



Indian Standardization Landscape

“Priority Sectors – Digitization and Green & Clean technologies”

July 2023



Agenda

- **Main Indian Standardisation Bodies**
 - BIS
 - TSDSI
 - TEC
 - ARAI
- **Other Standards Developing Organizations (SDOs)**
- **Other key actors influencing standards development in India**
- **Accreditation, Testing & Certification**
- **Foreign Standards Development Organizations in India**



Indian Standardisation Bodies

BIS,TSDSI,TEC and ARAI



Main Standardization bodies in India

Indian Standardization



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graph LR; A((Indian Standardization)) --- B[Bureau of Indian standards (BIS)]; A --- C[Telecommunication Standards Development Society for India (TSDSI)]; A --- D[Telecommunication Engineering Centre (TEC)]; A --- E[Automotive Research Association of India (ARAI)];
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Bureau of Indian standards (BIS)



Telecommunication Standards Development Society for India (TSDSI)



Telecommunication Engineering Centre (TEC)



Automotive Research Association of India (ARAI)



Bureau of Indian Standards (BIS)



Introduction...

- BIS –National Standards Body of India Functioning Under Ministry Of Consumer Affairs.

Objectives:

- Harmonious development of standardization & quality control
- Growth and development of Indian industry, commerce and exports
- Consumer protection
- Certification schemes for products and systems

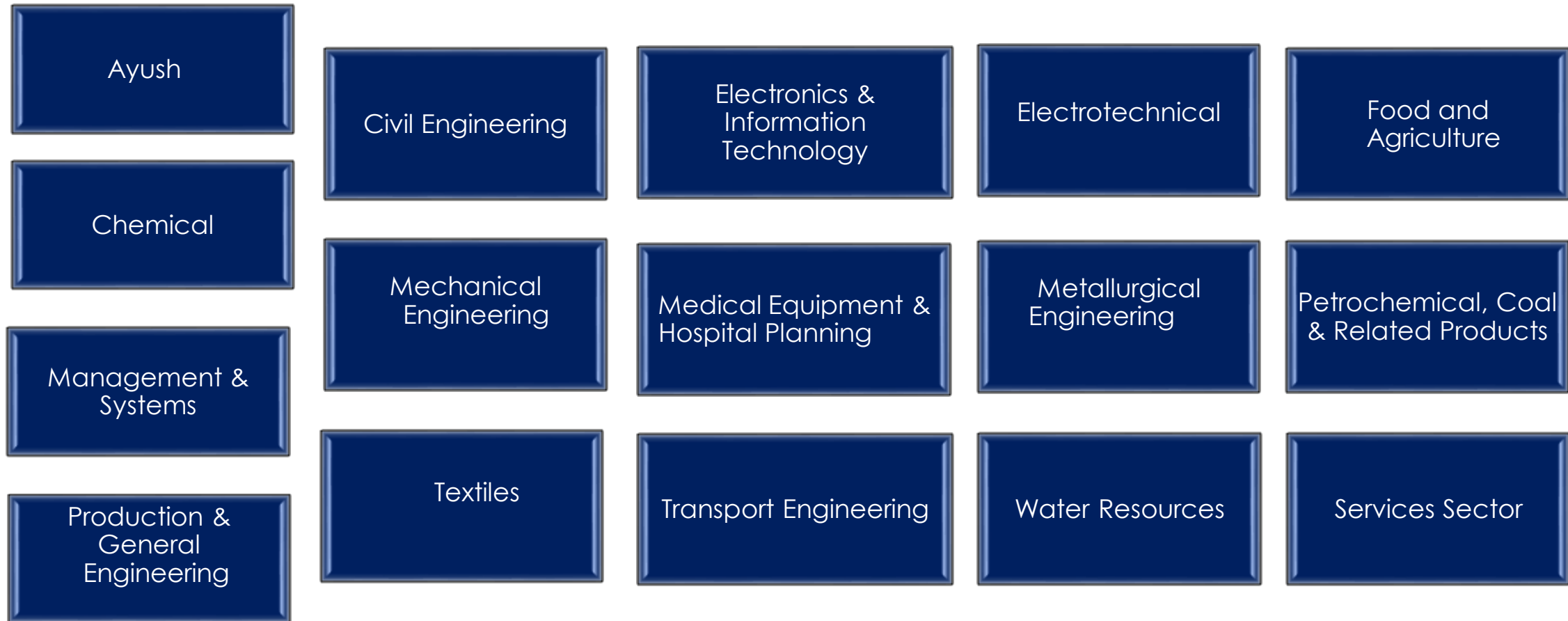
Activities:

