulates creativity and innovation across sectors, as also facilitates a stable, transparent and service-oriented IPR administration in the country.

The Policy recognizes that India has a well-established TRIPS-compliant legislative, administrative and judicial framework to safeguard IPRs, which meets its international obligations while utilizing the flexibilities provided in the international regime to address its developmental concerns. It reiterates India's commitment to the Doha Development Agenda and the TRIPS agreement.

While IPRs are becoming increasingly important in the global arena, there is a need to increase awareness on IPRs in India, be it regarding the IPRs owned by oneself or respect for others' IPRs. The importance of IPRs as a marketable financial asset and economic tool also needs to be recognized. For this, domestic IP filings, as also commercialization of

patents granted, need to increase. Innovation and sub-optimal spending on R&D too are issues to be addressed. The **broad contours of the National IPR Policy** are as follows:

Vision: An India where creativity and innovation are stimulated by Intellectual Property for the benefit of all; an India where intellectual property promotes advancement in science and technology, arts and culture, traditional knowledge and biodiversity resources; an India where knowledge is the main driver of development, and knowledge owned is transformed into knowledge shared.

Mission: Stimulate a dynamic, vibrant, balanced intellectual property rights system in India to:

- foster creativity and innovation and thereby, promote entrepreneurship and enhance socio-economic and cultural development, and
- focus on enhancing access to healthcare, food security and environmental protection, among other sectors of vital social, economic and technological importance.

Objectives: The Policy lays down the following seven objectives:

- i. **IPR Awareness:** Outreach and Promotion - To create public awareness about the economic, social and cultural benefits of IPRs among all sections of society.
- ii. **Generation of IPRs** - To stimulate the generation of IPRs.
- iii. **Legal and Legislative Framework** - To have strong and effective .
- iv. **Administration and Management** - To modernize and strengthen service-oriented IPR administration.
- v. **Commercialization of IPRs** - Get value for IPRs through commercialization.
- vi. **Enforcement and Adjudication** - To strengthen the enforcement and adjudicatory mechanisms for combating IPR infringements.
- vii. **Human Capital Development** - To strengthen and expand human resources, institutions and capacities for teaching, training, research and skill building in IPRs.

These objectives are sought to be achieved through detailed action points. The action by different Ministries/ Departments shall be monitored by DIPP which shall be the nodal department to coordinate, guide and oversee implementation and future development of IPRs in India. The National Intellectual Property Rights (IPR) Policy will endeavour for a “Creative India; Innovative India.

4.5 Standard Essential Patents (SEPs) and their availability on Fair, Reasonable, and Non-Discriminatory (FRAND) terms

The Commerce and Industry Ministry floated a [discussion paper on standard essential patents and their availability on fair, reasonable and non-discriminatory terms](#). The objective of the paper is to invite views and suggestions from the public at large to develop a suitable policy framework to define the obligations of essential patent holders and their licensees.

An essential patent or standard essential patent (SEP) is a patent that claims an invention that must be used to comply with a standard. The discussion paper, floated by the Department of Industrial Policy and Promotion (DIPP), said that Indian jurisprudence on fair, reasonable and non-discriminatory (FRAND) licensing practices for SEPs is at a relatively nascent stage.

"With an increasing pervasiveness of standardized technology in virtually all sectors, and particularly telecommunications, in India and worldwide, issues associated with SEPs are increasingly agitated. "This discussion paper deliberates upon such issues, particularly in telecom sector and seeks views and comments of all the stakeholders on all such issues," the 28-page paper said.

This paper, aims to sensitize the stakeholders, concerned organization and citizens towards need and importance of regulating SEPs as well as facilitating their availability at FRAND terms. The DIPP has invited views from the concerned stakeholders on issues like whether the existing provisions in the various IPR related legislations, especially the Patents Act, 1970 and Anti-Trust legislations are adequate to address the issues related to SEPs and their availability on FRAND terms.

- "If not, then can these issues be addressed through appropriate amendments to such IPR related legislations?
- If so, what changes should be affected?

The other questions which the paper has listed for stakeholders' views include what should be the IPR policy of Indian standard setting organizations in developing standards for telecommunication sector and other sectors in India where SEPs are used.

Download the [DIPP Discussion paper on Standard Essential Patents and their availability on FRAND terms.](#)

4.6 A National Telecom M2M Roadmap, IoT policy & Telecom Regulator (TRAI) recommendation

M2M Communications will impact every aspect of life of common man and results in substantial and tangible social and economic benefits to consumers, businesses, citizens and government. The country is focusing on digital empowerment, it has to play a lead role in the implementation of M2M technologies. Standardization of M2M roadmap becomes more important, as the country heads towards setting up 100 smart cities and introducing digitalization all over the country.

Adoption of M2M based applications in areas like healthcare, tele-education, smart grid, smart building, smart city etc. have enormous potential to boost the socio-economic development of the country. Anticipating the promising potential of M2M, DoT has come up with this Roadmap which will serve as a single reference document for all the M2M stake holders in India. It is first of its kind initiative taken by any government in the world. This roadmap is aimed to provide guidance to all the stakeholders to nurture M2M Communications.

M2M will be the key enabler for the Government vision of Digital India, Make in India and proposed Smart cities in India. Success of Smart Vehicle, Smart Grid, Smart Cities and related IoT applications will ride on robust communication infrastructure. The requisite communication policies and coordination will be more meaningful with M2M initiatives of DoT.

1. The Network and Technologies cell of DoT deals with all policy and regulatory aspects related to M2M communications. A National Telecom M2M Roadmap in this regard is already released in May 2015. Post release of M2M roadmap, NT cell is engaged in formulation of KYC Norms for SIM embedded M2M Devices, Numbering scheme for M2M, Registration of MSP (M2M Service Provider) and M2M Pilots. In addition, recommendations are sought from TRAI on Roaming issues, Spectrum Requirement and Quality of Service (QoS) in M2M communications.
2. TEC had been assigned the task to undertake studies through stakeholders and finalize Indian specific standards/specifications and also to make contributions in International Standardization effort. TEC will bring out reports with the objective of achieving interoperability among devices/ network/ applications and harmonization of Indian standards with global standards, on four sectors namely Automotive, Health, Power, Safety and Surveillance and one on M2M Gateway and Architecture.
 - 2.1. M2M Working Groups: To begin with, five multi stake holders Working Groups as detailed below were formed in TEC in March 2014. Working Groups are having members from TEC, DoT, Telecom Service Providers (TSPs), OEMs, R&D organizations, Vertical Industries, MNCs, IT / ITes, Semiconductor industries and standardisation bodies (ETSI, TSDSI, BIS etc.).
 - i. M2M Gateway and Architecture
 - ii. Power
 - iii. Automotive
 - iv. Health
 - v. Safety and Surveillance
 - 2.2. Joint Working Group (JWG): It comprises members of all the working groups. Following new working groups have been created in June-2015
 - I. Security (End to End security of M2M domain)
 - II. Smart Cities
 - III. Smart Homes
 - IV. Smart villages and Agriculture
 - V. Smart Environment (Environment monitoring and Pollution Control)
 - VI. Smart Governance
 - 2.3. Frame of Reference for the working Groups was prepared and approved in the JWG meeting. ([Click here](#))
 - 2.4. Technical Reports (Release 1 and Release 2) of M2M working groups ([Click here](#))

4.6.1. Internet of Things (IoT) Policy by Meity

India, in the recent few years, has been moving towards becoming a digital economy. The digital space in India has seen a lot of transformations and Internet of Things (IoT) is a recent phenomenon. Hence the Department of Electronics and Information Technology (DeitY) has drafted India's first 'Internet of Things Policy'.

The objective of the drafted policy on Internet of things (IoT) includes:

- I. To create an IoT industry in India of USD 15 billion by 2020. This will also lead to increase in the connected devices from around 200 million to over 2.7 billion by 2020. As per Gartner Report the total revenue generated from IoT industry would USD 300 billion and the connected devices would be 27 billion by 2020 globally. It has been assumed that India would have a share of 5-6% of global IoT industry.
- II. To undertake capacity development (Human & Technology) for IoT specific skillsets for domestic and international markets.
- III. To undertake Research & development for all the assisting technologies.
- IV. To develop IoT products specific to Indian needs in the domains of agriculture, health, water quality, natural disasters, transportation, security, automobile, supply chain management, smart cities, automated metering and monitoring of utilities, waste management, Oil & Gas) etc.

India's first Internet of Things Policy comes at the most appropriate time when the country is moving towards digitalization and a policy like this will support the initiatives taken in this direction. Two major efforts taken by the Government of India which will lead to a rapid growth of IoT industry are Smart Cities project and Digital India Program. [Read more/Download](#)

4.6.2. Telecom Regulatory Authority of India (TRAI) recommendation on "Spectrum, Roaming and QoS related requirements in Machine-to-Machine (M2M) Communications"

The Telecom Regulatory Authority of India (TRAI) issued a recommendation on "Spectrum, Roaming and QoS related requirements in Machine-to-Machine (M2M) Communications".

The Authority has finalized the following recommendations on:-

- I. All existing telecom service providers can be allowed to provide Machine-to-Machine (M2M) or IoT solutions within their specified circle of operations.
- II. License holders can use existing spectrum to provide IoT services while TRAI is also considering de-licensing spectrum under the 867-868 MHz, 915-935 MHz and 57-64 GHz bands for M2M and IoT.

- III. The regulator has also put forward recommendations on SIM roaming, Quality of Service levels, privacy, security, and other aspects of IoT/M2M.

For more information please click [here](#)

4.7 Automotive Mission Plan 2016-26

The [Automotive Mission Plan 2016-26 \(AMP 2026\)](#) is the collective vision of Government of India (Government) and the Indian Automotive Industry on where the Vehicles, Auto-components, and Tractor industries should reach over the next ten years in terms of size, contribution to India's development, global footprint, technological maturity, competitiveness, and institutional structure and capabilities. AMP 2026 also seeks to define the trajectory of evolution of the automotive ecosystem in India including the glide path of specific regulations and policies that govern research, design, technology, testing, manufacturing, import/ export, sale, use, repair, and recycling of automotive vehicles, components and services. AMP 2026 is a document that is aimed at multiple stakeholders in India and overseas, and seeks to communicate the Government and industry's intent and objectives pertaining to the Indian Automotive industry, comprising the automotive vehicle manufacturers, the auto-component manufacturers and tractor manufacturers who operate in India.

The objective of the Automotive Mission Plan 2026 includes:

- To propel the Indian Automotive industry to become the engine of the "Make in India" programme.
- To make the Indian Automotive Industry a significant contributor to the "Skill India" programme.
- Promote safe, efficient and comfortable mobility for every person in the country with an eye on environmental protection and affordability through both public and personal transport options.
- To seek increase of net exports of the Indian Automotive industry several fold.
- Promote comprehensive and stable policy dispensation for all regulations impacting the industry.

The AMP 2026 is aimed at bringing the Indian Automotive Industry among the top three of the world in engineering, manufacture and exports of vehicles & components; growing in value to over 12% of India GDP and generating an additional 65 million jobs. [Read more](#)

4.8 National Electric Mobility Mission Plan 2020

[The National Electric Mobility Mission Plan 2020](#) is one of the most important and ambitious initiatives undertaken by the Government of India that has the potential to bring about a transformational paradigm shift in the automotive and transportation industry in the country. This is a culmination of a comprehensive collaborative planning for promotion of hybrid and electric mobility in India through a combination of policies aimed at gradually ensuring a vehicle population of about 6-7 million electric/hybrid vehicles in India by the year 2020 along with a certain level of indigenization of technology ensuring

India's global leadership in some vehicle segments. It is a composite scheme using different policy-levers such as:

1. Demand side incentives to facilitate acquisition of hybrid/electric vehicles
2. Promoting R&D in technology including battery technology, power electronics, motors, systems integration, battery management system, testing infrastructure, and ensuring industry participation in the same
3. Promoting charging infrastructure
4. Supply side incentives
5. Encouraging retro-fitment of on-road vehicles with hybrid kit

The 2020 roadmap estimates a cumulative outlay of about Rs.14000 cr [1.86B Euro]. during the span of the scheme, including industry contribution.

National Electric Mobility Mission Plan (NEMMP) 2020 aims to achieve national fuel security by promoting hybrid and electric vehicles in the country. There is an ambitious target to achieve 6-7 million sales of hybrid and electric vehicles year on year from 2020 onwards. Government aims to provide fiscal and monetary incentives to kick start this nascent technology. With the support from the Government, the cumulative sale is expected to reach 15-16 Million by 2020. It is expected to save 9500 Million Liters of crude oil equivalent to Rs. 62000 Cr. [8.26B Euro] savings.

Government has also launched the scheme namely [Faster Adoption and Manufacturing of \(Hybrid &\) Electric Vehicles \(FAME India\)](#) under NEMMP 2020 in the Union Budget for 2015-16 with an initial outlay of Rs. 75 Cr [10M Euro]. The scheme will provide a major push for early adoption and market creation of both hybrid and electric technologies vehicles in the country. The thrust for the Government through this scheme will be to allow hybrid and electric vehicles to become the first choice for the purchasers so that these vehicles can replace the conventional vehicles and thus reduce liquid fuel consumption in the country from the automobile sector. It is envisaged that early market creation through demand incentive, in-house technology development and domestic production will help industry reach a self-sufficient economies of scale in the long run by around the year 2020.

4.9 Indian Electrical Equipment Mission Plan

Indian Electrical Equipment Industry Mission Plan seeks to steer, coordinate and synergise the efforts of all stakeholders to accelerate and sustain the growth of the domestic electrical equipment industry.

It identifies five key areas for action:

- **To enhance industry competitiveness**, the Mission Plan calls for providing a level playing field in the country to domestic electrical equipment manufacturers vis-à-vis foreign manufacturers, replacing the L1 criteria of procurement by power utilities in India with two part bidding, augmenting domestic testing facilities to cover the type testing of all equipment, mandating type testing of imported small equipment in Indian labs, supporting SMEs in technology up gradation and testing, standardisation

of product ratings and specifications of electrical equipment, providing funds at globally competitive rates of interest to domestic manufacturers, establishing clusters of electrical and component manufacturers and providing them funds for technology up gradation.

- **For technology up gradation**, the Mission Plan recommends a coordinated and collaborative effort by industries and utilities. For any R&D project, the user organisation or main beneficiary should be supported by the government for leading the research in a planned and committed manner. It also recommends public-private partnership (PPP) for fast development of new technology / systems.
- **Under skill development**, it is suggested to set up a Sector Skill Council (SSC), which will undertake skill mapping and interact with the industry to provide training to the workers and also train the trainers / teachers, propose changes in curriculum, etc. It will also arrange for accreditation of the institutes and certification of the students. The Mission Plan calls for greater involvement of industry in the periodic review of the curriculum of technical institutes, summer training of students and for guest lectures by industry experts.
- **To boost exports Electrical Equipment**, the Mission Plan recommends providing policy support to domestic manufacturers to enhance their competitiveness in the global market and address issues of quality of the products, high transaction costs, non-recognition of test certificates of CPRI by some countries, high cost of production, high cost of finance, etc. The Mission Plan calls for more project specific lines of credit by the EXIM Bank to other countries with an emphasis on acceptance of equipment / material only from India for such projects.
- **To convert the latent demand for power in the country**, the Mission Plan calls for timely completion of power generation projects and the downstream transmission projects for evacuation of power and improvement in the health of power distribution companies. It recommends the State Governments to acquire land, construct approach roads, and arrange construction power supply and other clearances, with the project developers reimbursing the costs. It suggests that urban areas with high aggregate technical & commercial losses be handed over to private sector on the input-based franchisee model with the provision for investment by the franchisee for system improvement, with the franchisee being asked to set up decentralised distribution-cum-generation (DDG) projects in identified rural areas.

Detailed recommendations have been formulated for strategic and policy interventions in these five critical areas that need to be addressed by the industry, with support from the government. The Mission Plan envisages to make India the country of choice for the production of electrical equipment and reach an output of US \$100 billion by balancing imports and exports. It has been evolved by the Department of Heavy industry through an elaborate exercise involving all stakeholders and with the support of the Indian Electrical and Electronics Manufacturers' Association (IEEMA).

For More Details [Click Here](#)

4.10 National Capital Goods Policy

The [National Capital Goods Policy](#) is formulated with the vision to increase the share of capital goods contribution from present 12% to 20% of total manufacturing activity by 2025.

The policy is envisaged to achieve the following missions:

- To become one of the top capital goods producing nations of the world by raising the total production to over twice the current level.
- To raise exports to a significant level of at least 40% of total production and become a net exporter of capital goods.
- To improve technology depth in Indian capital goods from the current basic and intermediate levels to advanced levels. 3.2.4 To build local champions or large scale Indian corporations.

The objectives of the National Capital Goods Policy are to:

- **Increase total production:** To create an ecosystem for a globally competitive capital goods sector to achieve total production in excess of ~Rs. 750,000 Cr [100 B Euro] by 2025 from the current ~Rs. 230,000 Cr [30.6B Euro].
- **Increase employment:** To increase direct domestic employment from the current 1.4 million to at least 5 million and indirect employment from the current 7 million to 25 million by 2025, thus providing additional employment to over 21 million people.
- **Increase domestic market share:** To increase the share of domestic production in India's capital goods demand from 60% to 80% by 2025 and in the process improve domestic capacity utilization to 80-90%.
- **Increase exports:** To increase exports to 40% of total production (from Rs 61,000 Cr [8.13B Euro] to ~Rs 300,000 Cr[40B Euro]) by 2025, enabling India's share of global exports in capital goods to increase to ~2.5% and making India a net exporter of capital goods.
- **Improve skill availability:** To significantly enhance availability of skilled manpower with higher productivity in the capital goods sector by training ~5 Million people by 2025, and create institutions to deliver the human resources with the skills, knowledge and capabilities to fuel growth and profitability.
- **Improve technology depth:** To improve 'technology depth' in capital goods sub-sectors by increasing research intensity in India from 0.9% to at least 2.8% of GDP to rank amongst the Top-10 countries in research intensity and achieve global benchmarks for intellectual property in the capital goods sector.
- **Promote standards:** To enhance the quality regime in the capital goods sector through relevant standards to propel the sector and curb inflow of sub-standard capital goods.

- **Promote SMEs:** To promote growth and build capacity of SMEs to compete with established domestic and international firms and become national and global champions of capital goods in the future.

4.11 National Smart Grid Mission

The efforts for the development and deployment of Smart Grids in India were being carried out through India Smart Grid Task Force (ISGTF) and India Smart Grid Forum (ISGF) under the aegis of Ministry of Power (MoP). During the implementation of 14 Smart Grid Pilot projects in State utilities, it was felt that smart grid efforts required urgent concerted focus for which it was necessary to create a comprehensive institutional arrangement capable of dedicating the manpower, resources and organizational attention needed to take it forward.

A Smart Grid Vision and Roadmap for India was approved by the Ministry of Power in August 2013 which also envisaged the launch of a [National Smart Grid Mission \(NSGM\)](#) having its own resources, authority, functional & financial autonomy to plan and monitor implementation of the policies and programmes prescribed in the roadmap.

Accordingly, in May 2015 Government of India approved the National Smart Grid Mission (NSGM) -an institutional mechanism for planning, monitoring and implementation of policies and programs related to Smart Grid activities. This would be under the aegis of Ministry of Power, Coal & New and Renewable Energy. The total outlay for NSGM activities for 12th Plan is Rs 980 crore (9.8 billion) with a budgetary support of Rs 338 crore (3.38 Billion).

NSGM has three tier structures:

- At the apex level, NSGM has a Governing Council headed by the Minister of Power. Members of the Governing Council are Secretary level officers of concerned Ministries and departments. Role of Governing Council is to approve all policies and programme for smart grid implementation.
- At the second level, the NSGM has an Empowered Committee headed by Secretary (Power). Members of the Empowered Committee are Joint Secretary level officers of concerned Ministries and departments. Role of Empowered Committee is to provide policy input to Governing Council and approve, monitor, review specific smart grid projects, guidelines / procedures etc.
- In a supportive role, NSGM has a Technical Committee headed by Chairperson (CEA). Members of the Technical Committee are Director level officers of concerned Ministries & departments, representatives from industries and academia. Role of Technical Committee is to support the Empowered Committee on technical aspect, standards development, technology selection guidelines etc.
- For day-to-day operations, NSGM has a NSGM Project Management Unit (NPMU) headed by the Director NPMU. Director NPMU is a Member of the Governing Council and Empowered Committee, and Member Secretary of Technical Committee. NPMU

is the implementing agency for operationalizing the Smart Grid activities in the country under the guidance of Governing Council and Empowered Committee.

- Grant up-to 30% of the project cost is available from NSGM budget. For selected components such as training & capacity building, consumer engagement etc, 100% grant is available.
- Corresponding to the NSGM, State Level Mission chaired by the Power Secretary of the State has also been proposed. Support for training & capacity building to State Level Project Monitoring Units (SLPMUs) for smart grid activities is provided by NSGM.

The major activities envisaged under NSGM are development of smart grid, development of micro grids, consumer engagements and training & capacity building etc. NSGM entails implementation of a smart electrical grid based on state-of-the art technology in the fields of automation, communication and IT systems that can monitor and control power flows from points of generation to points of consumption. **For more information please click [here](#)**

Smart Grid Roadmap for India:

In order to achieve the vision of **“Transform the Indian power sector into a secure, adaptive, sustainable and digitally enabled ecosystem that provides reliable and quality energy for all with active participation of stakeholders”**, stakeholders are advised to formulate state/utility specific policies and programs in alignment with following broad policies and targets which are in line with MoP's overarching policy objective of Access, Availability and Affordability of Power for All:

A) Distribution (Including Distributed Generation)

- i. Appropriate policies and programs to provide access to electricity for all with uninterrupted life line supply (8 hours/day minimum, including the evening peak) and electrification of 100% households by 2017 and continuous improvement in quality and quantum of supply.
- ii. Completion of on-going programs which will lay the building blocks of smart grids such as system strengthening, consumer indexing, asset mapping as part of RAPDRP, and planning for integration of such systems into future smart grid deployments.
- iii. Enabling programs and projects in distribution utilities to reduce AT&C losses to below 15% by 2017, below 12% by 2022, and below 10% by 2027.
- iv. Integrated technology trials through a set of smart grid pilot projects by 2015; and based on outcome of the pilots, full rollout of smart grids in pilot project areas by 2017; in major urban areas by 2022 and nationwide by 2027.
- v. Availability of an indigenous low cost smart meter by 2014. After successful completion of pilots, AMI roll out for all customers in a phased manner based on size of connection (and geography and utility business case), starting with consumers with load >20 KW by 2017, 3- phase consumers by 2022 and all consumers by 2027 by deploying smart meters and necessary IT and

- communication infrastructure for the same. Innovative and sustainable financing/business models for smart meter roll outs may be developed.
- vi. Working with other stakeholders, building the National Optical Fiber Network (NOFN) by connecting 2,50,000 (0.25 Million) village Panchayats in the country by Optical Fiber Cable and extending the fiber link to all the 33/11 kV and above substations to build a backbone communications network for the power sector by 2017.
 - vii. Modernisation of distribution sub-stations and conversion of sub-stations in all urban areas (starting with metro cities) to Gas Insulated Substations based on techno-commercial feasibility in a phased manner through innovative financing models.
 - viii. Development of Micro grids, storage options, virtual power plants (VPP), solar photovoltaic to grid (PV2G), and building to grid (B2G) technologies in order to manage peak demand, optimally use installed capacity and eliminate load shedding and black-outs.
 - ix. Policies for mandatory roof top solar power generation for large establishments, i.e., with connected load more than 20kW or otherwise defined threshold.
 - x. EV charging facilities may be created in all parking lots, institutional buildings, apartment blocks etc; and quick/fast charging facilities to be built in fuel stations and at strategic locations on highways.
 - xi. Micro grids in 1000 villages/industrial parks/commercial hubs by 2017 and 10,000 villages/industrial parks/commercial hubs by 2022, which can island from the main grid during peak hours or grid disturbances.
 - xii. Optimally balancing different sources of generation through efficient scheduling and dispatch of distributed energy resources (including captive plants in the near term) with the goal of long term energy sustainability.

B) Transmission:

- i. Development of a reliable, secure and resilient grid supported by a strong communication infrastructure that enables greater visibility and control of efficient power flow between all sources of production and consumption by 2027.
- ii. Implementation of Wide Area Monitoring Systems (WAMS, using Phasor Measurement Units, or PMUs) for the entire transmission system. Installation of a larger number of PMUs on the transmission network by 2017 or sooner, as guided by the results of initial deployments. Indigenization of WAMS technology and PMU development and development of custom made analytics for synchrophasor data by 2017
- iii. Setting up of Renewable Energy Monitoring Centre's (REMCs) and Energy Storage Systems to facilitate grid integration of renewable generation.
- iv. 50,000 Kms of optical fiber cables to be installed over transmission lines by the year 2017 to support implementation of smart grid technologies.
- v. Enabling programs and projects in transmission utilities to reduce transmission losses to below 4% by 2017 and below 3.5% by 2022.
- vi. Implement power system enhancements to facilitate evacuation and integration of 30 GW renewable capacity by 2017, 80 GW by 2022, and 130 GW

by 2027 – or targets mutually agreed between Ministry of New and Renewable Energy (MNRE) and MoP.

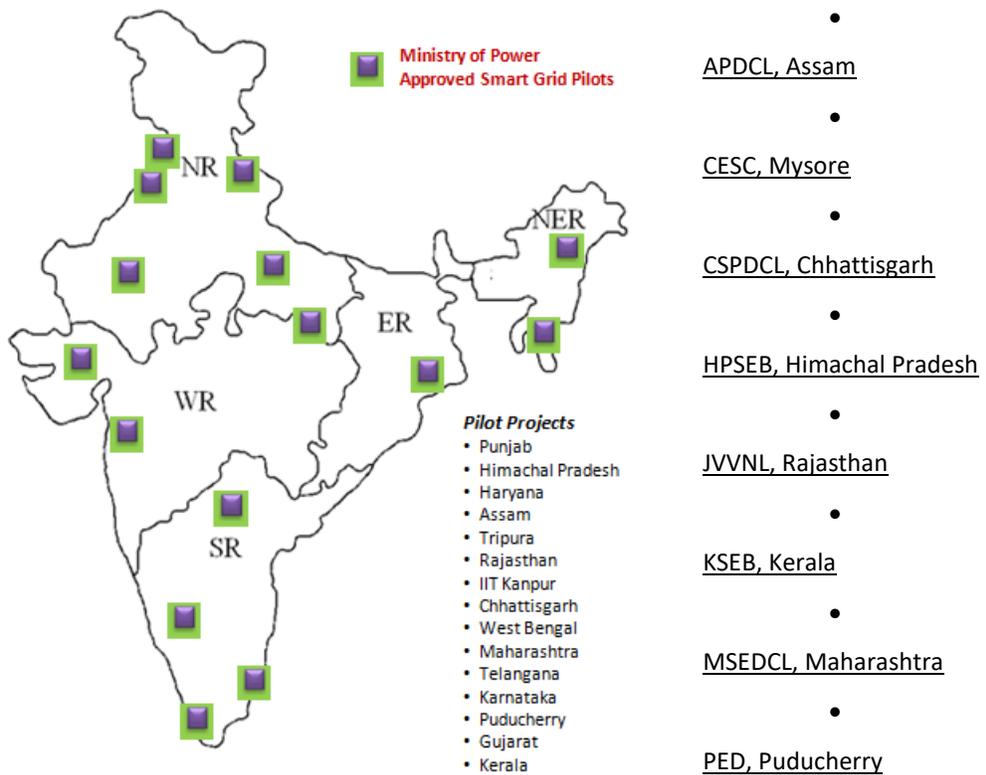
C) Policies, Standards and Regulations:

- i. Formulation of effective customer outreach and communication programs for active involvement of consumers in the smart grid implementation.
- ii. Development of state/utility specific strategic roadmap(s) for implementation of smart grid technologies across the state/utility by 2014. Required business process reengineering, change management and capacity building programs to be initiated by 2014. State Regulators and utilities may take the lead here.
- iii. Finalization of frameworks for cyber security assessment, audit and certification of power utilities by end of 2013.
- iv. Policies for grid-interconnection of captive/consumer generation facilities (including renewables) where ever technically feasible; policies for roof-top solar, net-metering/feed-in tariff; and policies for peaking power stations by 2014.
- v. Policies supporting improved tariffs such as dynamic tariffs, variable tariffs, etc., including mandatory demand response (DR) programs, starting with bulk consumers by 2014, and extending to all 3-phase (or otherwise defined consumers) by 2017.
- vi. Policies for energy efficiency in public infrastructure including EV charging facilities by 2015 and for demand response ready appliances by 2017. Relevant policies in this regard to be finalized by 2014.
- vii. Development/adoption of appropriate standards for smart grid development in India—first set of standards by 2014; continuous engagement in evolution of applicable standards relevant to the Indian context. Active involvement of Indian experts in international bodies engaged in smart grid standards development.
- viii. Study the results of the first set of smart grid pilot projects and recommend appropriate changes conducive to smart grid development in the Indian Electricity Act / National Power Policy by end of 2015.
- ix. Development of business models to create alternate revenue streams by leveraging the smart grid infrastructure to offer other services (security solutions, water metering, traffic solutions etc.) to municipalities, state governments and other agencies.
- x. Development of Skill Development Centers for smart grid development in line with the National Skill Development Policy 2009 for Power Sector by 2015.

For more information please click [here](#).

Smart Grid Pilot Projects in India:

Ministry of Power in conjunction with India Smart Grid Task Force had shortlisted 14 Smart Grid Pilot Projects and 1 Smart City R&D Platform at different geographical locations in India which are currently under implementation. Precise of these pilot projects is as follows:



- PSPCL, Punjab
- TSECL, Tripura
- TSSPDCL, Telangana
- UHBVN, Haryana
- UGVCL, Gujarat
- WBSIEDCL, West Bengal
- IIT Kanpur

For more information please click [here](#)

4.12 100 Smart Cities

The objective of the Smart Cities Mission is to promote cities that provide core infrastructure and give a decent quality of life to its citizens, a clean and sustainable environment and application of ‘Smart’ Solutions. The focus is on sustainable and inclusive development and the idea is to look at compact areas, create a replicable model which will act like a light house to other aspiring cities.

The Smart Cities Mission of the Government is a bold, new initiative. It is meant to set examples that can be replicated both within and outside the Smart City, catalyzing the creation of similar Smart Cities in various regions and parts of the country. Accordingly, the

purpose of the Smart Cities Mission is to drive economic growth and improve the quality of life of people by enabling local area development and harnessing technology, especially technology that leads to Smart outcomes.

Area-based development will transform existing areas (retrofit and redevelop), including slums, into better planned ones, thereby improving liveability of the whole City. New areas (Greenfield) will be developed around cities in order to accommodate the expanding population in urban areas.

Application of Smart Solutions will enable cities to use technology, information and data to improve infrastructure and services. Comprehensive development in this way will improve quality of life, create employment and enhance incomes for all, especially the poor and the disadvantaged, leading to inclusive Cities.

After due assessments, [20 cities](#) were adjudged as candidates for the first phase of smart cities in Jan 2016 and proposed a total investment of Rs 48,064 crore (6.4B Euro) under respective smart city plans. Another [13 cities](#) were added to the list in May 2016 and [27 cities](#) were added in September 2016 as a part of the second and third list of the smart city mission rollout. The 13 cities selected in the Fast-track competition have proposed a total investment of Rs. 29,795 crore (3.97B Euro) while another 27 cities have proposed an investment of Rs.53,903 cr (7.18B Euro).

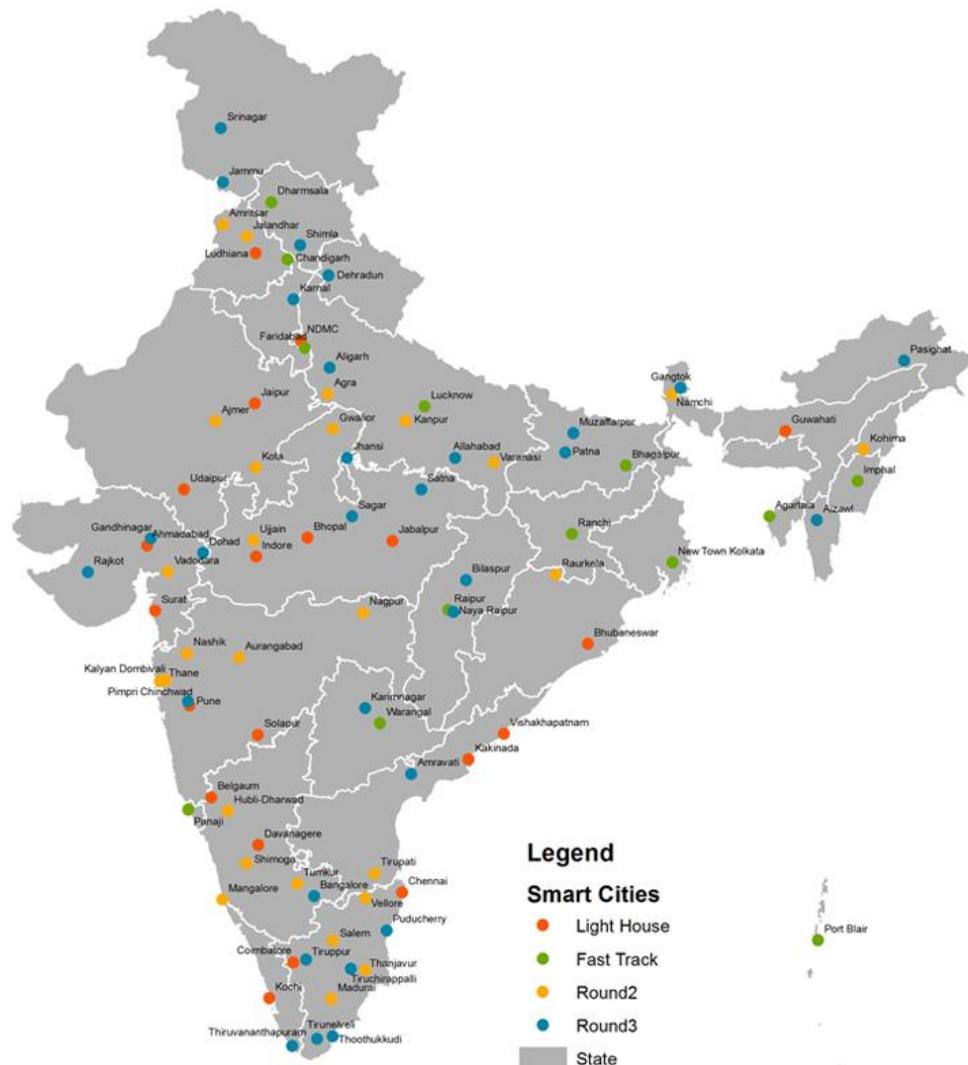
With the announcement of [30 cities](#) in June 2017 as a part of fourth list of the Smart City Mission, the total number of smart cities has reached 90.

The 30 cities announced in June 2017 proposed a total investment of Rs 57,393 crore (7.65B Euro) under respective smart city plans. With this the total investment approved under the smart city plans of 90 cities has gone up to Rs.1,89,155 crore (25.22B Euro).

Till now, four lists have been announced, including the latest one. The first list included the names of 20 cities and Bhubaneswar topped it. The second list comprised of 13 names and it was first spot in this list was bagged by Uttar Pradesh's Lucknow. The third list, which had the names of 27 smart cities, was topped by Punjab's Amritsar.

The Smart Cities Mission Dashboard as on 23rd June 2017 is as below:

- Total Winning Proposals are 90
- Total Urban Population Impacted is 95,955,046
- Total Cost of Projects (₹ Cr.) (Including Other Cost - O&M, Contingency, etc.) is 189,155 [25.22B Euro]
- Total Area Based Development Cost (₹ Cr.) is 152,499 [20.33B Euro]
- Total Pan City Solution Cost (₹ Cr.) is 36,656 [4.88B Euro]



For more information on [Smart Cities Guidelines](#) and other related information please click [here](#) and [here](#) and [here](#)

4.13 Digital India

Digital India is a campaign launched by the Government of India on 1 July 2015 to ensure that Government services are made available to citizens electronically by improved online infrastructure and by increasing Internet connectivity or by making the country digitally empowered in the field of technology. The Ministry of Communications and IT is the nodal agency to implement the programme.

The initiative includes plans to connect rural areas with high-speed internet networks. Digital India consists of three core components. They are:

1. Development of secure and stable Digital Infrastructure

2. Delivering government services digitally
3. Universal Digital Literacy

With the above vision, the Digital India programme aims to provide:

- Broadband Highways
- Universal Access to Phones
- Public Internet Access Programme
- e-Governance - Reforming government through Technology
- e-Kranti - Electronic delivery of services
- Information for All
- Electronics Manufacturing - Target NET ZERO Imports
- IT for Jobs
- Early Harvest Programmes

For more information please click [here](#)

4.14 Make in India

Indian Government launched the Make in India initiative on September 25, 2014, with the primary goal of making India a global manufacturing hub, by encouraging both multinational as well as domestic companies to manufacture their products within the country. Led by the Department of Industrial Policy and Promotion, the initiative aims to raise the contribution of the manufacturing sector to 25% of the Gross Domestic Product (GDP) by the year 2025 from its current 16%. Make in India has introduced multiple new initiatives, promoting foreign direct investment, implementing intellectual property rights and developing the manufacturing sector.

The major objective behind the initiative is to focus on job creation and skill enhancement in 25 sectors of the economy. The initiative also aims at high quality standards and minimizing the impact on the environment. The initiative hopes to attract capital and technological investment in India.

The initiative is built on four pillars which are as follows:

1. **New Processes:** The government is introducing several reforms to create possibilities for getting Foreign Direct Investment (FDI) and foster business partnerships. Some initiatives have already been undertaken to alleviate the business environment from outdated policies and regulations. This reform is also aligned with parameters of World Bank's 'Ease of Doing Business' index to improve India's ranking on it. India ranks 100th out of 190 countries in the World Bank's [doing Business Report, 2018](#). India has leapt 30 ranks over its rank of 130 in the Doing Business Report 2017.
2. **New Infrastructure:** Infrastructure is integral to the growth of any industry. The government intends to develop industrial corridors and build smart cities with state-of-the-art technology and high-speed communication. Innovation and research activities are supported by a fast-paced registration system and improved infrastructure for Intellectual Property Rights (IPR) registrations. Along with the

development of infrastructure, the training for the skilled workforce for the sectors is also being addressed.

3. **New Sectors:** 'Make in India' has identified 25 sectors to promote with the detailed information being shared through an interactive web-portal. The Government has allowed 100% FDI in Railway and removed restrictions in Construction. It has also recently increased the cap of FDI to 100% in Defense and Pharmaceutical.
4. **New Mindset:** Government in India has always been seen as a regulator and not a facilitator. This initiative intends to change this by bringing a paradigm shift in the way Government interacts with various industries. It will focus on acting as a partner in the economic development of the country alongside the corporate sector.

For more information please click [here](#)

4.16 Swachh Bharat Abhiyan /Clean India Mission

Swachh Bharat Abhiyan (SBA) or Swachh Bharat Mission (SBM) or Clean India Mission is a campaign that was launched on 2 October 2014 that aims to clean up the streets, roads and infrastructure of India's cities, smaller towns, and rural areas. The objectives of Swachh Bharat include eliminating open defecation through the construction of household-owned and community-owned toilets and establishing an accountable mechanism of monitoring toilet use. Run by the Government of India, the mission aims to achieve an Open-Defecation Free (ODF) India by 2 October 2019, the 150th anniversary of the birth of Mahatma Gandhi, by constructing 12 million toilets in rural India at a projected cost of ₹1.96 lakh crore (US\$30 billion).

The mission contains two sub-missions: Swachh Bharat Abhiyan ("Gramin" or rural), which operates under the Ministry of Drinking Water and Sanitation; and Swachh Bharat Abhiyan (Urban), which operates under the Ministry of Housing and Urban Affairs. The mission includes ambassadors and activities such as national real-time monitoring and updates from non-governmental organizations (NGOs) that are working towards its ideas of swachh Bharath.

Swachh Bharat Abhiyan (SBA) is not just about cleaning surroundings but also seeking the participation of people in planting tree, creating trash-free environment, providing sanitation facilities and paving a way for Swachh Bharat eventually. A Clean India is of utmost importance for promoting the nation as an ideal destination for tourists from across the world. Images of unclean India often become a matter of embarrassment for Indians therefore this is the right time and opportunity to participate towards Swachh Bharat. This campaign will not only help citizens adopt good habits of cleanliness but also boost our image as a nation, sincerely working towards cleanliness. [Read more](#)

4.17. India Standards Portal

Ministry of Commerce and Industry launched the India Standards. The Standards Portal is

online resource to provide updated information on India's Quality infrastructure comprising prevailing systems for standardization, technical regulations, conformity assessment and accreditation practices, and the related bodies in India.

Information on this portal has been structured to facilitate easy access to information both on the web pages of the portal and through links, to the different organizations responsible for providing services in the relevant areas. [Read more](#)

5. Project Priority Sectors and its Key Players

Standard formulation is a comprehensive procedure which requires engagement of all the key stakeholders. These key players in each of the priority sector play a significant role in the formulation of standards and steer the direction of the technologies and emerging trends.

Policy and Legislation and National Regulatory requirements are drafted and issued by the concerned Ministry or Government Department, providing foundation for the Standardization bodies to make standards. Similarly, the Industry players contribute in the standards formulation by bringing their requirements, technical specifications and other important inputs.

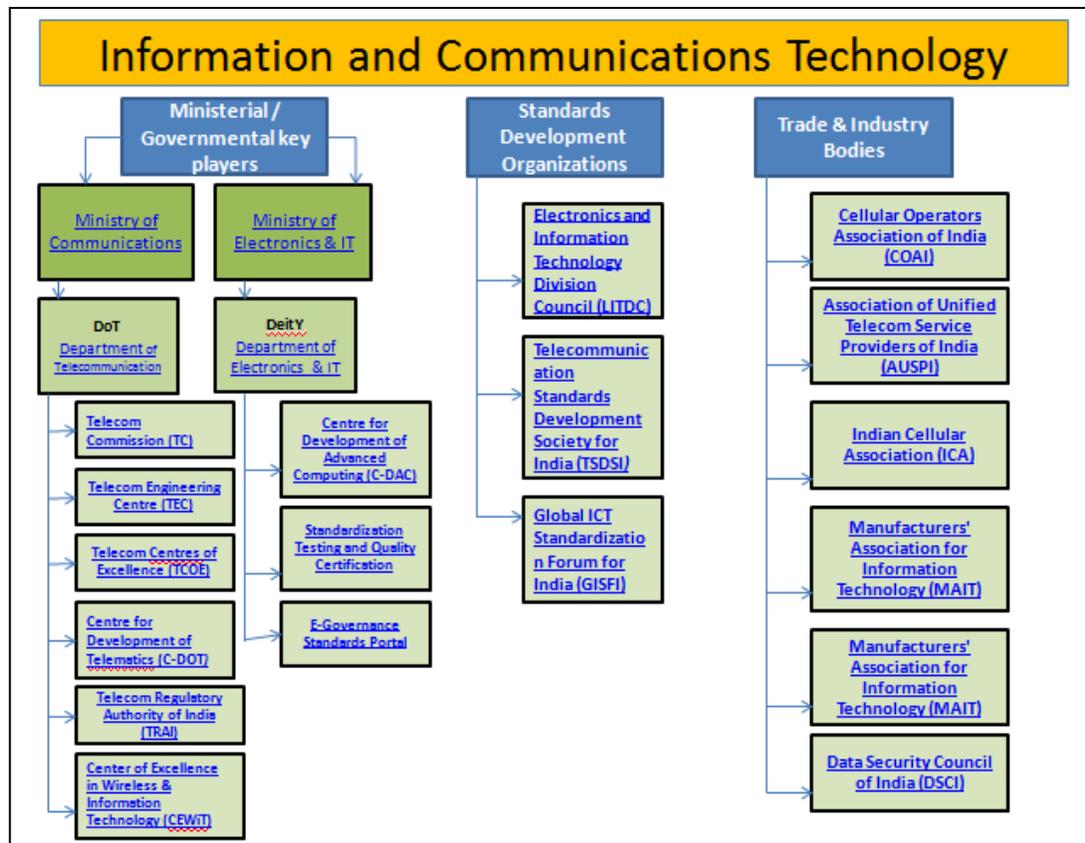
In this section, our endeavor is to familiarize you with the main players of each of the priority sector Project SESEI is responsible covering Information and Communications Technology (ICT), Automotive, Smart Cities, Electrical Equipment including Consumer Electronics. We have categorized this under the following headings and order:

- **Government**
- **Standards Development Organizations**
- **Trade & Industry Association**
- **Other Important Bodies**

The who's who of the priority sector identified for the Project are as under;

5.1. Information and Communications Technology (ICT)

The Information and Communication Technology is a dynamic sector globally. The Ministerial / governmental key players in India in the ICT sector are covered in the following section.



5.1.1. Government

5.1.1.1. Ministry of communication

One of the recent major change which has taken place in the ICT sector in India is that of creation of the new Ministry of Electronics and Information Technology by the Government after bifurcating Ministry of Communications and Information Technology (MoC&IT). The Government has taken out the Department of Electronics and Information Technology (DeITY) from the remit of the Ministry of Communications and Information Technology, and has made it a new Ministry. Hence India now has two ministries - Ministry of Communications and Ministry of Electronics and Information Technology.

Ministry of Communication:

Ministry has two departments- Department of Telecommunications and Department of Posts under its control.

Department of Telecommunications (DoT):

The telecom services have been recognized the world-over as an important tool for socio economic development for a nation and hence telecom infrastructure is treated as a crucial factor to realize the socio-economic objectives in India. Accordingly, the Department of Telecom has been formulating developmental policies for the accelerated

growth of the telecommunication services. The Department is also responsible for grant of licenses for various telecom services like Unified Access Service Internet and VSAT service. The Department is also responsible for frequency management in the field of radio communication in close coordination with the international bodies. It also enforces wireless regulatory measures by monitoring wireless transmission of all users in the country.

The main objectives of the Departments of Telecommunication are administration of laws with respect to any of the matters such as:

- The Indian Telegraph Act, 1885 (13 of 1885);
- The Indian Wireless Telegraphy Act, 1933 (17 of 1933); and
- The Telecom Regulatory Authority of India Act, 1997 (24 of 1997).
- Policy, Licensing and Coordination matters relating to telegraphs, telephones, wireless, data, facsimile and telematics services etc.
- International cooperation in matters connected with telecommunications including matters relating to all international bodies dealing with telecommunications such as International Telecommunication Union (ITU), its Radio Regulation Board (RRB), Radio Communication Sector (ITU-R), Telecommunication Standardization Sector (ITU-T), Development Sector (ITU-D), International Telecommunication Satellite Organization (INTELSAT), International Mobile Satellite Organization (INMARSAT), Asia Pacific Telecommunication (APT).
- Promotion of standardization, research and development in telecommunications.
- Promotion of private investment in Telecommunications.
- Financial assistance for the furtherance of research and study in telecommunications technology and for building up adequately trained manpower for telecom programme, including assistance to institutions, assistance to scientific institutions and to universities for advanced scientific study and research; and also
- Responsible for matters relating to Telecom Engineering Center (TEC), Centre for Development of Telematics (C-DOT), Bharat Sanchar Nigam Limited, Mahanagar Telephone Nigam Limited, Indian Telephone Industries Limited, Videsh Sanchar Nigam Limited and Telecommunications Consultants (India) Limited and Post disinvestment matters relating to M/s Hindustan Teleprinters Limited etc.

Department of telecom has following key Units/Functions:

Telecom Commission (TC):

The Telecom Commission was set up by the Government of India vide the Resolution dated 11th April, 1989 with administrative and financial powers of the Government of India to deal with various aspects of Telecommunications. This is one of the key departments within the DoT and is responsible for approving overall telecommunications policy formulation including industrial policy, national telecommunications roll-out planning and promotion, licensing, tariff, etc. The Telecom Commission is responsible for:

1. Formulating the policy of Department of Telecommunications for approval of the Government;

2. Preparing the budget for the Department of Telecommunications for each financial year and getting it approved by the Government; &
3. Implementation of Government's policy in all matters concerning telecommunication.

For more information on Department of Telecom & Telecom Commission please click [here](#)

Telecom Engineering Centre (TEC)

The **Telecommunication Engineering Center** is a body under telecom commission, department of telecom and is a nodal agency of the Department of Telecommunications, Ministry of Communications. TEC is responsible for drawing up of standards, generic requirements, interface requirements, service requirements and specifications for telecom products, services and networks. Telecom Engineering Center (TEC) as described above is the formally recognized telecom standards/specification and type approval body. For more information on TEC please click [here](#)

Centre for Development of Telematics (C-DOT)

The Centre for Development of Telematics (C-DOT) is the Telecom Technology Development Centre of the Government of India. It was established in August 1984 as an autonomous body. It was vested with full authority and total flexibility to develop state-of-the-art telecommunication technology to meet the needs of the Indian telecommunication network. The key objective was to build a Centre for excellence in the area of telecom technology. The Centre for Development of Telematics (C-DOT), which celebrated its 25th anniversary, is the DoT's state-of-the-art development Centre with a mandate to develop home-grown Indian telecommunications solutions which can be manufactured by local Indian companies. The state-of-the-art R&D facilities at its Delhi and Bangalore campuses are comparable with the best in the world.

The main vision behind creation of C-DOT is to make it the world class telecom technology development centre. The main endeavor of C-DOT is to design and develop state of the art technologies, products and solutions and to meet the telecom needs of India, particularly of national importance in strategic sectors and rural areas. The main objectives of the CDOT are;

- Work on telecom technology products and services.
- Provide solutions for current and future requirements of telecommunication and converged networks including those of national importance especially related to rural applications, strategic sector and security agencies etc.
- Provide market orientation to R&D activities and sustain C-DOT as a centre of excellence.
- Build partnerships and joint alliance with academia, industry, solution providers, Telcos and other R&D organizations to offer cost effective solutions.
- Support Telcos and service providers in the introduction of new technologies, features and services by optimal utilization of installed networks, pilots and studies.
- To strengthen the Indian telecom manufacturing base, by transfer of technologies developed by C-DOT.

Within a very short span of time, CDOT has revolutionized the Indian telecom scenario by introducing and designing telecom switching products suited to Indian conditions, Rural Automatic Exchanges (RAXs) and medium size switches as SBMs for towns, developing products in the area of optical, satellite and wireless communication from circuit switching technology of yester years, C-DOT has proven its expertise in ATM and Next Generation Networks. From a purely hardware development Centre it has diversified into development of Telecom software solutions like IN, NMS, Data Clearing House etc. and has journeyed from a protected environment of closed market to an open and competitive market.

Over the years, C-DOT has come to be looked upon as a Centre of Excellence in Telecom; projects of National importance, such as Central Monitoring Systems for Telecom Security, are entrusted to C-DOT, by the Indian Government. C-DOT has evolved, from a single mission oriented organization to an R&D Centre, working on several important, cutting edge technologies. And, with the support it has been receiving from the Government, especially in Projects of National Importance, the Centre will strive to maintain its National relevance.

C-DOT has realigned its efforts and defined its roadmap with a focus in the four major directions keeping in view the relevance and need in the present scenario. The major developmental schemes in these directions, for the 11th five-year plan period are:

- **Projects of national and strategic importance for the following sectors:**
 - Rural Areas: The shared GSM Radio Access Network, which is currently under development, will give a fillip to business in rural India.
 - North Eastern Region: The MAX-NG programme will breathe fresh life into the fixed line infrastructure and bring to people of NER, VoIP and Broadband services.
- **Projects for software intensive telecom solutions:**
 - NMS, which provides a common umbrella of management of a network equipped with products from diverse vendors.
 - Data Clearing House services for roaming based on ASP model, which has become commercially operational.
 - Common Service Platform for Machine to Machine Communications
- **Projects in the areas of hi-tech:**
 - Gigabit Optical Passive Network (G-PON) to bring broadband pipes to homes and SOHOs.
 - Next Generation Network (NGN) products and services
- **Futuristic study projects:**
 - One Number, which will aim to utilize a unique number like social security number, for a mobile personal number
 - Cognitive Radio
 - Advanced Optical Network Technology

For more information on CDOT Solutions, Product and Services please click [here](#)

Telecom Regulatory Authority of India (TRAI)

The entry of private service providers brought with it the inevitable need for independent regulator. The Telecom Regulatory Authority of India (TRAI) was, thus, established with effect from 20th February 1997 by an Act of Parliament, called the Telecom Regulatory Authority of India Act, 1997, to regulate telecom services, including fixation/revision of tariffs for telecom services which were earlier vested in the Central Government.

TRAI's mission is to create and nurture conditions for growth of telecommunications in the country in a manner and at a pace which will enable India to play a leading role in emerging global information society.

One of the main objectives of TRAI is to provide a fair and transparent policy environment which promotes a level playing field and facilitates fair competition. In pursuance of this objective TRAI has issued from time to time a large number of recommendations, orders and directives to deal with issues coming before it and provided the required direction to the evolution of Indian telecom market from a Govt. owned monopoly to a multi operator multi service open competitive market.

The directions, orders and regulations issued cover a wide range of subjects including tariff, interconnection and quality of service as well as governance of the Authority. The TRAI Act was amended by an ordinance, effective from 24 January 2000, establishing a Telecommunications Dispute Settlement and Appellate Tribunal (TDSAT) to take over the adjudicatory and disputes functions from TRAI. TDSAT was set up to adjudicate any dispute between a licensor and a licensee, between two or more service providers, between a service provider and a group of consumers, and to hear and dispose of appeals against any direction, decision or order of TRAI.

For more information on TRAI recommendation, regulation, publication please click [here](#)

Center of Excellence in Wireless and Information Technology (CEWiT)

The Centre of Excellence in Wireless Technology (CEWiT) is an autonomous research Society of IIT Madras set up by Ministry of Communication and IT in partnership with the Indian telecom industry. CEWiT's vision is to provide technological leadership to the Indian wireless industry and address the needs of the Indian market through advanced R&D and value creation. CEWiT works as a neutral partner to industry stakeholders and policy makers on various technological aspects of the wireless communication industry. The Center has several experts in the Radio access technologies, specifically focusing on 4G and 4G-Advanced technologies like LTE and WiMAX. CEWiT also provides technical leadership to the Broadband Wireless Consortium of India.

Today wireless research is moving rapidly beyond 3G and 4G technologies towards 5G technologies, which are required to satisfy the rapidly growing broadband wireless needs of large populations around the globe. CEWiT conducts research in 5G technologies and participates in global standardization. It is engaging very closely with academic and

industry research groups in India to focus on areas with strong potential for contribution to global standards while keeping in mind operator requirements and usage scenarios.

CEWiT with its vast knowledge and experience base provides consultancy and technical services to Telecom companies in India in the areas of 4G technologies like LTE and LTE-Advanced and the upcoming 5G technologies. It has built simulators and test beds which benefit the industry in its R&D and capacity building activities. CEWiT plays a key role in building a dynamic wireless R&D ecosystem in India.

CEWiT made more than 25 contributions of which nine significant are accepted and became part of 802.16m specs in the areas of Conjugate data repetition (CDR); Collision free Interlaced pilots (CoFIP); Pilot modulation sequences; two-dimensional phase offset diversity (2D-POD); Open-loop region; Being member of 3GPP, CEWiT also made important contributions to 3GPP such as Proposal for '7-bit encoding for Indian Language SMS' accepted in TS 23.038 in Sept 2009; Consolidated requirements for Rel 12 from stakeholders in India presented at workshop held in Slovenia in June 2012 along with COAI; Seven contributions submitted for Rel 10 & 11 in CoMP, Cooperative MIMO, Cell Edge improvements, eICIC, Relays, eDDA; An element of CoFIP is part of Rel 11.

Towards 3GPP2, CeWIT also submitted one proposal on EVDO Rev-C to give higher capacity to in-building users. Towards ITU CeWIT also technically led evaluation of IMT-Advanced technologies for ITU-R; and A new propagation model for Indian Rural scenario was analyzed and proposed in the IMT-Advanced evaluation report.

For more information on CeWIT please click [here](#)

Telecom Centres of Excellence (TCOE)

Telecom Centres of Excellence, set up in Public Private Partnership (PPP) mode, are an example of the Government, the Academia and the Industry working together for the sustained growth and progress of the country in the Telecom sector. The idea of Telecom Centres of Excellence was initiated with the shared realization, by the Government and the Telecom Industry, that boosting the growth of telecommunications was essential for the overall progress of the country. It was conceptualized in May 2007 and brought into existence by February 2008 with the signing of 7 MoUs between DoT, participating premier Academic Institutes and the sponsors from the Telecom Industry. The eighth TCOE with participation of Railtel came up in June 5th, 2013. The TCOEs set up in Public Private Partnership (PPP) mode, are an excellent example of the Government, the Academia and the Industry working together for the sustained growth and progress of the country.

The TCOE initiative was converted to reality with the signing of tri-partite Memoranda of Understanding (MoUs) between the Department of Telecom, Government of India, participating Institutes, and the sponsors from the Industry. List of TCOEs.

TCOEs are created for promoting development of new technologies, to generate IPRs, incubate innovations and promote entrepreneurship to position India as a global leader in telecom innovation and making India a hub of telecom equipment manufacturing.

TCOE were set up with the sole idea of promoting Research and Development and for promotion of entrepreneurship and innovation aspects in the ICT and Telecom sector. TCOEs have opened up their research platform to all the stakeholders of ICT sector for enabling industry driven research through a competitive process. For this purpose, a TCOE may have collaboration with other academic institutions and funding for the projects would be accessed from Government, industry, and VCs etc. on competitive basis.

For more information on TCOE, please click [here](#)

Department of Posts (DoP):

The **Department of Posts (DoP)**, trading as **India Post**, is a government-operated postal system in India. Generally referred to within India as "the post office", it is the most widely distributed postal system in the world. The postal service is under the Department of Posts, which is part of the Ministry of Communications of the Government of India.

For more than 150 years, the Department of Posts (DoP) has been the backbone of the country's communication and has played a crucial role in the country's social economic development. It touches the lives of Indian citizens in many ways: delivering mails, accepting deposits under Small Savings Schemes, providing life insurance cover under Postal Life Insurance (PLI) and Rural Postal Life Insurance (RPLI) and providing retail services like bill collection, sale of forms, etc. The DoP also acts as an agent for Government of India in discharging other services for citizens such as [Mahatma Gandhi National Rural Employment Guarantee Scheme \(MGNREGS\)](#) wage disbursement and old age pension payments. With 1,55,015 Post Offices, the DoP has the most widely distributed postal network in the world. [Read more](#)

5.1.1.2. Ministry of Electronics and Information Technology (MeitY)

The Department of Electronics and Information Technology (DeitY), which used to be in the erstwhile Ministry of Communication & IT, has now been made to become a full fledged new Ministry of Electronics and Information Technology (MeitY): The newly formed Ministry of Electronics and Information Technology will deal with all matters related to Unique Identification Authority of India (UIDAI)-- mandated to issue Aadhaar numbers to all Indian citizens, the matters related to promotion of internet, information technology enabled services, initiative on bridging the digital divide and National Informatics Centre (NIC), among others are being dealt by the new ministry.

Functions of newly formed Ministry:

The Allocation of Business Rules Pertaining to Ministry of Electronics and Information Technology. (As published in Part I, Section 3, Sub—Section (ii) of the Gazette of India)

- Policy matters relating to information technology; Electronics; and Internet (all matters other than licensing of Internet Service Provider).
- Promotion of internet, IT and IT enabled services.

- Assistance to other departments in the promotion of E-Governance, E- Commerce, E- Medicine, E- Infrastructure, etc.
- Promotion of Information Technology education and Information Technology-based education.
- Matters relating to Cyber Laws, administration of the Information Technology Act, 2000 (21 of 2000) and other IT related laws.
- Matters relating to promotion and manufacturing of Semiconductor Devices in the country excluding all matters relating to Semiconductor Complex Limited (SCL), Mohali; The Semiconductor Integrated Circuits Layout Design Act, 2000 (37 of 2000).²
- Interaction in IT related matters with international agencies and bodies e. g. Internet for Business Limited (IFB), Institute for Education in Information Society (IBI) and International Code Council – on line (ICC).
- Initiative on bridging the Digital Divide: Matters relating to Media Lab Asia.
- Promotion of Standardization, Testing and Quality in IT and standardization of procedure for IT application and Tasks.
- Electronics Export and Computer Software Promotion Council (ESC).
- National Informatics Centre (NIC).
- Initiatives for development of Hardware/Software industry including knowledge-based enterprises, measures for promoting IT exports and competitiveness of the industry.
- All matters relating to personnel under the control of the Department.³
- Unique Identification Authority of India (UIDAI).

Ministry of Electronics and Information Technology has long acknowledged R&D as an integral part of Electronics ecosystem and is supporting the entire value chain of R&D activities in the country ranging from the basic components to sophisticated product development. As a roadmap for developing, strengthening, and enhancing the competitiveness of the Indian Electronics sector DIT has constituted a group-R&D in Electronics Group to conduct sponsored R&D activities across India at various academic institutions of higher learning and R&D laboratories, in the areas assigned to it through a variety of plan programmes. The sophisticated projects assigned to the groups cover a wide spectrum of key technological areas. These include developments in Nanotechnology, Medical Electronics, Microelectronics, Industrial Electronics et al. The major R&D initiatives of the Group has been in the development of Linac tubes, Automation and Intelligent Transportation Systems (ITS) technology, setting up of Nanoelectronics centers and generic Nanometrology facilities. Major divisions of the group include the following.

- Nanotechnology Initiative Division
- Electronics Systems Development & Application Division
- Electronic Materials & Components Development Division
- Microelectronics Development Division
- Semiconductor ICs Layout Design Registry

R&D projects are invited in the aforesaid areas. Working Groups have been constituted in each of the above areas by DIT to evaluate and recommend R&D projects. Leading researchers, scientists and industry representatives from various organizations are

nominated in the formulation of Working Groups. Terms and Conditions for financial support as grant-in-aid for various R&D Projects have been formulated in this regard. Once the projects are initiated, expert Project Review and Steering Groups (PRSG), comprised of leading academicians and researchers of the country would closely monitor the technical and financial progress of the projects.

For more information on this Ministry please click [here](#)

Centre for Development of Advanced Computing (C-DAC):

Centre for Development of Advanced Computing (C-DAC) is the premier R&D organization of the Ministry of Electronics and Information Technology (MeitY) for carrying out R&D in IT, Electronics and associated areas. Different areas of C-DAC, had originated at different times, many of which came out as a result of identification of opportunities.

The setting up of C-DAC in 1988 itself was to built Supercomputers in context of denial of import of Supercomputers by USA. Since then C-DAC has been undertaking building of multiple generations of Supercomputer starting from PARAM with 1 GF in 1988.

Almost at the same time, C-DAC started building Indian Language Computing Solutions with setting up of GIST group (Graphics and Intelligence based Script Technology); National Centre for Software Technology (NCST) set up in 1985 had also initiated work in Indian Language Computing around the same period.

Electronic Research and Development Centre of India (ER&DCI) with various constituents starting as adjunct entities of various State Electronic Corporations, had been brought under the hold of Department of Electronics and Telecommunications (now MeitY) in around 1988. They were focusing on various aspects of applied electronics, technology and applications.

With the passage of time as a result of creative echo system that got set up in C-DAC, more areas such as Health Informatics, etc., got created; while right from the beginning the focus of NCST was on Software Technologies; similarly C-DAC started its education & training activities in 1994 as a spin-off with the passage of time, it grew to a large efforts to meet the growing needs of Indian Industry for finishing schools.

C-DAC has today emerged as a premier R&D organization in IT&E (Information Technologies and Electronics) in the country working on strengthening national technological capabilities in the context of global developments in the field and responding to change in the market need in selected foundation areas. In that process, C-DAC represents a unique facet working in close junction with MeitY to realize nation's policy and pragmatic interventions and initiatives in Information Technology. As an institution for high-end Research and Development (R&D), C-DAC has been at the forefront of the Information Technology (IT) revolution, constantly building capacities in emerging/enabling technologies and innovating and leveraging its expertise, caliber, skill sets to develop and deploy IT products and solutions for different sectors of the economy, as per the mandate of its parent, the Ministry of Electronics and Information Technology,

Ministry of Communications and Information Technology, Government of India and other stakeholders including funding agencies, collaborators, users and the market-place.

For more information on CDAC please click [here](#)

Centre for Materials for Electronics Technology (C-MET):

C-MET has been set up as a Registered Scientific Society in March 1990 under Department of Information Technology (formerly Department of Electronics) as a unique concept for development of viable technologies in the area of materials mainly for electronics. C-MET is operating with 3 laboratories located at Pune (Head Quarters), Hyderabad and Thrissur with specialized research mandate at each place. The mission of C-MET is to develop knowledge base in the electronic materials and their processing technology and become a source of critical electronic materials, know-how and technical services for the industry and other sectors of the economy.

Core Programmes of C-MET are;

- Integrated Electronics Packaging
- Nanomaterials and Devices
- Ultra-High Purity Materials
- Materials for Renewable Energy
- Piezo Sensors and Actuators

For more information on C-MET please click [here](#)

E-Governance Standards Portal – Department of IT:

The Ministry deals with e-Development of India through multi-pronged strategy of e-Infrastructure creation to facilitate and promote e-governance, promotion of Electronics & Information Technology - Information Technology Enabled Services (IT-ITeS) Industry, providing support for creation of Innovation / Research & Development (R&D), building Knowledge network and securing India's cyber space. At the moment, Objective of the Ministry of Electronics, Information and Technology are;

- e-Government: Providing e-infrastructure for delivery of e-services.
- e-Industry: Promotion of electronics hardware manufacturing and IT-ITeS industry.
- e-Innovation / R & D: Providing Support for creation of Innovation Infrastructure in emerging areas of technology.
- e-Education: Providing support for development of e-Skills and Knowledge network.
- e-Security: Securing India's cyber space.

To ensure Interoperability among e-Governance applications, Government of India has setup an institutional mechanism for formulation of Standards through collaborative efforts of stakeholders like Department of Information (DIT), National Informatics Centre (NIC), Standardization Testing and Quality Certification (STQC), other Government departments, Academia, Technology Experts, Domain Experts, Industry, BIS, NGOs etc. In this process, there is a provision of formal Public review also.

The Government of India has also launched the National e-Governance Plan (NeGP) with the intent to support the growth of e-governance within the country. The Plan envisages creation of right environments to implement G2G, G2B, G2E and G2C services.

The e-Governance Standards portal (<http://egovstandards.gov.in>) provides a platform for password protected sharing of ideas, knowledge, and draft documents among the members of various committees involved in standards formulation process. It also has a provision for web publishing of draft documents for review comments by the closed user group and the Public.

The activities of E-Governance Standards Division include:

- To publish the draft standards on the website for obtaining feedback from external community and industry.
- To submit draft standards to apex body for approval.
- To coordinate with STQC for adopting of approved standards

The duly approved standards by Government's Apex body consisting of Senior Strategic members from: DIT, NIC, NASSCOM, BIS, CDAC, Planning Commission etc. would be released on the web site of Standardization Testing and Quality Certification (STQC) and is available for free down load and usage.

All draft standards made by Working groups /Technical groups can be seen on the home page of website by clicking [Link](#)

Norms for e Gov Standards can be seen through link `[e Gov Standards](#)` on home page of website.

Standardization Testing and Quality Certification:

Standardization Testing and Quality Certification (STQC) Directorate is an attached office of the Department of Information Technology(DIT), Government of India, provides quality assurance services in the area of Electronics and IT through countrywide **network of laboratories and centres**.

In the area of **Information Technology**, STQC provides assurance services through its six **IT Centres** for Software Quality testing, Information Security and IT Service Management by conducting testing, training, audit and certifications. **STQC is responsible for maintaining** e-Gov standards. Based on this concept a Conformity Assessment Framework (CAF) for e-Governance project has also been developed and is in operation. Two IT test laboratories, at Bangalore and Kolkatta, have received accreditation from American Association for Laboratory Accreditation (A2LA) being the first outside the USA.

For more information please click [here](#)

5.1.2. Standards Development Organizations

5.1.2.1. Electronics and Information Technology Division Council (LITDC)

Standardization in the field of electronics and telecommunications including Information Technology (IT) same as CEN-CENELEC activities in ICT sector, the national Standards are formulated based on the concept of Consensus by the Division Councils and the Sectional Committees under LITDC hence in short The LITDC (Electronics & IT Division Council) is responsible for formulation of Indian Standards in Electronics & Information Technology field. Established as LTD in 1977 to give thrust to Standardization in the field of Electronic and Telecommunication, it was re-designated as LITD in 2003 to formally enlarge the scope to include Information Technology. Presently there are 21 Sectional Committees under LITD and 1471 standards are formulated under the LITDC Council.

- Indian Standards - IS under dual No's.: 409
 - Indian Standards - IS technically equivalent to ISO/IEC: 578
- Composition of Technical Committee details is available at <http://www.bis.org.in/sf/compltd.pdf>
- Program of Work Details are available at <http://www.bis.org.in/sf/pow/powltd.pdf>
- Updated link to their Program of Work is also available at <http://164.100.105.199:8071/php/BIS/StandardsFormulationV2/pow.01.php>

5.1.2.2. Telecommunication Standards Development Society for India (TSDSI)

TSDSI (Telecommunications Standards Development Society, India) is an SDO that aims at developing and promoting India-specific requirements, standardizing solutions for meeting these requirements and contributing these to international standards, contributing to global standardization in the field of telecommunications, maintaining the technical standards and other deliverables of the organization, safe-guarding the related IPR, helping create manufacturing expertise in the country, providing leadership to the developing countries (such as in South Asia, South East Asia, Africa, Middle East, etc.) in terms of their telecommunications-related standardization needs.

A consensus based approach is followed towards standards development by involving all stake holders - Government, Academia and Industry. TSDSI follows the principles of Openness, Transparency, Fairness, Consensus and Due Process in conducting its activities. It maintains technology neutrality and provide a uniform playing field for all of its members.

The TSDSI is not for profit legal entity in Public-Private Partnership (PPP) mode with participation from all stake holders including Government, service providers, equipment vendors, equipment manufacturers, academic institutes and research labs.

General Body & Governing Council

The General Body, constituted by the authorized representatives of all member organizations of TSDSI, is the apex decision making body of TSDSI.

While General Body is the apex decision making body of the TSDSI, the Governing Council (GC) steers and governs it in the intervals between the General Body meetings. The GC consists of 16 elected and 5 Government nominated members. GC has representation from all eight verticals of the telecom sector. Two GC members are elected from each telecom vertical. The members of the GC, except those nominated by the Government of India, are elected by the General Body.

The Governing Council has a Chairperson and a Vice-Chairperson who are elected by the General Body from amongst the members of the Governing Council.

The Governing Council is assisted by a Secretariat headed by a Director General.

Work Program of TSDSI

Technical standardization activities are carried out through Study Groups (SG) and Working Groups (WG). At present they have following Technical Groups:

I. SG1 Wireless Systems Study Group

This SG is instrumental in carrying out research activities related to wireless telecom systems which are the key-enablers for future communication systems. This group has 3 workgroups described below:

- G1-WG1 (RNES)[Radio Network Evolution and Spectrum]: This work group presently deals with various RAT related research areas, most important of them being, mm-wave, device-t-device communication, cloud RAN, massive MIMO, and new waveform techniques.
- G1-WG2 (CN)[Core Network]: This work group has (Network Function Virtualisation) NFV/ Software Defined Network (SDN) as its major thrust areas for research and standardization.
- G1-WG3 (5G): This work group emphasizes on the end-to-end aspect of the 5G technologies.

II. SG2 Services Study Group

Services play a major factor in driving the CAPEX, OPEX and various other parameters of a network. Currently activities of this study group are being carried out in 2 WGs described below:

- SG2-WG1 (M2M): This work group concentrates on M2M-IoT related activities and has identified 11 major verticals since last year where, there is a commendable work progress in some key areas.
- SG2-WG2 (Indian Languages): This WG is responsible for the TSDSI standardization activities for Indic user interfaces and encoding methods and representation (fonts, rendering etc). The scope includes user terminals, mobile network equipment and applications.

III. SG3 (Optical Access and Transport)

It encompasses the development of standards on wireless & wireline backhaul, microwave, optical & packet based backhaul or transport network and Software Defined Network (SDN) infrastructures, NFV, systems, equipment, optical fiber cables, along with the related control plane, network management, performance monitoring & reporting, Synchronization, interfaces, multi layer optimization techniques, SDN network applications and testing aspects.

IV. Energy Efficiency Group

The EE group is responsible for evaluating energy performance for telecommunication networks including access, user equipment, aggregation, core which includes underlying transport systems.

V. Security Group

The newly formed Security group has a broad scope of identification of essential requirements to ensure security assurance for cellular mobile telecom networks in India based on 3GPP SECAM SA3 work as related to fundamental approach, in consultation with various industry stakeholders. The details of various technical activities can be viewed on TSDSI website at <http://tsdsi.org/standards/>

For more information please click [here](#)

5.1.2.3. Global ICT Standardization Forum for India (GISFI)

The Global ICT Standardization Forum for India/Innovations (GISFI) is a non-profit, nongovernmental organization registered as a “Society” under the Indian laws. This is an Indian industry and University research establishments’ initiative to produce industry driven ICT standards for Indian environment. GISFI has had a slow start but in May, 2009, it re-organized itself again as a standardization platform for ICT Standards with the aim to become the leading SDO for ICT Standardization in India and interact with ITU, ETSI, and other SDOs.

It has created the following standardization “Teams”:

- Future radio Technologies Team (Looking at higher data-rates, new systems or enhancement of existing systems)
- Service oriented network Team (Looking for convergence and business models valid for Indian environment)
- Spectrum management Team (for spectrum flexibility and usage in a dynamic techno-economic scenario)
- Green ICT Team (for making ICT green and use of ICT to make other sectors green)
- Special Interest Group (for Security and QoS)
- Internet of Things Team (To make anything communicate with any other thing via Internet)

For more information please [click](#)

5.1.3. Trade and Industry Associations

Apart from the government bodies and agencies in the ICT Sector which play an important role in the standards making process. Industry associations play a vital role in lobbying and pursuing industry interest/concern with Government in India. These associations via its members provide the needed lobbying mechanisms to the Indian ministries.

5.1.3.1. Cellular Operators Association of India (COAI)

Over the years COAI has emerged as the official voice for the Indian GSM Industry and interacts directly with Ministries, Policy Makers, Regulators, Financial Institutions and Technical Bodies. It provides a forum for discussion and exchange of ideas between these bodies and Service Providers, who share a common interest in the development of cellular mobile telephony. COAI also collaborates with other Industry Associations such as CII, FICCI, ASSOCHAM, AUSPI, ISPAI, VSAT association etc., with the objective of presenting an industry consensus view to the Government on crucial issues relating to the growth and development of the Indian Cellular Industry.

COAI also interacts with various international organizations such as ITU, , UMTS, WWRF and 3GPP etc. as well as the Press & Media to ensure that the issues pertaining to the cellular industry are discussed, understood and debated on a wider platform. COAI truly brings with it commonality of purpose and achievement of common objectives for the growth and protection of this sector. For more information please click [here](#)

5.1.3.2. Association of Unified Telecom Service Providers of India (AUSPI)

Association of Unified Telecom Service Providers of India (AUSPI) is the representative industry body of Unified Access Service Licensees providing CDMA & GSM Mobile Services, Fixed Line Services as well as Value Added Services throughout the length and breadth of the country. AUSPI is a registered society and works as a non-profit organization with the aim of delivering the promise of improved Access, coverage and Teledensity in India.

The objectives of the Association include collection and dissemination of knowledge and information for promotion and healthy growth of telecom services, enunciating a telecom vision for India, fueling unprecedented domestic investment, improving teledensity and bringing value for customers.

The Association interacts on policy and regulatory issues with various Government bodies such as the Department of Telecommunications, Telecom Regulatory Authority of India, apex industry organizations like ASSOCHAM, Confederation of Indian Industry (CII) and Federation of Indian Chambers of Commerce & Industry (FICCI), technical institutions, financial analysts and other institutions of world repute. The Association formulates expert

opinion on industry issues and submits whenever necessary, recommendations to the concerned authorities. For more information please [click here](#)

5.1.3.3. Indian Cellular Association (ICA)

Indian Cellular Association (ICA) is the apex body of the mobile industry comprising of Brand Owners; Technology Providers; Manufacturers; National Distributors; Application, Solution and VAS Providers, Ethical Retailers and eminent Consumers of mobile handsets. The Association has been constituted to provide value and service to the mobile cellular handset industry in India; by fuelling its growth, improving competitiveness, helping create a legal and ethical market and regulatory environment, thereby providing long term benefits of mobile connectivity to the Indian masses.

The Association is headed by its **National President**, who presides over the Association's objectives of ensuring the development of the mobile cellular handset industry in India. ICA, foresee India as a country having a very competitive mobile industry penetrating the entire Indian population, thereby providing voice connectivity and giving tremendous benefits of wireless connectivity to the masses and offering instant wireless solutions to citizens in the areas of;

- Mobile Governance
- Mobile Payments
- Mobile Education
- Mobile Enterprise solutions (including SME Cluster)
- Other walks of life like information, entertainment etc.

For more information please [click here](#)

5.1.3.4. Manufacturers' Association for Information Technology (MAIT)

Set up in 1982 for purposes of scientific, educational and IT Industry promotion, **MAIT** has emerged as an effective, influential, and dynamic organization in these 30 years. Representing Hardware, Training, R&D & Hardware Design and other associated service segments of the Indian IT Industry, **MAIT's** charter is to develop a globally competitive Indian IT Industry, promote the usage of IT in India, strengthen the role of IT in national economic development, promote business through international alliances, promote quality consciousness in the IT Industry and transform the Indian IT Industry into a World Scale Industry leading to a World Class Usage and thus a World Size Market.

MAIT is represented on all concerned Government of India forums and works in close association with the Department of Electronics & IT, Department of Telecom, Ministry of Communications & IT, Ministry of Commerce & Industry, Ministry of Environment & Forests, DGFT, DGS&D, DIPP, NMCC, Ministry of MSME, Ministry of Finance, Planning Commission, UIDAI, Directorate of Income Tax (Systems), RGI, DARPG, BEE, BIS, NPC, CPCB, ESC, NIC, STQC, CII, FICCI, ASSOCHAM, TEMA, ISA, ICA,

ELCINA, CEAMA, etc. for the advancement of the IT Industry in India. **MAIT** is driving the eco-system of the Indian IT hardware manufacturing industry in the country. The primary agenda for the Association is to:

- Build the demand for ICT and evolve the e-Inclusion objective of the government; and
- Build a globally competitive, environmentally sound, ethically healthy and best-in-class IT industry eco-system.

For more information please [click here](#)

5.1.3.5. National Association of Software and Services Companies (NASSCOM)

The National Association of Software and Services Companies (NASSCOM) is a trade association of Indian Information Technology (IT) and Business Process Outsourcing (BPO) industry. Established in 1988, NASSCOM is a non-profit organization. NASSCOM is a global trade body with over 1200 members, of which over 250 are global companies from the US, UK, EU, Japan and China. NASSCOM's member companies are in the business of software development, software services, software products, IT-enabled/BPO services and e-commerce.

NASSCOM has been a proponent of global free trade in India. NASSCOM is headquartered in New Delhi, India with regional offices in the cities of Mumbai, Chennai, Hyderabad, Bangalore, Pune and Kolkata. For more information please [click here](#)

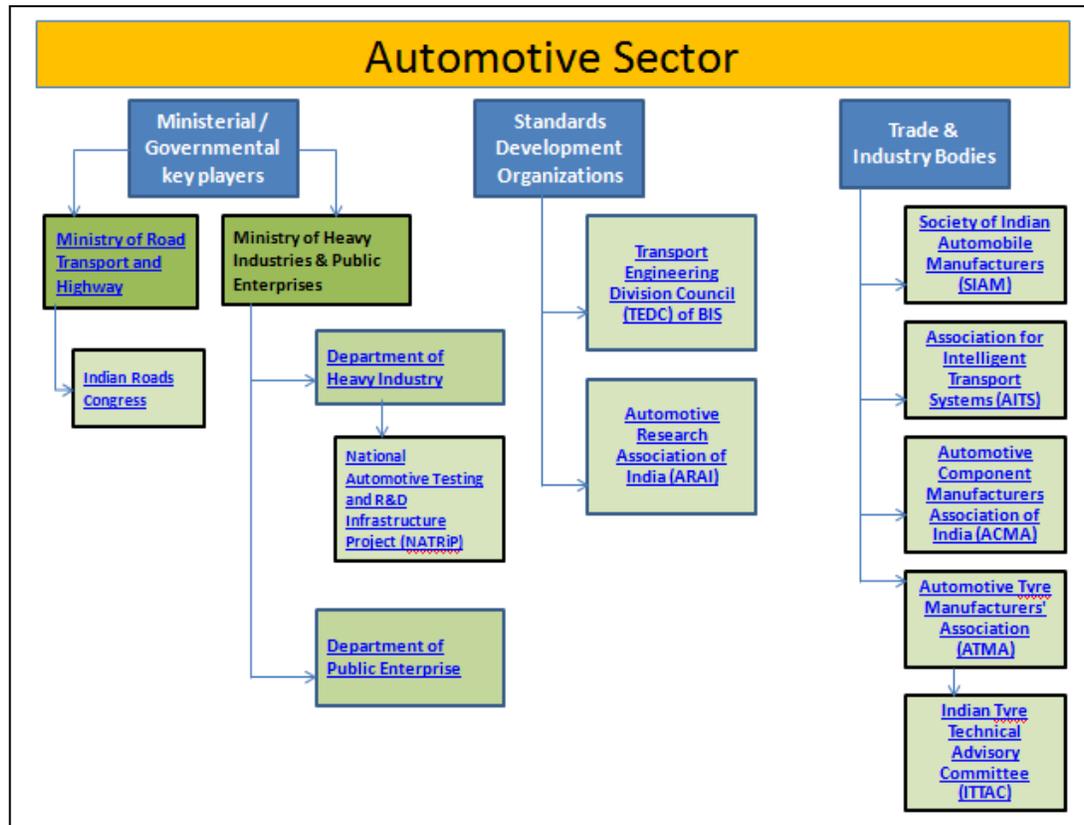
5.1.3.6. Data Security Council of India (DSCI)

DSCI is a focal body on data protection in India, setup as an independent Self-Regulatory Organization (SRO) by NASSCOM®, to promote data protection, develop security and privacy best practices & standards and encourage the Indian industries to implement the same.

DSCI is engaged with the Indian IT/BPO industry, their clients worldwide, Banking and Telecom sectors, industry associations, data protection authorities and other government agencies in different countries. It conducts industry wide surveys and publishes reports, organizes data protection awareness seminars, workshops, projects, interactions and other necessary initiatives for outreach and public advocacy. DSCI is focused on capacity building of Law Enforcement Agencies for combating cyber-crimes in the country and towards this; it operates several Cyber labs across India to train police officers, prosecutors, and judicial officers in cyber forensics.

Public Advocacy, Thought Leadership, Awareness and Outreach and Capacity Building are the key words with which DSCI continues to promote and enhance trust in India as a secure global sourcing hub, and promotes data protection in the country. For more information please [click here](#)

5.2. Automotive



5.2.1. Government

5.2.1.1. Ministry of Road Transport and Highway

An apex organization under the Central Government is entrusted with the task of formulating and administering, in consultation with other Central Ministries/Departments, State Governments/UT Administrations, organizations and individuals, policies for Road Transport, National Highways and **Transport Research** with a view to increasing the mobility and efficiency of the road transport system in the country. The Ministry has two wings: Roads wing and Transport wing.

Ministry Transport Wing deals with matter relating to Road Transport and is responsible for such as:

- [Central Motor Vehicle Rules.](#)
- Administration of the [Motor Vehicles Act.](#)
- [Notifications under Motor Vehicle Legislation](#)
- Promotion of Transport co-operatives in the field of motor transport.
- Evolves road safety standards in the form of a National Policy on Road Safety and by preparing and implementing the Annual Road Safety Plan etc.

Indian Roads Congress

The Indian Roads Congress (IRC) is the premier technical body of Highway Engineers in the country. The IRC was set up in December 1934 on the recommendations of the Indian Road Development Committee best known as Jayakar Committee set up by the Govt. of India with the objective of Road Development in India. As the activities of the IRC expanded, it was formally registered as a Society in 1937 under the Societies Registration Act of 1860. Over the years Congress has burgeoned and grown into a multi-dimensional many faceted organization, devoted to the cause of better roads & better bridges in the country.

The Congress provides a National forum for sharing of knowledge and pooling of experience on the entire range of subjects dealing with the construction & maintenance of roads and bridges, including technology, equipment, research, planning, finance, taxation, organization and all connected policy issues.

In more specific terms the objectives of the Congress are:

- To promote and encourage the science and practice of building and maintenance of roads;
- To provide a channel for the expression of collective opinion of its members regarding roads;
- To promote the use of standard specifications and to propose specifications;
- To advise regarding education, experiment and research connected with roads;
- To hold periodical meetings, to discuss technical questions regarding roads;
- To suggest legislation for the development, improvement and protection of roads;
- To suggest improved methods of administration, planning design, construction, operation, use and maintenance of roads;
- To establish, furnish and maintain libraries and museums for furthering the science of road making;
- To publish, or arrange for the publication of proceedings, journals, periodicals and other literature for the promotion of the objects of the Society;
- To accept subscriptions, subsidies, donations, endowments and gifts in furtherance of the objects of the Society;
- To invest and deal with the funds of the Society or entrusted to the Society, to acquire and hold any movable or immovable property, and to borrow or raise money for the furtherance of the objects of the Society and to sell, lease, exchange, or otherwise deal with the same;
- To grant pay, prizes, honoraria, or scholarships (including traveling scholarships) for meritorious work in furtherance of the objects of the Society;
- To do all such other lawful things as may be, incidental or conducive to the attainment of the above objects.

IRC has published 112 specifications/standards/design codes and 96 special publications. The List of Standards published by IRC can be accessed at <http://www.irc.nic.in/publications.aspx>

5.2.1.2. Ministry of Heavy Industries & Public Enterprises

The Ministry of Heavy Industries and Public Enterprises, is a Union Ministry under Government of India and comprises of the Department of Heavy Industry and the Department of Public Enterprise. The Ministry focuses on promoting the development and growth of capital goods, auto, power equipment, manufacturing and engineering industry in the country, framing of policy guidelines for Central Public Sector Enterprise (CPSE). Under the Ministry, the Department of Heavy Industry is concerned with the development of the engineering industry viz. machine tools, heavy electrical, industrial machinery and auto industry and administers 32 operating CPSEs. The Department of Heavy Industry seeks to achieve its vision of global automotive excellence through creation of state-of-the-art Research and Testing infrastructure through the National Automotive Testing and R&D Infrastructure Project (NATRIP). The Department of Heavy Industry seeks to achieve its vision by providing necessary support to the Auto, Heavy Engineering, Heavy Electricals and Capital Goods Sector. For more information please click [here](#)

National Automotive Testing and R&D Infrastructure Project (NATRiP)

National Automotive Testing and R&D Infrastructure Project (NATRiP), the largest and one of the most significant initiatives in Automotive sector so far, represents a unique joining of hands between the Government of India, a number of State Governments and Indian Automotive Industry to create a state of the art Testing, Validation and R&D infrastructure in the country.

The Project aims at creating core global competencies in Automotive sector in India and facilitate seamless integration of Indian Automotive industry with the world as also to position the country prominently on the global automotive map. As part of NATRIP, the following test centers have been finalized to setup the test facilities as described below:

- [International Center for Automotive Technology \(iCAT\): Manesar, Harayana](#)
- [Global Automotive Research Center \(GARC\): Chennai](#)
- [National Automotive Test Tracks \(NATRAX\) : Indore, Madhya Pradesh](#)
- [Automotive Research Association of India \(ARAI\) : Pune, Maharashtra](#)
- [Vehicle Research and Development Center \(VRDE\) : Ahmednagar, Maharashtra](#)
- [National Institute for Automotive Inspection, Maintenance & Training \(NIAIMT\) : Silchar, Assam](#)
- [The National Center For Vehicle Research & Safety \(NCVRS\) Rae-Bareli](#)

For more information please [click here](#)

5.2.2. Standards Development Organizations

5.2.2.1. Automotive Research Association of India (ARAI)

The Automotive Research Association of India (ARAI) has been playing a crucial role in assuring safe, less polluting and more efficient vehicles. ARAI provides technical expertise in R & D, testing, certification, homologation and framing of vehicle regulations.

ARAI is a co-operative industrial research association established by the automotive industry with the Ministry of Industries and Public Enterprises, Government of India. It works in harmony and complete confidence with its members, customers and the Government of India to offer the finest services, which earned for itself ISO 9001, ISO 14001, OHSAS 18001 and accreditations by National Accreditation Board for Testing and Calibration Laboratories (NABL).

Automotive Industry Standards Committee (AISC) is set up under Central Motor Vehicles Rules -Technical Standing Committee (CMVR - TSC) by Ministry of Road Transport & Highways, Dept. of Road Transport & Highways (MoRT&H, DoRT&H)) in the year 1997 to review the safety in the design, construction, operation and maintenance of motor vehicles. The composition of the AISC is as under:

- Ministry of Road Transport & Highways, Department of Road Transport & Highways (MoRT&H, DoRT&H)
- Ministry of Heavy Industries & Public Enterprises, Department of Heavy Industry (MoHI&PE, DHI)
- Ministry of Micro, Small & Medium Enterprises (Office of the Development Commissioner, MSME)
- The Automotive Research Association of India (ARAI)
- Central Institute of Road Transport (CIRT)
- Indian Institute of Petroleum (IIP)
- Vehicle Research and Development Establishment (VRDE)
- Society of Indian Automobile Manufacturers (SIAM)
- Tractor Manufacturers Association (TMA)
- Automotive Component Manufacturers Association of India (ACMA)
- Bureau of Indian Standards (BIS): Technical Committee “Transport Engineering Division Council (TEDC)” for Standardization in the field of transport engineering

ARAI has published 177 Automotive Industry Standards and 2 Safety Standards. The List of Standards published by the AISC can be accessed at [link](#)

Recently, India has also signed the 1998 agreement, under which, the country is committed to participate in formulation of Global Technical Regulations. It is important that views of Indian auto industry as well as test agencies are transmitted with authenticated data to the respective groups under which the discussions take place. To achieve this objective, six mirror groups are formulated in India, which work on various standards under the subject. The 6 GR groups (subsidiary technical bodies of WP.29) are:

- GRPE (India): Working Party on Pollution and Energy
- GRSG (India): Working Party on General Safety Provisions
- GRRF (India): Working Party on Brakes and Running Gear
- GRE (India): Working Party on Lighting and Light-Signaling
- GRB (India): Working Party on Noise
- GRSP (India): Working Party on Passive Safety

The Indian working groups consist of experts from the industry, test agencies and other organizations and deliberate on various subjects / regulations falling within their purview and submit their recommendations to the national secretariat for further actions.

5.2.2.2. Transport Engineering Division Council (TEDC) of BIS

The TED Council of BIS covers the Standardization in the field of transport engineering including air, water, road and rail transport; diesel engines for stationary application and ISO freight containers, transport packaging etc.

- Composition of Technical Committee details is available at <http://www.bis.org.in/sf/compted.pdf>
- Program of Work Details are available at <http://www.bis.org.in/sf/pow/ted.pdf>

5.2.3. Trade and Industry Associations

5.2.3.1. Society of Indian Automobile Manufacturers (SIAM)

Society of Indian Automobile Manufacturers (SIAM) is the apex Industry body representing 46 leading vehicle and vehicular engine manufacturers in India. SIAM is an important channel of communication for the Automobile Industry with the Government, National and International organizations. The Society works closely with all the concerned stake holders and actively participates in formulation of rules, regulations and policies related to the Automobile Industry. SIAM provides a window to the Indian Automobile industry and aims to enhance exchanges, communication, expand economics, trade and technical cooperation between the Automotive Industry and its international counterparts.

With its regular and continuous interaction with international bodies and organizations it aims to facilitate up gradation of technical capabilities of the Indian Industry to match the best practice worldwide. SIAM organizes the biennial Auto Expo series of trade fairs in co-operation with Confederation of Indian Industry (CII) and Automotive Component Manufacturers Association of India (ACMA). SIAM has been striving to keep pace with the socio-economic and technological changes shaping the Automobile Industry and endeavor to be a catalyst in the development of a stronger Automobile Industry in India. For more information please [click here](#)

5.2.3.2. Association for Intelligent Transport Systems (AITS)

Association for Intelligent Transport Systems, India is a registered not-for-profit organization working towards the development and deployment of ITS in India since 2001. AITS, India is a forum that brings Government, Academia and Industries together to focus on visions set- up by the Government and direct Research and Development for implementing visions in the field of ITS. AITS along with its members as an essential ITS player contributes to the future of transportation in India, while promoting interests in intelligent transportation systems, in the following areas:

- Vision and strategy
- Research and development
- Partnerships, operational tests
- Deployment of strategic and showcase Projects
- Innovative procurements

- Public/private partnerships
- Training/education
- Consumer awareness
- Standards development

For more information please [click here](#)

5.2.3.3. Automotive Component Manufacturers Association of India (ACMA)

The Automotive Component Manufacturers Association of India (ACMA) is the nodal agency for the Indian Auto Component Industry. Its active involvement in trade promotion, technology up-gradation, quality enhancement and collection and dissemination of information has made it a vital catalyst for this industry's development. Its other activities include participation in international trade fairs, sending trade delegations overseas and bringing out publications on various subjects related to the automotive industry.

ACMA is represented on a number of panels, committees and councils of the Government of India through which it helps in the formulation of policies pertaining to the Indian automotive industry. For exchange of information and especially for co-operation in trade matters, ACMA has signed Memoranda of Understanding with its counterparts in Australia, Brazil, Canada, Egypt, France, Germany, Iran, Italy, Japan, Malaysia, Pakistan, South Africa, South Korea, Spain, Sweden, Thailand, Tunisia, Turkey, UK, USA and Uzbekistan.

ACMA represents over 600 companies, whose production forms a majority of the total auto component output in the organized sector. In the domestic market, they supply components to vehicle manufacturers, Tier-1 suppliers, to state transport undertakings, defense establishments, railways and even to the replacement market. A variety of components are being exported to OEMs and aftermarket worldwide. For more information please [click here](#)

5.2.3.4. Automotive Tyre Manufacturers' Association (ATMA)

Automotive Tyre Manufacturers' Association (ATMA) was set up in 1975, registered under The Companies Act, as the representative body of automotive tyre industry in India. Eight large tyre companies representing over 90% of production of tyres in the country are members of the Association. The Association with the guidance of the Managing Committee functions through various committees set up, consisting of different disciplines, such as, Marketing, Export, Purchase (Raw Material), Taxation, Technical etc. Day to day functioning of the Association is managed by the Secretariat of the Association headed by the Director General. The primary function of the Association is to be a conduit between Government Departments and the tyre companies in having two-way communications. The Association projects the views of the industry on various subjects to respective Government departments. Conversely, the expectations of the Government from tyre industry are conveyed to tyre companies. Further, the Association briefs its members of the changes in Government Policy on issues related to Indian economy and

industry in general and tyre industry in particular. Frequent meetings are held with the Government to sort out problems being faced by the industry.

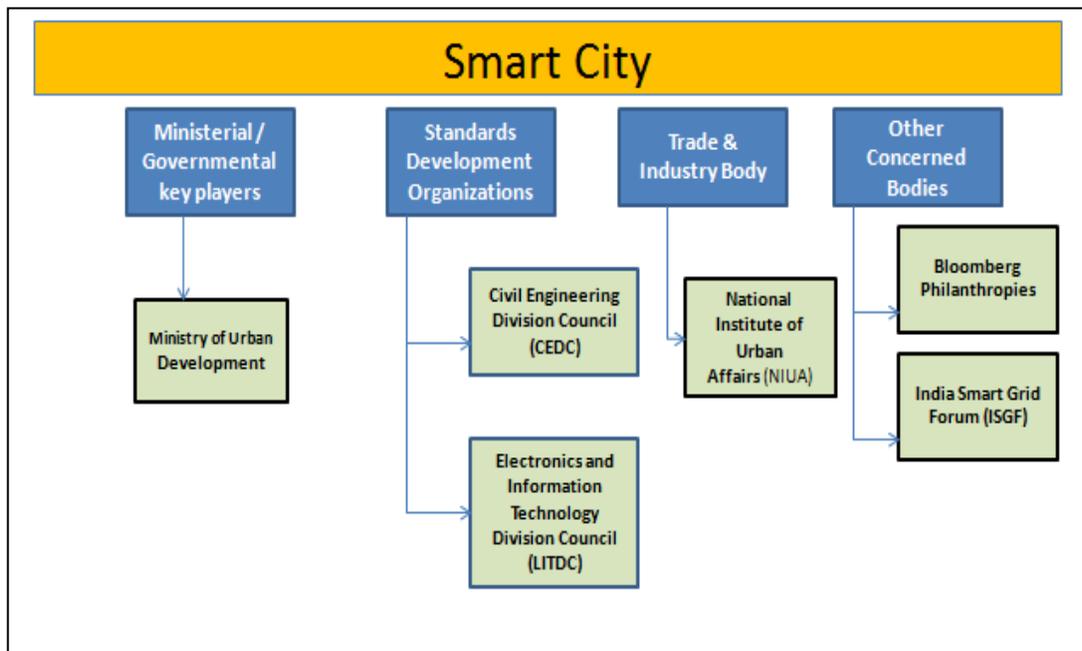
The Association also has an extensive information bank on the tyre industry which is available for tapping not only for Government but those who are interested in tyre industry related developments. The Association regularly publishes data on production and export of various categories of tyres. Besides, the Association prepares Status notes on various subjects which are of relevance to tyre industry, such as, Tyre Retreading Industry, Regional Trade Agreements & Rules of Origin, Anti-Dumping, etc. For more information please [click here](#)

5.2.3.4.1. Indian Tyre Technical Advisory Committee (ITTAC)

ITTAC was established in 1966, by ATMA, Indian Tyre Technical Advisory Committee (ITTAC) is an associated body consisting mainly of technical representatives of ATMA member companies and other tyre companies. ITTAC is essentially a technical Standardization body for the tyre industry. For more information please [click here](#)

5.3. Smart City

Smart Cities Mission is an urban renewal and retrofitting program by the Government of India with a mission to develop 100 cities (the target has been revised to 109 cities) all over the country making them citizen friendly and sustainable. The Union Ministry of Urban Development is responsible for implementing the mission in collaboration with the state governments of the respective cities. The Government has a vision of developing 100 smart cities as satellite towns of larger cities by modernizing the existing mid-sized cities.



5.3.1. Government

5.3.1.1. Ministry of Urban Development

The [Ministry of Urban Development](#), Government of India, is a nodal Ministry in-charge of various aspects of Urban Development including Urban Water Supply and Sanitation in the Country. It is the apex body for formulation and administration of the rules and regulations, formulates the policies and strategies and laws pertaining to various aspects of Urban Development including Water Supply, Sanitation and Municipal Solid Waste Management in the Country and also provides technical and financial assistance to the States. The ministry is under the charge of Cabinet Minister. The Ministry was attached on and off with the Ministry of Housing and Urban Poverty Alleviation on many occasions, before finally becoming independent in 2004.

Smart City Programme under Ministry of Urban Development

The Government of India has launched the Smart Cities Mission on 25 June 2015.

- The objective is to promote sustainable and inclusive cities that provide core infrastructure and give a decent quality of life to its citizens, a clean and sustainable environment and application of 'Smart' Solutions.
- The focus is on sustainable and inclusive development and the idea is to look at compact areas, create a replicable model which will act like a lighthouse to other aspiring cities. The Smart Cities Mission is meant to set examples that can be replicated both within and outside the Smart City, catalyzing the creation of similar Smart Cities in various regions and parts of the country.
- Some of the core infrastructure elements in a Smart City would include adequate water supply, assured electricity supply, sanitation, including solid waste management, efficient urban mobility and public transport, affordable housing, especially for the poor, robust IT connectivity and digitalization, good governance, especially e-Governance and citizen participation, sustainable environment, safety and security of citizens, particularly women, children and the elderly and health and education.
- The strategic components of the Smart Cities Mission are city improvement (retrofitting), city renewal (redevelopment) and city extension (Greenfield development) plus a Pan-city initiative in which Smart Solutions are applied covering larger parts of the city.
- Area-based development will transform existing areas (retrofit and redevelop), including slums, into better planned human settlements, thereby, improving livability of the whole cities. Development of well-planned and fully serviced new areas (greenfield) will be encouraged around cities in order to accommodate the rapidly expanding population in urban areas. Application of Smart Solutions will enable cities to use technology to improve infrastructure and services.
- Comprehensive development in this way will improve quality of life, create employment and enhance incomes for all, especially the poor and the disadvantaged, leading to inclusive cities.

Selection Process

- The selection process of Smart Cities is based on the idea of Competitive and Co-operative Federalism and follows a Challenge process to select cities in two stages.
- In January 2016, based on the All India Competition, 20 smart cities were selected in Round 1 (Annexure-I). 13 more Smart Cities were selected in May 2016 in fast track round (Annexure-II).
- In Round 2, 63 potential smart cities participated of which, 27 more Smart Cities have been selected in September 2016 (Annexure-III).
- In Round 3, 45 potential smart cities participated of which, 30 Smart Cities have been selected in June 2017 (Annexure-IV).
- A total investment of Rs.1,89,155 crore (25.22B Euro) has been proposed by the 90 cities under their smart city plans. Projects focusing on revamping an identified area (Area Based Projects) are estimated to cost Rs. 1,52,499 crore (20.33B Euro). Smart initiatives across the city (Pan City Initiatives) account for the remaining Rs. 36,656 crore of investments.
- The implementation of the Smart Cities Mission is done by a Special Purpose Vehicle (SPV) to be set up at city level in the form of a limited company under the Companies Act, 2013 and will be promoted by the State/UT and the Urban Local Body (ULB) jointly both having 50:50 equity shareholding. After selection, each selected Smart Cities have to set up SPVs and start implementation of their Smart City Proposal, preparation of Detailed Project Reports (DPRs), tenders etc.
- The SPV will convert the Smart City Proposal into projects through Project Management Consultants (PMCs) and implementation thereafter.

For more information please click [here](#)

List of Office Memorandums (OMs) released by Ministry of Housing and Urban Affairs is available [here](#)

5.3.2. Standards Development Organizations

5.3.2.1. Civil Engineering Division Council (CEDC) of BIS

The Civil Engineering Division Council (CEDC), of BIS is responsible for preparation of Smart City indicators in India. The work scope of CEDC is as follows: ‘Standardization in field of Civil Engineering including structural engineering, building materials and components, planning, design, construction and maintenance of civil engineering structures and built environment, construction practices, safety in building; but excluding those subjects which specifically relate to Water Resources Development and Management’. The Division Council is working towards achieving the above goal through 35 Sectional Committees covering wide range of subjects for basic building materials, design and construction to very high technical areas like Offshore Installations, Ports and Harbours, Cyclone Resistant Structures, etc.

CED has issued the indicators for the proposed ‘Smart Cities’ to be raised in India. The Document (CED-59) 10,000 WC has been placed in the public domain for eliciting opinion, it had been guided by ‘ISO 37120:2014-Sustainable Development of Communities: Indicators for city services and quality of life’ while preparing the Standards.

The Bureau says elements of aspirations for cities must be factored into consideration while measuring the delivery of services. For instance, a city would like to remain a 'Heritage City', a cultural hub, an industrial city, a business city or a tourism city in the course of its development. There must be scope for these features to remain at the core of its planning and growth.

5.3.2.2. Electronics and Information Technology Division Council (LITDC) of BIS

BIS ICT divisional council has setup a Panel on Smart Infrastructure LITDC/P2. Panel has formed following WGs:

- LITDC/P2 WG1 Smart cities
- LITDC/P2 WG2 Active Assisted Living
- LITDC/P2 WG3 Smart Energy
- LITDC/P2 WG4 Smart Manufacturing

This panel has prepared a Pre-standardization study report on "Unified, Secure & Resilient ICT Backbone for Smart Cities/Smart Infrastructure". ([Click here to download the report](#).)

5.3.3. Trade and Industry Association

5.3.3.1. National Institute of Urban Affairs

The [National Institute of Urban Affairs](#) (NIUA) is an institute for research, training and information dissemination in urban development and management in New Delhi, India. It was established in 1976 as an autonomous body under the Societies Registration Act. The Institute is supported by the Ministry of Urban Development, Government of India, State Governments, urban and regional development authorities and other agencies concerned with urban issues. The Institute gets a core grant from the Ministry of Urban Development and generates funds through projects from other central ministries, state governments, and agencies such as ADB, World Bank, UN agencies.

The Institute's policies and directions are determined by the Governing Council consisting of a President, who is appointed by the Government of India, two Vice-Presidents, three members of the Government of India in their *ex officio* capacity, twelve other members, and the Director, the Chief Executive of the Institute, as the member-secretary.

National Institute of Urban Affairs (NIUA) is a premier institute for research, capacity building and dissemination of knowledge for the urban sector in India. It conducts research on urbanization, urban policy and planning, municipal finance and governance, land economics, transit oriented development, urban livelihoods, environment & climate change and smart cities.

The institute was set up to bridge the gap between research and practice, and to provide critical and objective analyses of trends and prospects for urban development. NIUA has assisted in policy formulation and programme appraisal and monitoring for the Ministry of Urban Development, state governments, multilateral agencies and other private

organizations. It contributed to the National Commission on Urbanisation, participated in drafting the 74th Constitutional Amendment of 1992, prepared the Draft National Urban Policy and other documents for the roll out of the Jawaharlal Nehru National Urban Renewal Mission (JNNURM). It also guided the discourse on municipal finance by framing the Model Municipal Law.

Its main objectives are;

- Provide research support to MoUD
- Evaluate Government of India's urban programs/schemes
- Analyze and promote policy change agenda
- Conduct research studies on contemporary urban issues
- Coordinate capacity building and training activities
- Disseminate information

Functional Setup

- Thematic Research Themes: Urbanization, Urban Infrastructure and Economic Growth
- Municipal Finance and Governance
- Land Economics and Transportation
- Urban Poverty
- Affordable Housing
- Sustainable Habitat, Environment and Climate Change
- Smart Cities
- Urban Data Centre
- Capacity Building Cell
- Information, Publication & Communication Cell

Research Themes

Urbanization, Urban Infrastructure and Economic Growth

Study of macro parameters that influence urban development and its spatial expansion, with a continual review and analysis of the linkages between urbanization, migration, urban infrastructure and economic growth.

Municipal Finance and Governance

Study of fiscal structures at the national, state and municipal levels, with focus on strengthening local capacity for managing own sources of revenue, leveraging finance from the market, and appropriate structuring of public-private partnerships.

Land Economics and Transportation

Study of the current models of land development within the country and abroad, land economics and its effects on urban development, the efficient functioning of land markets, synergies between land use and transportation, and responses to acquisition and pooling of land.

Urban Poverty

Study of the conditions that produce and perpetuate urban poverty and ways of amelioration, the role of livelihoods and equitable access in determining the response to urban poverty, and the nature of enterprise, labour and social structure that can produce inclusive urbanization.

Affordable Housing

Study of factors that govern the affordability of housing in cities and the structural, financial and technical aspects that affect the supply of affordable housing, both self-owned and rented.

Sustainable Habitat, Environment and Climate Change

Study of urbanization and its linkages with climate change, mitigation of climate-related hazards & risks, building resilience in urban systems and estimating relative sustainability of urban systems located in different climate zones.

Smart Cities

Study of the conditions in which cities can adopt ICT-based and data-enabled platforms for participative planning and citizen engagement, real-time measurement of technical performance parameters, efficiency and transparency in e-Governance.

CIDCO Smart City Lab at NIUA

CIDCO has established a 'CIDCO Smart City Lab' at NIUA, a research and capacity-building unit that can develop and provide the latest training to CIDCO's technical personnel, with particular focus on the development of 'smart cities'. The 'CIDCO Smart City Lab' unit is a first step towards the establishment of a national-level training institute in Navi Mumbai. The unit will focus on capturing and creating awareness about the existing knowledge within CIDCO such as the innovations and best practices that have been produced by CIDCO, documenting the history and achievements of CIDCO and the development of Navi Mumbai, conducting training needs assessments for CIDCO's technical and management staff, planning the training calendar and seeking approval of Advisory Committee, creating knowledge products and learning tools that will enrich the training experience, assessing the data needs for the planning of CIDCO cities, establishing geo-spatial database for CIDCO city planning through coordination of existing data sources and urban indicators, creating a Draft DPR for the CIDCO-NIUA Training Centre in Navi Mumbai, creating awareness about smart and innovative solutions in priority sectors, such as land-use planning and management, traffic & transportation, utility networks, public services, conservation/preservation of greenery and energy efficiency.

Website: cidco-smartcity.niua.org

Smartnet NIUA

Smartnet is an initiative of the **Ministry of Urban Development** to support the development of cities across India and to create a resource-rich ecosystem of learning, sharing and disseminating for city managers and primary stakeholders in the urban transformation of India.

The key objectives of Smartnet are:

- Providing a horizontal learning and knowledge sharing platform for exchange between cities, practitioners, academia, researchers and technologists;

- Evolving a comprehensive framework to visualise and articulate the government's urban sector missions such as smart cities, AMRUT, Housing for All, HRIDAY and Swacch Bharat.

Smartnet encourages Government to Government (G-to-G) and Government to Business (G-to-B) and Business to Government (B-to-G) linkages for the urban sector in India enabling transparent and structured interactions between cities, businesses and institutions.

Smartnet provides cities an opportunity to share details of training programmes, conferences and tender documents like EOIs, RFPs, and so on. For the private sector, it provides a platform for the industries to showcase their ideas and innovations developed for cities. [Read more](#)

5.3.4. Other important bodies concerning Smart Cities in India

5.3.4.1. Bloomberg Philanthropies

Bloomberg Philanthropies Partners with the Government of India

Bloomberg Philanthropies is committed to its partnership with the Government of India in support of the Smart Cities Mission, one of Prime Minister Narendra Modi's ambitious urban development programs to improve quality of life in India's fast-growing urban centers. Bloomberg Philanthropies is providing strategic and technical support in the design and delivery of a Smart Cities Challenge, through which central government will select 100 cities over the next three years to receive funding. The foundation also will provide support for cities to develop more innovative and impactful proposals. Bloomberg Philanthropies is leveraging both its expertise in designing large scale competitions for cities and its deep urban policy expertise and network to support the success of the Smart Cities Mission.

In 2015, Bloomberg Philanthropies partnered with the Ministry of Urban Development to support the Mission through the design and delivery of the India Smart Cities Challenge. The Challenge, in which Indian cities compete for central government funding, marks the first time the Government of India has used a competitive framework to advance a major urban development mission and allocate funding.

After helping to design the Challenge, Bloomberg Philanthropies supported the competing cities as they developed their proposals, with a special emphasis on engaging citizens. Bloomberg Philanthropies hosted Ideas Camp – which gathered leaders from India's cities with global experts in urban innovation under one roof. We also conducted expert webinars, which helped cities learn from international best practices and identify transformative solutions for their applications during the first round of the competition. In January 2016, the Ministry of Urban Development announced the 20 winners of the first round. The Government of India will expand the list of nominated cities and continue running the competition in subsequent years.

The collaboration marks the first time the Government of India has embraced a competitive framework to advance a national urban development mission and to distribute grant funds. Bloomberg Philanthropies' support for the effort includes:

- Strategic and technical assistance to design and administer a Cities Challenge that enables central government to articulate standards and goals while ensuring local officials have broad flexibility to develop approaches that are citizen-centred and responsive to local needs
- Providing supports to help India's municipal officials assess challenges, engage citizens, draw from best practices, and generate smart proposals – the best of which ultimately receive government funding
- Galvanizing an international network of urban practitioners to share global best practices and evidence in urban planning and smart solutions with India's municipal and state officials and their partners over the course of the competition

The collaboration for the Cities Challenge, is a result of two meetings between Prime Minister Modi and Michael Bloomberg and subsequent staff level discussions. The two met in September 2014 when the Prime Minister visited the United States. They met again in February 2015 when Michael Bloomberg, acting in his capacity as UN Special Envoy for Cities and Climate Change, visited Delhi and Mumbai to meet with government officials to applaud India's bold commitment to renewables and other carbon emission activities.

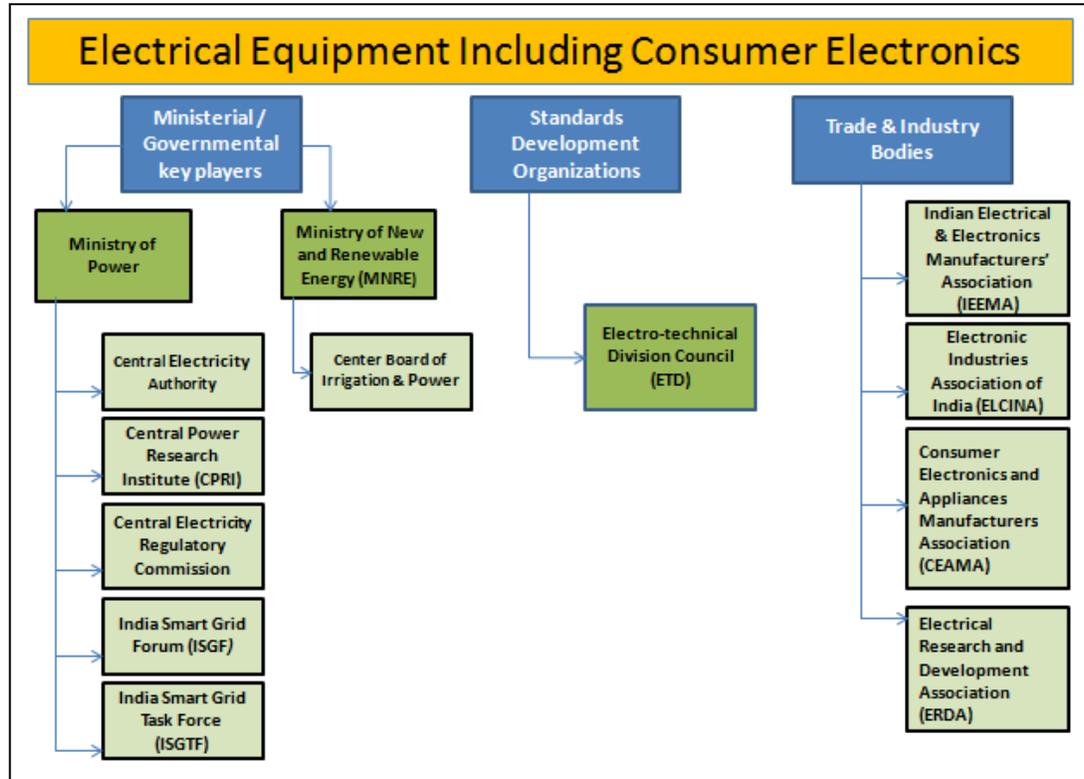
The Smart Cities Mission was outlined by Prime Minister Modi today during a forum at Vigyan Bhavan in Delhi, India that was attended by over 1,200 public sector leaders, urban planning experts and citizens from across the country. This flagship effort will allocate Rs. 48,000 crores (an estimated \$7.5 billion) over five years to promote progressive urban planning, improve governance, and strengthen the economic, social and physical infrastructure of 100 cities.

For more information about partnership and the cities competition, visit www.smartcitieschallenge.in and follow the dialogue about Smart Cities on Twitter [@indiacities](https://twitter.com/indiacities) and on Facebook at [Facebook.com/SmartCitiesChallenge](https://www.facebook.com/SmartCitiesChallenge).

5.3.4.2. Smart city work at India Smart Grid Forum (ISGF)

India Smart Grid Forum (ISGF) along with our members have taken the initiative to design a standard framework for various domains of smart cities which will be common platform for any city to design city specific framework. ISGF has designed a Smart City Maturity Model (SCMM) to map the progress levels of city domains and set the targets to achieve as year on year basis. This Smart Cities working group will take initiative to interact with various cities in India who are willing to become smart cities to design their own standard framework, Domain Interdependency Matrix and SCMM. [Read more](#)

5.4. Electrical Equipment including Consumer Electronics



5.4.1. Government

5.4.1.1. Ministry of Power

The [Ministry of Power](#) started functioning independently with effect from 2nd July, 1992. Earlier it was known as the Ministry of Energy sources. The Ministry of Power is primarily responsible for the development of electrical energy in the country. The Ministry is concerned with perspective planning, policy formulation, processing of projects for investment decision, monitoring of the implementation of power projects, training and manpower development and the administration and enactment of legislation in regard to thermal, hydro power generation, transmission and distribution. The Ministry of Power is responsible for the Administration of the Electricity Act, 2003, the Energy Conservation Act, 2001 and to undertake such amendments to these Acts, as may be necessary from time to time, in conformity with the Government's policy objectives.

Central Electricity Authority - Ministry of Power

The [Central Electricity Authority \(CEA\)](#) is a statutory organization and established as a part-time body in the year 1951 and made a full-time body in the year 1975.

With the objective of reforming the Power Sector, the Electricity Act, 2003 has been enacted and the provisions of this Act have been brought into force with effect from 10th

June, 2003. As per section 73 of the Electricity Act, 2003, the functions and duties of CEA includes following:

- Advise the Central Government on the matters relating to the national electricity policy, formulate short-term and perspective plans for development of the electricity system and coordinate the activities of the planning agencies for the optimal utilization of resources to sub serve the interests of the national economy and to provide reliable and affordable electricity to all consumers;
- Specify the technical standards for construction of electrical plants, electric lines and connectivity to the grid;
- Specify the safety requirements for construction, operation and maintenance of electrical plants and electric lines;
- Specify the Grid Standards for operation and maintenance of transmission lines;

For more information please [click here](#)

Central Power Research Institute (CPRI)

CPRI is the power house of the Indian electrical industry. Set up in 1960 by the Government of India, it functions as a centre for applied research in electrical power engineering assisting the electrical industry in product development and quality assurance. CPRI also serves as an independent authority for testing and certification of power equipment. With its state-of-the art infrastructure and expertise, CPRI has made significant contributions to the power sector in the country for improved planning, operation and control of power systems. Besides in-house R&D, CPRI also undertakes sponsored research projects from manufacturers and other agencies in different areas of specialization. With its quality of output on par with International standards CPRI offers specialized services on the performance, evaluation and certification of different kinds of power equipment like Switchgear, Fuse Gears, Transformers, Cables, Capacitors, Insulating Materials and Systems, Transmission Line Towers, Liquid Dielectrics and Non-Conventional Energy Devices in its seven laboratories spread all over India. For more information please [click here](#)

Central Electricity Regulatory Commission

The Commission intends to promote competition, efficiency and economy in bulk power markets, improve the quality of supply, promote investments and advise government on the removal of institutional barriers to bridge the demand supply gap and thus foster the interests of consumers. In pursuit of these objectives the Commission aims to –

- Improve the operations and management of the regional transmission systems through Indian Electricity Grid Code (IEGC), Availability Based Tariff (ABT), etc.
- Formulate an efficient tariff setting mechanism, which ensures speedy and time bound disposal of tariff petitions, promotes competition, economy and efficiency in the pricing of bulk power and transmission services and ensures least cost investments.
- Facilitate open access in inter-state transmission
- Facilitate inter-state trading

- Promote development of power market
- Improve access to information for all stakeholders.
- Facilitate technological and institutional changes required for the development of competitive markets in bulk power and transmission services.
- Advise on the removal of barriers to entry and exit for capital and management, within the limits of environmental, safety and security concerns and the existing legislative requirements, as the first step to the creation of competitive markets.

Website: <http://cercind.gov.in/regulations.html>

India Smart Grid Forum (ISGF)

India Smart Grid Forum (ISGF), registered under Indian Societies Registration Act (Act XXI of 1860) is a Public Private Partnership (PPP) initiative of Ministry of Power, Government of India for accelerated development of Smart Grid technologies in the Indian power sector. The main objectives of ISGF are:

- To help Indian power sector to deploy smart grid technologies in an efficient, cost effective, innovative and scalable manner by bringing together all key stakeholders and enabling technologies.
- To create a platform for public and private stakeholder members, research institutions and power utilities to drive down myths on smart grids, and create innovation through information exchanges.
- To bring together stakeholders specializing in regulation, policy, and business case with a view to building up a broad-based support for smart grid policies.
- To undertake research work and other efforts such as scoping the capabilities of smart grids in the Indian context through case studies, cost-benefit framework, technical advancements in the renewable energy sources and other ancillary activities.
- To provide advice to Government, Regulators, Utilities and Consumers in the form of reports and white papers, technical seminars, etc.

ISGF has 10 working groups focused on different aspects of smart grid such as:

- WG1: Advanced Transmission & distribution;
- WG2: Smart cities;
- WG3 & WG4: Communications and Metering for Smart Grids;
- WG5: Consumption and Load Control;
- WG6: Policy and Regulations;
- WG7: Architecture and Design;
- WG8: Pilots and Business Models;
- WG9: Renewables and Microgrids; and
- WG - 10: Cyber Security.

For more information please [click here](#)

The India Smart Grid Task Force (ISGTF)

The India Smart Grid Task Force is an inter-ministerial group and will serve as government focal point for activities related to SMART GRID. The Main functions of ISGTF pertaining to Smart Grid are:

- To ensure awareness coordination and integration of diverse activities related to Smart Grid Technologies.
- Practices & services for research & development of SMART GRID.
- Coordination and integrate other relevant inter- governmental activities.
- Collaborate on interoperability framework.
- Review & validate recommendations from India Smart Grid Forum etc.
- Five Working groups have been constituted to take-up the different task related to SMART GRID activities i.e.
 - WG1 – Trials/Pilot on new technologies.
 - WG2 – Loss reduction and theft, data gathering and analysis.
 - WG3 – Power to rural areas and reliability & quality of power to urban areas.
 - WG4 – Dist. Generation & renewable.
 - WG5 – Physical cyber security, Standards and Spectrum.

5.4.1.2. Ministry of New and Renewable Energy (MNRE)

The [Ministry of New and Renewable Energy \(MNRE\)](#) is the nodal Ministry of the Government of India for all matters relating to new and renewable energy. The broad aim of the Ministry is to develop and deploy new and renewable energy for supplementing the energy requirements of the country. Background on its creation as a Ministry:

- Commission for Additional Sources of Energy (CASE) in 1981.
- Department of Non-Conventional Energy Sources (DNES) in 1982.
- Ministry of Non-Conventional Energy Sources (MNES) in 1992.
- Ministry of Non-Conventional Energy Sources (MNES) renamed as Ministry of New and Renewable Energy (MNRE) in 2006.

The role of new and renewable energy has been assuming increasing significance in recent times with the growing concern for the country's energy security. Energy self-sufficiency was identified as the major driver for new and renewable energy in the country in the wake of the two oil shocks of the 1970s. The sudden increase in the price of oil, uncertainties associated with its supply and the adverse impact on the balance of payments position led to the establishment of the Commission for Additional Sources of Energy in the Department of Science & Technology in March 1981. The Commission was charged with the responsibility of formulating policies and their implementation, programmes for development of new and renewable energy apart from coordinating and intensifying R&D in the sector. In 1982, a new department, i.e., Department of Non-conventional Energy Sources (DNES), that incorporated CASE, was created in the then Ministry of Energy. In 1992, DNES became the Ministry of Non-conventional Energy Sources. In October 2006, the Ministry was re-christened as the Ministry of New and Renewable Energy. Ministry is currently handling following programs;

- **Grid Connected Power:** Grid-interactive renewable power projects based on wind power, biomass, small hydro and solar are mainly private investment driven, with favorable tariff policy regimes established by State Electricity Regulatory Commissions (SERC), and almost all-renewable power capacity addition during the year has come through this route.
- **Off-grid Renewable Energy / Power:** Biomass based heat and power projects and industrial waste to-energy projects for meeting captive needs; Biomass gasifiers for rural and industrial energy applications; Watermills/micro hydro projects – for meeting electricity requirement of remote villages; Small Wind Energy & Hybrid Systems - for mechanical and electrical applications, mainly where grid electricity is not available; Solar PV Roof-top Systems for abatement of diesel for power generation in urban areas. The main objectives of the programme are: supporting RD&D to make such systems more reliable and cost-effective, demonstration, field testing, strengthening manufacturing base.
- **Decentralized Systems:** Renewable energy technologies are ideally suited to distributed applications, and they have substantial potential to provide a reliable and secure energy supply as an alternative to grid extension or as a supplement to grid-provided power. Over 400 million people in India, including 47.5% of those living in India's rural areas, still had no access to electricity. Because of the remoteness of much of India's un-electrified population, renewable energy can offer an economically viable means of providing connections to these groups. Some of the renewable energy technologies that are used in villages and rural areas as decentralized systems are: Family-size biogas plants; Solar street lighting systems; Solar lanterns and solar home lighting systems; Solar water heating systems; Solar cookers; Standalone solar/ biomass based power generators; Akshay Urja / Aditya Solar Shops; Wind pumps; and Micro-Hydel plants. Many of these systems have been found useful in urban and semi urban areas also to conserve the use of electricity and other fossil fuels. Solar water heating systems have helped in demand side management of electricity in various cities and towns during peak hours. Standalone roof top SPV systems are getting popular for day time diesel abatement in areas where power cuts are very high.
- **New Technologies:** The Ministry of New and Renewable Energy (MNRE) has taken up the programmes such as Hydrogen Energy; Chemical Sources of Energy (Fuel Cells); Alternative Fuels for Surface Transportation; Geo Thermal Energy; and Tidal Energy; on various New Technologies, As part of these programmes, research, development and demonstration projects have been initiated at various research, scientific and educational institutes, universities, national laboratories, industry, etc. These projects are helping in the development of indigenous research and industrial base, expertise, trained manpower and prototypes/devices/systems in the country.

Center Board of Irrigation & Power

Central Board of Irrigation & Power (CBIP), a Premier Institution, rendering dedicated services to professional organizations, engineers and individuals for more than 81 years,

resulting in accelerated development in Water Resources, Energy and Allied Fields, including renewable energy, in the country and abroad. CBIP has grown into an eminent organization of international importance while serving the nation equally with great distinction. CBIP is Indian chapter for 10 international organizations related to aforesaid sector.

Today, Central Board of Irrigation and Power presents a shining example of a pioneer organization and has enabled Indian industry to set higher benchmarks and attain international standards in excellence by creating a unique platform for growth and progress of this sector. For more information please [click here](#)

5.4.2. Standards Development Organization

5.4.2.1. Electro-technical Division Council (ETD)

Bureau of Indian Standards has a division council known as Electrotechnical Division Council (ETDC), which takes care of standardization in the field of electrical power generation, transmission, distribution and utilization equipment; and insulating materials, winding wires, measuring and process control instruments and primary and secondary batteries.

- Composition of Technical Committee details of this division council is available at [Electrotechnical Division Council, Technical Committee](#)
- Program of Work Details of this division council are available at [Electrotechnical Division Council, Work Program](#)

5.4.3. Trade and Industry Associations

5.4.3.1. Indian Electrical & Electronics Manufacturers' Association (IEEMA)

IEEMA is the national representative organisation of manufacturers of electrical, industrial electronics and allied equipment. Indian Electrical & Electronics Manufacturers' Association (IEEMA) is the apex association of manufacturers of electrical, industrial electronics and allied equipment in India. Founded in 1948, IEEMA has a pan India presence with its headquarters in Mumbai and regional offices in New Delhi, Kolkata and Bangalore. IEEMA, the first ISO certified industry association in India, has over 750-member organisations encompassing the complete value chain in power generation, transmission and distribution. Its membership base, ranging from public sector enterprises, multinational companies to small and medium companies, gives IEEMA a truly national representative character.

IEEMA members represent a combined annual turnover in excess of Rs. 1,10,000 crores (approximately 14.66 billion Euro) and have contributed to more than 95% of the power equipment installed in India. India's exports of electrical equipment are around Rs. 18,000 crores (approximately 2.4 billion Euro) and the industry provides direct employment to over 5 lakh (0.5 Million) persons and indirectly to over 10 lakhs (1 Million).

With expertise resident in its product divisions and cells, IEEMA is the natural voice of Indian electrical industry and plays a crucial policy advocacy role with the government and its agencies. IEEMA facilitates a robust two-way flow of customised and value-added information between the government and the industry. It sensitizes all stakeholders on the future requirements for development of the power sector in the country. IEEMA also engages proactively in government-industry consultative mechanism through its representation on councils and committees constituted by the government and its agencies in policy, strategic and other matters.

IEEMA works closely with government agencies, utilities, standardisation bodies, research & development organisations and testing institutes for formulating Indian standards for electro-technical industry and developing energy efficient products. For more information please [click here](#)

5.4.3.2. Consumer Electronics and Appliances Manufacturers Association (CEAMA)

Electronics and Appliances Manufacturers Association is an all India organization in the Consumer Electronics and Durables sector. It has been in existence for over 32 years. Presently, there are about 100 members. It is the voice of Consumer Electronics and Durables sector to;

- Interacts with the Government in formulating policies for the development of the sector
- Facilitate industry growth, by serving as an interface with the Government for meaningful interaction and dialogue.
- Conduct Training Programs and Workshops and Organize Seminars, Conferences and Exhibitions.
- Interact with other industry Chambers / Associations.

For more information please [click here](#)

5.4.3.3. Electronic Industries Association of India (ELCINA)

ELCINA Electronic Industries Association of India (Formerly Electronic Component Industries Association) was established in 1967 when India's Electronics industry was still in its infancy. Since then, ELCINA has been well known as an interactive forum for electronics and IT manufacturers. Apart from the basic objective of promoting hardware manufacturing through active representation and advice to the Government, ELCINA has been networking with national and international technical institutions and business promotion bodies to further the interests of its members. Today, in an increasingly liberalized environment, there is greater focus on professional and value-added services rendered by the Association to the Electronics and IT Community.

As India's oldest and largest electronics Association, ELCINA has always remained committed to the promotion of electronics manufacturing culture in the country, focusing on components - the building blocks of electronics industry. **ELCINA, now renamed as ELCINA Electronic Industries Association of India**, has widened its horizons and broadened

its activities to include the development of entire Electronics and IT Hardware, including components & assemblies, consumer electronics, telecom, IT, industrial/professional, defense/strategic electronics and other emerging areas like medical and automobile electronics, embedded systems and hardware design. ELCINA continues to work towards correlating the common interest of electronic hardware manufacturers with that of manufacturers of electronic materials, machinery and service providers, for accelerating growth. For more information please [click here](#)

5.4.3.4. Electrical Research and Development Association (ERDA)

Electrical Research and Development Association (**ERDA**) is a cooperative research institution created by the Indian Electrical Industry and Utilities with the support of Governments of India and Gujarat. National in character, ERDA has established its laboratory facilities at Makarpura Industrial Estate, Vadodara, Gujarat. The Laboratories stand in a sprawling 25-acre plot donated by the Government of Gujarat. ERDA is a professionally managed not-for-profit technical organization serving the industries and utilities since 1974 in the areas of test, evaluation, certification, consultancy, and R&D related to electrical products and systems. ERDA is managed by a Managing Committee consisting of elected and nominated members from industries, utilities, Council of Scientific and Industrial Research – Government of India, Government of Gujarat, and eminent invited experts. For more information please [click here](#)

6. Accreditation, Testing and Certification

In India, unlike Europe, there is very little, if any, market-surveillance, almost no product liability court cases and it is common to find non-conformant inferior quality products. Official sanctions are minimal and very time consuming and so most consumers do not even report non-conformance. This has resulted in consumers and entities relying on (company) branded products which guarantee quality and/or government approved certifications and logos such as ISI Mark, Gold hallmarking which provide the necessary trust. The only entities which do have power to impose sanctions, confiscate products, etc. are the Indian export councils which provide the guarantees. Thus, it is common to see local products being promoted as “Export Quality” since products for exports from India are monitored and certified by the certification bodies.

- National Accreditation Board for Certification Bodies (NABCB - <http://qcin.org/nabcb/>): It undertakes assessment of Certification Bodies applying for accreditation as per the Board's criteria in line with international standards and guidelines. It offers Accreditations for
 - Quality Management Systems (QMS)
 - Environmental Management Systems (EMS)
 - Food Safety Management Systems
 - Inspection
 - Product Certification
 - Occupational Health and Safety Management Systems
 - Information Security Management

List of Name and Address of NABCB Accredited Certification / Inspection Bodies is available [here](#)

- National Accreditation Board for Testing and Calibration Laboratories (NABL - <http://www.nabl-india.org/>): National Accreditation Board for Testing and Calibration Laboratories (NABL) is an autonomous body under the aegis of Department of Science & Technology, Government of India, and is registered under the Societies Act. It undertakes the assessment and accreditation of Testing and Calibration Laboratories, in accordance with the international standard ISO / IEC 17025 and ISO 15189. The Board is a signatory of Mutual Recognition Arrangement (MRA) of International Laboratory Accreditation Co-operation (ILAC) and Asia Pacific Laboratory Accreditation Co-operation (APLAC). It offers Accreditation to
 - Testing: Biological, Chemical, Electrical, Electronics, Fluid-Flow, Mechanical, Non-Destructive Testing, Photometry, Radiological, Thermal, Forensic, Medical
 - Calibration: Electro-Technical, Mechanical, Fluid flow, Thermal & Optical, Radiological
- National Accreditation Board for Education and Training (NABET - <http://qcin.org/nabet/>)
- National Accreditation Board for Hospitals and Healthcare Providers “NABH - <http://www.nabh.co/>

This means that products from EEA area may have to go through additional certification by QCI accredited body since SDoC or certification from non-accredited entity may not be accepted, unless there is an MLA.

6.2. Standardization Testing and Quality Certification (STQC)

Standardization Testing and Quality Certification (STQC) Directorate is an attached office of the Department of Electronics and Information Technology(DeitY), Government of India, provides quality assurance services in the area of Electronics and IT through countrywide network of laboratories and centers. The services include **Testing, Calibration, IT & e-Governance, Training** and **Certification** to public and private organizations. STQC laboratories are having national/International accreditation and recognitions in the area of testing and calibration.

Besides testing and calibration STQC has specialized institutions such as Indian Institute of Quality Management (IIQM) for quality related training programs. Centre for Reliability (CFR) for reliability related services and Centre for Electronics Test Engineering (CETEs) for skill based trainings.

In the area of IT & e-Governance, STQC provides assurance services through its IT Centers for Software Quality testing, Information Security and IT Service Management by conducting testing, training, audit and certifications. STQC is responsible for maintaining eGov standards. Based on this concept a Conformity Assessment Framework (CAF) for e-Governance project has also been developed and is in operation. Two IT test laboratories, at Bangalore and Kolkata, have received accreditation from American Association for Laboratory Accreditation (A2LA) being the first outside the USA. STQC Certification Services are accredited and recognized by:

- Dutch Council for Accreditation (Raad vor Accreditate, RvA), Netherlands for
- ISO 9001 - Quality Management System (QMS)
- ISO 27001 - Information Security Management System (ISMS)
- ISO 20000 – IT Service Management (ITSM)
- Product Safety Certification Scheme based on IEC standards.
- National Accreditation Board for Certification Bodies (NABCB), India for ISO 9001 - Quality Management System

Both Raad vor Accreditate (RvA), Netherlands and NABCB, India are signatory of Multilateral Recognition Arrangement (MLA) of International Accreditation Forum (IAF) Inc., the RvA / NABCB accredited certificates issued by STQC Certification Services are valid worldwide. STQC's international recognition has also been enhanced by virtue of its mutual recognition agreements with leading certification agencies across the world such as BSI, UK; TUV, Germany; JQA, Japan; Kaitech, S.Korea; CEPREL, China; KEMA, Netherlands etc. Organizations can also obtain EQNET certificate acceptable in all over the European Union.

STQC Certification Services took lead and became the first Third Party Certification Agency of Indian origin in India in 1991 to offer QMS certification. Since then STQC Certification Services has broaden its scope of certification and is now providing Certification Service in QMS Product Certification, ISMS, ITSM, Website quality, smart card, biometric devices along with a host of other schemes for the benefit of the industry. It caters to the need of third party certification for the products in line with National and International standards and schemes. STQC offers its certification services to industry and other organizations in the following domains:

- Management System Certification Schemes
 - ISO 9001 Quality Management System (QMS) Certification
- Product Certification Schemes
 - Product Safety Certification based on IEC Standards (S mark)
 - IECEE-CB Certification Based on IEC Standards
 - Agency Inspection Services
- Mgmt. System, Product Certification (IT & e-Gov)
 - ISO 27001 Information Security Management System (ISMS) Certification
 - ISO 20000-1 IT Service Management (ITSM) Certification
 - Website Quality Certification
 - Common Criteria Certification

- Smart Card Testing and Certification
- Bio-metric Devices Testing and Certification

Electrical & Electronics Testing

STQC laboratories namely ERTLs and ETDCs providing electrical and electronics testing services to industry / organizations have been accredited and recognized by:

- National Accreditation Board for Laboratories (NABL) under National laboratory accreditation program as per ISO/IEC 17025 practices
- STQC Test Reports are recognized by International agencies like UL VDE, CSA & FCC etc through mutual recognition arrangements
- Test laboratories approved by BIS, DOT, RDSO, ISRO, DRDO, MNES, DG Mine Safety & Chief Controller Explosive and DG Shipping
- Recognition by consumer associations and forums for conducting comparative testing and evaluation of consumer electronic/electrical products

Software & System Testing

STQC IT centres providing software and system testing services to industry/ organizations have been accredited and recognized by:

- STQC IT centres at Bangaluru and Kolkata have been accredited by A2LA, USA for Information Technology Testing as per ISO/IEC 17025
- STQC on behalf of India is the signatory to Common Criteria Recognition Arrangement (CCRA) with Indian Common Criteria Certification Scheme (IC3S) for evaluation and certification of IT products for security as per CC standards, ver 3.1/ISO/IEC 15408, up to EAL4 assurance level. As per the article 1 of the CCRA, Certificates issued by one-member countries are accepted in other countries without re-certification
- STQC's services in the area of testing have been recognized by Govt. departments for quality assurance of e-governance applications.

6.3. Controller of Certifying Authorities (CCA)

As per Section 18 of The Information Technology Act, 2000 provides the required legal sanctity to the digital signatures based on asymmetric cryptosystems. The digital signatures are now accepted at par with handwritten signatures and the electronic documents that have been digitally signed are treated at par with paper documents.

The IT Act provides for the Controller of Certifying Authorities (CCA) to license and regulate the working of Certifying Authorities. The Certifying Authorities (CAs) issue digital signature certificates for electronic authentication of users.

The Controller of Certifying Authorities (CCA) has been appointed by the Central Government under section 17 of the Act for purposes of the IT Act. The Office of the CCA came into existence on November 1, 2000. It aims at promoting the growth of E-Commerce and E- Governance through the wide use of digital signatures.

The Controller of Certifying Authorities (CCA) has established the Root Certifying Authority (RCAI) of India under section 18(b) of the IT Act to digitally sign the public keys of Certifying Authorities (CA) in the country. The RCAI is operated as per the standards laid down under the Act.

The CCA certifies the public keys of CAs using its own private key, which enables users in the cyberspace to verify that a given certificate is issued by a licensed CA. For this purpose it operates, the Root Certifying Authority of India (RCAI). The CCA also maintains the Repository of Digital Certificates, which contains all the certificates issued to the CAs in the country. For more information please [click here](#)

6.4. Export Promotion Councils of India (EPC)

The Export Promotion Councils are non-profit organizations registered under the Indian Companies Act or the Societies Registration Act, as the case may be. They are supported by financial assistance from the Government of India.

The main role of the EPCs is to project India's image abroad as a reliable supplier of high quality goods and services. In particular the EPCs encourage and monitor the observance of international standards and specifications by exporters. The EPCs keep abreast of the trends and opportunities in international markets for goods and services and assist their members in taking advantage of such opportunities in order to expand and diversify exports. The major functions of the EPCs are as follows:

- To provide commercially useful information and assistance to their members in developing and increasing their exports
- To offer professional advice to their members in areas such as technology upgradation, quality and design improvement, standards and specifications, product development and innovation etc.
- To organize visits of delegations of its members abroad to explore overseas market opportunities.
- To organize participation in trade fairs, exhibitions and buyer-seller meets in India and abroad.
- To promote interaction between the exporting community and the Government both at the Central and State levels.
- To build a statistical base and provide data on the exports and imports of the country, exports and imports of their members, as well as other relevant international trade data

Presently, there are Fourteen Export Promotion Councils under the administrative control of the Department of Commerce (<http://commerce.gov.in/PageContent.aspx?Id=12>) and there are Eleven Export promotion councils under the Ministry of Textiles (<http://texmin.nic.in/about-us/export-promotion-councils>). These Councils are also the registering authorities for exporters under the Foreign Trade Policy 2009-14; meaning an exporter has to register with an appropriate EPC.

Although the primary function of EPCs is to promote and export Indian products, they also act indirectly act as “lobby” for the internal Indian market as products which are “export quality” are regarded by Indian consumers as being far superior/safe than IS compliant

(local) products. The quality control and certification of Indian products is performed by yet another entity.

6.5. Export Inspection Council of India (EIC)

The Export Inspection Council (EIC) was set up by the Government of India under Section 3 of the Export (Quality Control and Inspection) Act, 1963 (22 of 1963), in order to ensure sound development of export trade of India through Quality Control and Inspection and for matters connected thereof.

EIC is an advisory body to the Central Government, which is empowered under the Act to:

- Notify commodities which will be subject to quality control and/ or inspection prior to export,
- Establish standards of quality for such notified commodities, and
- Specify the type of quality control and / or inspection to be applied to such commodities.

Besides its advisory role, the Export Inspection Council, also exercises technical and administrative control over the five Export Inspection Agencies (EIAs), one each at Chennai, Delhi, Kochi, Kolkata and Mumbai established by the Ministry of Commerce, Government of India, under Section 7 of the Act for the purpose of implementing the various measures and policies formulated by the Export Inspection Council of India.

Export Inspection Council, either directly or through Export Inspection Agencies, and its field organization renders services in the areas of:

- Certification of quality of export commodities through installation of quality assurance systems (In-process Quality Control and Self Certification) in the exporting units as well as consignment wise inspection.
- Certification of quality of food items for export through installation of Food safety Management System in the food processing units.
- Issue of Certificates of origin to exporters under various preferential tariff schemes for export products.

For more information please [click here](#)

7. Foreign Standards Development Organizations in India

Indian companies and consumers are looking for trusted quality and assurances of the product. This has opened the market for ISO standards based “Quality” certification and trainings for almost anything, including establishment of foreign SDOs in India. These certificates based on global standards add value to the buyer as they bring a level of trust which would not be there otherwise.

7.1. BIS Group India Pvt. Ltd. (BSI)

Since its foundation in 1901, BSI Group has grown into a leading global independent business services organization that inspires confidence and delivers assurance to customers with standards-based solutions. Originating as the world's first national standards body, the group has over 2,250 staff operating in over 100 countries through more than 50 global offices. The Group's key offerings are:

- The development and sale of private, national and international standards and supporting information
- Second and third-party management systems assessment and certification
- Testing and certification of products and services
- Performance management software solutions
- Training services in support of standards implementation and business best practice.

BSI India is offering over 30,000 standards which are EN, BS, ISO and PAS standards which you can now buy locally in India in, India Rupees. BSI is registered in India as Indian "for profit" company, and is the most dynamic entity with HQ in New Delhi and offices in Bengaluru, Chennai, Hyderabad, Kolkata and Mumbai. [Read more](#)

7.2. DQS Certification India Pvt. Ltd. (DQS-AFNOR)

DQS Certification India Private Limited, a Delhi Quality Services initiative for Corporate Excellence since 1994, is an Authorized Transition Partner with SEI (Software Engineering Institute), Carnegie Mellon University (CMU), Pittsburgh, USA to provide CMMI® Assessment and Training Services also known as CMMI® Product Suite Services. DQS Certification India Private Limited in partnership with AFAQ-EAQA, AFNOR Groupe, (<http://www.afnor.org/>), the 5th largest Certification and Inspection Organization of the world, provides Management System Certification services also.

DQS Certification India Pvt Ltd prides itself in providing premium quality registration services on value for money costs through competent professionals of high calibre. The attempt is to provide personalized service with a human interface rather than making the client wrestle with faceless organizations and bulky procedural issues. With this intention, DQS Certification India Pvt Ltd, has been able to create a niche for itself in the intensely competitive scenario. [Read more](#)

7.3. Project Management Institute (PMI-ANSI)

The Project Management Institute Standards Program was established by the PMI Executive Director with the advice and counsel of the PMI Board of Directors, and was commissioned to improve the understanding and competency of experienced and new project management practitioners and customers worldwide. The role of the Standards Program is to identify, define, document, and champion generally accepted project management approaches and a common project management lexicon.

PMI was accredited by the American National Standards Institute (ANSI) as a Standards Developer under the accredited organization method on October 14, 1998 and has successfully completed periodic audits since that time. [Read more](#)

7.4. VDE

VDE, the Association for Electrical, Electronic & Information Technologies headquartered in Frankfurt am Main, and represented in Berlin and Brussels as well as with 29 branch offices throughout Germany has a local representative in India based out of National Capital Region, Sonapat Harayana supporting the local industry on VDE testing quality and safety standards. [Read more](#)

7.5. IEEE, India

IEEE Bangalore was established in 1977 and currently the Section membership stands close to 7000. This membership is spread across various sectors combining Industry, Academia and Research organizations. Bangalore Section has 14 Society Chapters and two affinity groups. The Chapters carry out focused activities in the respective area by way of conducting technical talks, Seminars, Tutorials, workshops etc. Apart from the Chapters two affinity groups viz. the Graduate of the Last Decade (GOLD) and Women in Engineering (WIE) also carry out related activities. IEEE Bangalore and IEEE Princeton and Central New Jersey Sections had signed a MoU as sister sections. Close to half of the Section's strength are Student Members spread over the various Student Branches in India. There are about 53 Student Branches in Karnataka in the various graduate and post-graduate engineering colleges and these units conduct technical talks, TechFests etc They are also actively engaged in Technical activities such as TV White Space, Smart Grid, Digital Signal Processing, Advanced Graphics, MIMO over satellite, Green Energy, Acoustics etc. Read [more](#)

7.6. ASTM International-India

ASTM International, formerly known as the American Society for Testing and Materials (ASTM) and is one of the voluntary standards development organizations in the world of trusted source for technical standards for materials, products, systems, and services. In 2009, technical advisor Mr. Jayakumar Gopalakrishnan, began serving as an ASTM International consultant in India to promote and enhance the awareness and use of ASTM International standards and related products and services relevant to the textile and personal protective equipment industries. In August 2009, India's Central Institute of Plastics Engineering and Technology (CIPET) and ASTM International signed a letter of implementation for a training and collaboration program scheduled to take place in November 2009. Eight technical experts from several CIPET campuses attended an intensive two-week program that included training at ASTM headquarters and participation in the November committee week meetings of Committee D20 on Plastics. Read [more](#)

8. Sources

Ministry of Consumer Affairs, Food and Public Distribution

<http://fcamin.nic.in/>

Bureau of Indian Standards (BIS)

<http://www.bis.gov.in/>

Ministry of Communications and Information Technology

Department of Telecommunications (DoT)

<http://www.dot.gov.in/>

Ministry of Urban Development

<http://moud.gov.in/>

National institute of urban affairs

<https://www.niua.org/>

CIDCO Smartcity

<https://cidco-smartcity.niua.org/>

Bloomberg Philanthropies

<https://www.bloomberg.org/>

MyGov

<https://blog.mygov.in/editorial/digital-india-the-vision-and-the-mission/>

Make in India

<http://www.makeinindia.com/home>

India Standards Portal

<http://indiastandardsportal.org/>

Telecom Engineering Centre (TEC)

<http://www.tec.gov.in/>

Centre for Development of Telematics (C-DOT)

<http://www.cdote.in/home.htm>

Telecom Regulatory Authority of India (TRAI)

<http://www.traigov.in/>

Ministry of Electronics and Information Technology (MeitY)

<http://meity.gov.in/>

e-Governance Standards portal

<http://egovstandards.gov.in/>

Standardization Testing and Quality Certification (STQC)

<http://meity.gov.in/content/stqc>

Centre for Development of Advanced Computing (C-DAC)

<https://www.cdac.in/>

Indian Institute of Science, Bangalore of IISC

<http://www.iisc.ernet.in/about-iisc/visiting-iisc.php>

Center of Excellence in Wireless and Information Technology

<http://www.cewit.org/>

Global ICT Standardization Forum for India (GISFI)

<http://www.gisfi.org/>

Ministry of Power (Smart Grid, Smart Meter)

<http://powermin.nic.in/>

Bureau of Energy Efficiency (BEE)

<https://www.beeindia.gov.in/>

Central Electricity Authority - Ministry of Power

<http://www.cea.nic.in/>

India Smart Grid Forum (ISGF)

<http://www.indiasmartgrid.org/>

Central Power Research Institute (CPRI)

<http://www.cpri.in/>

Ministry of Road Transport and Highways (Automotive)

<http://morth.nic.in/>

Ministry of Heavy Industries & Public Enterprises (Automotive & Machinery)

<http://dhi.nic.in/>

National Automotive Testing and R&D Infrastructure Project (NATRiP)

<http://www.natrip.in/>

Automotive Research Association of India (ARAI)

<https://www.araiindia.com/>

Ministry of Environment and Forest

<http://envfor.nic.in/>

Central Pollution Control Board - Ministry of Environment and Forests

<http://cpcb.nic.in/>

Ministry of New and Renewable Energy

<http://www.mnre.gov.in/>

Ministry of Science & Technology (S&T)

<http://www.dst.gov.in/>

<http://www.serb.gov.in/home.php>

Department of Biotechnology (under the Ministry of Science and Technology)

<http://www.dbtindia.nic.in/>

Council of Scientific and Industrial Research (CSIR)

<http://www.csir.res.in/>

National Innovation Council (NIC)

<http://innovationcouncilarchive.nic.in/>

Ministry of Commerce and Industry

Department of Commerce;

<http://commerce.gov.in/>

Department of Industrial Policy & Promotion

<http://dipp.nic.in/>

Intellectual Property India

<http://www.ipindia.nic.in/>

National Manufacturing Policy

<http://dipp.nic.in/policies-rules-and-acts/policies/national-manufacturing-policy>

National Manufacturing Competitiveness Council (NMCC)

<http://www.dcmsme.gov.in/schemes/nmcpdetail.html>

http://www.dcmsme.gov.in/schemes/nmcp_scm.htm

Delhi - Mumbai Industrial Corridor Development Corporation Limited (DMICDC)

<http://www.dmicdc.com/>

Telecom Equipment Manufacturers' Association of India (TEMA)

<http://tematelecom.in/>

Telecom Equipment and Services Export Promotion Council (TEPC)

<http://www.telecomepc.in>

Electronic System Design & Manufacturing (ESDM)

<http://meity.gov.in/esdm>

Quality Council of India (QCI)

<http://qcin.org>

Standardization Testing and Quality Certification (STQC)

<http://www.stqc.gov.in/>

Controller of Certifying Authorities

<http://cca.gov.in>

Export Inspection Council of India (EIC)

<http://www.eicindia.gov.in>

BSI Group India Pvt. Ltd. (BSI)

<http://www.bsigroup.co.in/>

DQS Certification India Pvt. Ltd. (DQS – AFNOR)

<http://www.dqsindia.com/>

Project Management Institute (PMI – ANSI)

<http://www.pmi.org/>

IEEE Bangalore Section

<http://ieeebangalore.org/>

ASTM International – India

https://www.astm.org/GLOBAL/CIPET_overview.html

Federation of Indian Chambers of Commerce and Industry (FICCI)

<http://ficci.in/>

Confederation of Indian Industries (CII)

<http://www.cii.in/>

Global Innovation and Technology Alliance

<https://www.gita.org.in/>

Federation of Indian Export Organizations (FIEO)

<https://www.fieo.org/>

European Business Group India (EBGI)

<http://ebgindia.com/>

The Associated Chambers of Commerce and Industry of India (ASSOCHAM)

<http://www.assochem.org/index.php>

Cellular Operators Association of India (COAI)

<https://coai.com/>

Association of Unified Telecom Service Providers of India (AUSPI)

<http://www.auspi.in/>

Indian Cellular Association (ICA)

<http://www.ica-ind.org/>

Manufacturers' Association for Information Technology (MAIT)

<http://www.mait.com/>

National Association of Software and Services Companies (NASSCOM)

<http://www.nasscom.in/>

Data Security Council of India (DSCI)

<http://www.dsci.in/>

Indian Electrical & Electronics Manufacturers' Association (IEEMA)

<http://www.ieema.org>

Consumer Electronics and Appliances Manufacturers Association (CEAMA)

<http://www.ceama.in>

Electronic Industries Association of India (ELCINA)

<http://www.elcina.com>

Electrical Research and Development Association (ERDA)

<http://www.erda.org>

Society of Indian Automobile Manufacturers (SIAM)

www.siamindia.com

Association for Intelligent Transport Systems (AITS)

<http://www.itsindia.org/about.php>

Automotive Component Manufacturers Association of India (ACMA)

www.acmainfo.com/

Automotive Tyre Manufacturers' Association (ATMA)

<http://www.atmaindia.org/>

Indian Machine Tool Manufacturers' Association (IMTMA)

www.imtma.in/

9. Acronyms

S. No.	Acronym	Expansion
1	3GPP	3rd Generation Partnership Project
2	AZLA	American Association for Laboratory Accreditation
3	ANSI	American National Standards Institute
4	ASTM	American Society for Testing and Materials
5	GRRF (India)	ARAI Working Party on Brakes and Running Gear
6	GRSG (India)	ARAI Working Party on General Safety Provisions
7	GRE (India)	ARAI Working Party on Lighting and Light-Signaling
8	GRB (India)	ARAI Working Party on Noise
9	GRSP (India)	ARAI Working Party on Passive Safety
10	GRPE (India)	ARAI Working Party on Pollution and Energy
11	APLAC	Asia Pacific Laboratory Accreditation Co-operation
12	APT	Asia Pacific Telecommunication
13	ASSOCHAM	Associated Chambers of Commerce and Industry of India
14	AITS	Association for Intelligent Transport Systems
15	ARIB	Association of Radio Industries and Businesses
16	AUSPI	Association of Unified Telecom Service Providers of India
17	ACMA	Automotive Component Manufacturers Association of India
18	AISC	Automotive Industry Standards Committee
19	AMP	Automotive Mission Plan
20	ARAI	Automotive Research Association of India
21	ATMA	Automotive Tyre Manufacturers' Association
22	ABT	Availability Based Tariff
23	BSNL	Bharat Sanchar Nigam Limited
24	BU	billion unit
25	BOs	Branch Offices
26	BSI	BSI Group India Pvt. Ltd.
27	BEE	Bureau of Energy Efficiency
28	BIS	Bureau of Indian Standards
29	BPO	Business Process Outsourcing
30	COAI	Cellular Operators Association of India
31	CeWIT	Center of Excellence in Wireless and Information Technology
32	CBIP	Central Board of Irrigation & Power
33	CEA	Central Electricity Authority
34	CIPET	Central Institute of Plastics Engineering and Technology
35	CIRT	Central Institute of Road Transport
36	CMVR - TSC	Central Motor Vehicles Rules -Technical Standing Committee
37	CPCB	Central Pollution Control Board

38	CPRI	Central Power Research Institute
39	CPSE	Central Public Sector Enterprise
40	CSS	Centrally Sponsored Scheme
41	C-DAC	Centre for Development of Advanced Computing
42	C-DOT	Centre for Development of Telematics
43	CETEs	Centre for Electronics Test Engineering
44	C-MET	Centre for Materials for Electronics Technology
45	CFR	Centre for Reliability
46	CSD	Centre for Sustainable Development
47	CHDC	Chemical Division Council
48	CNITSEC	China Information Technology Certification Centre
49	CIDCO	City and Industrial Development Corporation
50	CEDC	Civil Engineering Division Council
51	CDMA	Code Division Multiple Acces
52	CoFIP	Collision free Interlaced pilots
53	CASE	Commission for Additional Sources of Energy
54	CASCO	Committee on Conformity Assessment
55	COPOLCO	Committee on Consumer Policy
56	DEVCO	Committee on Developing Country Matters
57	INFCO	Committee on Information
58	REMCO	Committee on Reference Materials
59	CRS	Compulsory Registration Scheme
60	CII	Confederation of Indian Industries
61	CAB	Conformity Assessment Bodies
62	CAF	Conformity Assessment Framework
63	CDR	Conjugate data repetition
64	CEAMA	Consumer Electronics and Appliances Manufacturers Association
65	CGPDTM	Controller General of Patents, Designs & Trade Marks
66	CCA	Controller of Certifying Authorities
67	CAREL	Core Advisory Group for Research and Development (R&D) in Electronics Hardware
68	DSCI	Data Security Council of India
69	DDG	Decentralised Distribution-Cum-Generation
70	DRDO	Defence Research and Development Organisation
71	DMIC	Delhi - Mumbai Industrial Corridor
72	DMICDC	Delhi - Mumbai Industrial Corridor Development Corporation Limited
73	DQS	Delhi Quality Services
74	DBT	Department of Biotechnology
75	DeitY	Department of Electronics and Information Technology
76	DHI	Department of Heavy Industry

77	DIPP	Department of Industrial Policy & Promotion
78	DIT	Department of Information
79	DNES	Department of Non-conventional Energy Sources
80	DST	Department of Science & Technology
81	DoT	Department of Telecommunications
82	DoRT&H	Dept. of Road Transport & Highways
83	DOSTI	Development Organization of Standards for Telecommunication in India
84	ESCAP	Economic and Social Council for Asia and Pacific
85	EV	Electric Vehicle
86	ERDA	Electrical Research and Development Association
87	ELCINA	Electronic Industries Association of India
88	ER&DCI	Electronic Research and Development Centre of India
89	ESDM	Electronic System Design & Manufacturing
90	LITDC	Electronics and Information Technology Division Council
91	ESC	Electronics Export and Computer Software Promotion Council
92	ERTLs	Electronics Regional Test Laboratories
93	ETDCs	Electronics Test and. Development Centres
94	ETDC	Electrotechnical Division Council
95	EMS	Environmental Management Systems
96	EBGI	European Business Group India
97	ETSI	European Telecommunications Standards Institute
98	EIAs	Export Inspection Agencies
99	EIC	Export Inspection Council
100	EPC	Export Promotion Councils of India
101	FRAND	Fair, Reasonable and Non-Discriminatory
102	FAME	Faster Adoption and Manufacturing of (Hybrid &) Electric Vehicles
103	FIEO	Federation of Indian Export Organizations
104	FADC	Food and Agricultural Division Council
105	FDI	Foreign Direct Investment
106	FMCS	Foreign Manufacturers Certification Scheme
107	FOSS	Free and Open Source Software
108	GRs	Generic Requirements
109	G-PON	Gigabit Optical Passive Network
110	GARC	Global Automotive Research Center
111	GEF	Global Environment Facility
112	GISFI	Global ICT Standardization Forum for India
113	GITA	Global Innovation & Technology Alliance
114	GSC	Global Standards Collaboration
115	GSM	Global System for Mobile
116	GC	Governing Council

117	GOLD	Graduate of the Last Decade
118	GIST group	Graphics and Intelligence based Script Technology
119	GDG	Green Discussion Group
120	GHG	Greenhouse gases
121	GDP	Gross Domestic Product
122	HAPS	High Altitude Platform Station
123	ISGF	India Smart Grid Forum
124	ISGTF	India Smart Grid Task Force
125	IBSA	India-Brazil-South Africa
126	ICA	Indian Cellular Association
127	IC3S	Indian Common Criteria Certification Scheme
128	IEEMA	Indian Electrical & Electronics Manufacturers' Association
129	IEGC	Indian Electricity Grid Code
130	IIP	Indian Institute of Petroleum
131	IIQM	Indian Institute of Quality Management
132	IISc	Indian Institute of Science
133	IMTMA	Indian Machine Tool Manufacturers' Association
134	IRC	Indian Roads Congress
135	ISRO	Indian Space Research Organisation
136	ISI	Indian Standards Institute
137	ITTAC	Indian Tyre Technical Advisory Committee
138	ICT	Information and Communications Technology
139	ISMS	Information Security Management System
140	IT&E	Information Technologies and Electronics
141	IT-ITeS	Information Technology - Information Technology Enabled Services
142	ITA 2000	Information Technology Act 2000
143	IEEE	Institute of Electrical and Electronics Engineers
144	IP	Intellectual Property
145	IPR	Intellectual Property Rights
146	ITS	Intelligent Transportation Systems
147	IRs	Interface Requirements
148	IAF	International Accreditation Forum
149	iCAT	International Center for Automotive Technology
150	ICIMOD	International Centre for Integrated Mountain Development
151	ICC	International Code Council
152	IEC	International Electrotechnical Commission
153	ILAC	International Laboratory Accreditation Co-operation
154	INMARSAT	International Mobile Satellite Organization
155	ISO	International Organization for Standardization
156	INTELSAT	International Telecommunication Satellite Organization
157	ITU	International Telecommunication Union

158	IFB	Internet for Business Limited
159	ITSM	IT Service Management
160	JNNURM	Jawaharlal Nehru National Urban Renewal Mission
161	KYC	Know Your Customer
162	LTE	long-term evolution
163	M2M	Machine To Machine
164	MTNL	Mahanagar Telephone Nigam Limited
165	MAXs	Main Automatic Exchanges
166	MSDC	Management and Systems Division Council
167	MAIT	Manufacturers' Association for Information Technology
168	MDA	Market Development Assistance
169	MEDC	Mechanical Engineering Division Council
170	MHDC	Medical Equipment and Hospital Planning Division Council
171	MoU	Memorandum of Understanding
172	MTDC	Metallurgical Engineering Division Council
173	MCIT	Ministry of Communications & Information Technology
174	MoCA	Ministry of Consumer Affairs
175	MeitY	Ministry of Electronics & Information Technology
176	MoEF	Ministry of Environment & Forests
177	MoHI&PE	Ministry of Heavy Industries & Public Enterprises
178	MSME	Ministry of Micro, Small & Medium Enterprises
179	MNRE	Ministry of New and Renewable Energy
180	MNES	Ministry of Non-Conventional Energy Sources
181	MoP	Ministry of Power
182	MoRT&H	Ministry of Road Transport & Highways
183	MoUD	Ministry of Urban Development
184	M-SIPS	Modified Special Incentive Package scheme
185	MLA	Multilateral Recognition Arrangement
186	MRA	Mutual Recognition Agreement
187	NABCB	National Accreditation Board for Certification Bodies
188	NABET	National Accreditation Board for Education and Training
189	NABH	National Accreditation Board for Hospitals and Healthcare Providers “
190	NABL	National Accreditation Board for Testing and Calibration Laboratories
191	NAMP	National Air Monitoring Programme
192	NASSCOM	National Association of Software and Services Companies
193	NATRAX	National Automotive Test Tracks : Indore, Madhya Pradesh
194	NATRIP	National Automotive Testing and R&D Infrastructure Project
195	NCVRS	National Center For Vehicle Research & Safety
196	NCST	National Centre for Software Technology
197	NeGP	National e-Governance Plan

198	NEMMP	National Electric Mobility Mission Plan
199	NIC	National Informatics Centre
200	NInC	National Innovation Council
201	NIAIMT	National Institute for Automotive Inspection, Maintenance & Training
202	NIIPM	National Institute of Intellectual Property Management
203	NIUA	National Institute Of Urban Affairs
204	NIMZs	National Investment & Manufacturing Zones
205	NMCC	National Manufacturing Competitiveness Council
206	NMP	National Manufacturing Policy
207	NPE	National Policy on Electronics
208	NSGM	National Smart Grid Mission
209	NTP	National Telecom Policy
210	NT	Network
211	NNI	Network-Network Interfaces
212	NIP	New Item Proposal
213	NGN	Next Generation Network
214	PASC	Pacific Asia Standards Congress
215	PIS	Patent Information System
216	PCDC	Petroleum, Coal and related Products Division Council
217	PMUs	Phasor Measurement Units
218	PMA	Preferential Market Access Policy
219	PSI	Product Specific Information
220	PGEDC	Production and General Engineering Division Council
221	PMI	Project Management Institute
222	PRSG	Project Review and Steering Groups
223	PIII	Public Information Infrastructure and Innovations
224	PPP	Public Private Partnership
225	PSUs	Public Sector Undertakings
226	QCI	Quality Council of India
227	QMS	Quality Management System
228	QoS	Quality of Service
229	RvA	Raad vor Accreditate (Dutch Council for Accreditation)
230	RNES	Radio Network Evolution and Spectrum
231	RC	Regional Coordination
232	ROs	Regional Offices
233	RET	Renewable Energy Technology
234	R&D	Research and Development
235	RDSO	Research Design and Standards Organisation
236	RBI	Reserve Bank of India
237	RCAI	Root Certifying Authority of India
238	RAXs	Rural Automatic Exchanges

239	SERB	Science and Engineering Research Board
240	SACC	Scientific Advisory Committee of the Cabinet
241	SESEI	Seconded European Standardization Expert in India
242	SSC	Sector Skill Council
243	SDoC	Self-Declaration-of Conformity
244	SCL	Semiconductor Complex Limited
245	SR	Service Requirements
246	SASA	Services, Applications, Systems and Architectures
247	SMEs	small and medium enterprises
248	SIAM	Society of Indian Automobile Manufacturers
249	SACEP	South Asia Co-operative Environment Programme
250	SAARC	South Asian Association for Regional Co-operation
251	SARSO	South Asian Regional Standards Association
252	SIG	Special Interest Group
253	STQC	Standardization Testing and Quality Certification
254	SDO	Standards development organization
255	SEPs	Standards Essential Patents
256	SERC	State Electricity Regulatory Commissions
257	SG	Study Groups
258	TCs	Technical Committees
259	TSs	Technical Standards
260	TDB	Technology development Board
261	TCOE	Telecom Centres of Excellence
262	TEC	Telecom Engineering Centre
263	TEPC	Telecom Equipment and Services Export Promotion Council
264	TEMA	Telecom Equipment Manufacturers Association of India
265	TRAI	Telecom Regulatory Authority of India
266	TSPs	Telecom Service Providers
267	TSDSI	Telecommunication Standards Development Society for India
268	TCL	Telecommunications Consultants (India) Limited
269	TDSAT	Telecommunications Dispute Settlement and Appellate Tribunal
270	TSDO	Telecommunications Standard Development Organization
271	TSTP	Test Schedule & Test Procedures
272	TXDC	Textile Division Council
273	CSIR	The Council of Scientific and Industrial Research
274	FICCI	The Federation of Indian Chambers of Commerce and Industry
275	NATRIP	The National Automotive Testing and R&D Infrastructure Project
276	TMA	Tractor Manufacturers Association
277	TEDC	Transport Engineering Division Council
278	2D-POD	Two dimensional phase offset diversity

279	UIDAI	Unique Identification Authority of India
280	UNCED	United Nations Conference on Environment and Development
281	UNEP	United Nations Environment Programme
282	UNICEF	United Nations International Children's Emergency Fund
283	UNI	User-Network Interfaces
284	VRDE	Vehicle Research and Development Establishment
285	VSNL	Videsh Sanchar Nigam Limited
286	VPP	virtual power plants
287	WQM	Water Quality Monitoring
288	WRDC	Water Resources Division Council
289	WAMS	Wide Area Monitoring Systems
290	WIE	Women in Engineering
291	WG	Working Groups
292	WTO/TBT	World Trade Organization - Technical Barriers to Trade