- **Standards Formulation**
 - **Product Certification Scheme**
 - **Compulsory Registration Scheme**
 - **Foreign Manufacturers Certification Scheme**
 - Hall Marking Scheme
 - Laboratory Services
 - **Laboratory Recognition Scheme**
 - Sale of Indian Standards
 - Consumer Affairs Activities
 - Training Services
 - Information Services
- Works as **WTO - TBT Enquiry Point** for India
 - **Standardization Cell:** a channel of communication among Ministries/Depts./Industry Associations and BIS to facilitate the identification of new subjects, relevant experts for standardization in different sectors



Technical Committees: BIS

16 Sectors, 16 Division Councils, 400+ Sectional Committees, 22,300+ Standards



Standards National Action Plan (SNAP)

- In 2022, BIS published [Standards National Action Plan 2022-27 \(SNAP\)](#), the plan was developed to ensure that BIS standards are based on a strong foundation with systems that are aligned to meet the current and anticipated standardization needs.
- **Drivers of Future Standardization in India**
 1. Economic growth and trade
 2. Public policy and regulation
 3. Digital engineering and other enabling technologies
 4. Climate change and Sustainability
- **Strategic imperatives**
 - Strengthen participation of all stakeholder interests in Standardization
 - Improve ability of the standardization system to respond to the needs of stakeholders and support national priorities
 - Build capability and capacity of various sections of stakeholders for effective participation in standardization
 - Innovate and improve processes and tools for efficient and timely development of standards
 - Promote synergy, coherence and cooperation in standardization activities
 - Strengthen participation and influence international and regional standardization and work towards facilitating trade through standards
 - Strengthen national outreach programmes to promote awareness and understanding of the impact and benefit of standards
- **Key Standardization Areas**
 - AI, IoT, Blockchain and DLT, Bigdata, Geographic Information System, Metaverse, Smart cities with ICT aspects, Data privacy, Cyber security, Mobile security guidelines, Data maturity assessment and data governance, digitally delivered services, cloud services, digital signature services, Green energy generation and storage related equipment, Digital technologies in construction, Batteries, Grid integration, Smart Grid, Circular Economy, Waste Management, Environment Management etc.

BIS - Product Certification Scheme

Scheme - I (ISI Mark Scheme)

- ISI mark is a standards-compliance mark for industrial products in India since 1955 and it certifies that a product conforms to an Indian standard (IS) published by BIS.
- So far, BIS has over 400 products under ISI Mark Scheme which require mandatory certification, e.g. below.

Product category	Sub Category
Cement	Different kind of Portland cement, sulphated cement
Household Electrical goods	RCCBs, RCVOs, Lamps, Iron, Water heaters, Electric Stoves, Room Heaters, Switches, Cables, Batteries,
Food & Related Products	Baby formula, Processed cereal based foods, different kinds of milk powder, Various kinds of condensed milk, Packaged Natural Mineral Water, Infant milk substitutes, Milk-cereal based weaning foods, Hexane, Food grade, Plastic Feeding Bottles, Glass Feeding Bottles.
Oil Pressure Stoves	Oil pressure stove, offset burner type, Multi-burner oil pressure stoves
Automobile Accessories	Tubes for pneumatic tyres, Pneumatic tyres for 2W, 3W, passenger car vehicles, commercial vehicles
Cylinder, Valves and Regulation	LPG Cylinders, Valves, Regulators
Medical Equipment	Clinical thermometers , Diagnostic Medical X-Ray Equipment

Product category	Sub Category
Steel Products	Steel Wires, steel bars, Steel tubes, Steel Ply, Structural steel
Electrical Transformers	Outdoor type Oil immersed Distribution Transformers upto and including 2500 kVA
Electrical Motors	Energy Efficient Induction Motors-Three Phase Squirrel Cage
Capacitors	A.C. motor capacitors, Power Capacitors of Self-healing Type, Shunt Power Capacitors of the Non-Self-Healing Type
Chemicals & Fertilizers	Caustic Soda, Boric Acid ,Poly Aluminium Chloride, Acetic Acid, Aniline, Methanol,
Kitchen Appliances	Hand-held Blender, Domestic Electric Food Mixer (Liquidizers and Grinders) and Centrifugal Juicer
Toys	Safety of Toys....

BIS - Compulsory Registration Scheme

Scheme - II (Compulsory Registration Scheme - CRS)

BIS and Ministry of Electronics & IT (MEITY) introduced CRS in 2012

- BIS is operating CRS as per the provision of Scheme - II of the [BIS \(Conformity Assessment\) Regulations, 2018](#)
- Under this scheme it is mandatory for manufacturers to get their products registered before launching them in the Indian market.
- As of June 2023, [81 electronic products](#) have been notified by Indian Ministries including under CRS.
- Overseas Manufacturers must have a local representative in India to represent the manufacturer locally and will be responsible for placing the product in the market.
- To make this program robust, [Market Surveillance](#) has been designed to ensure compliances
- For more information, please [click here>>](#) and for the list of BIS approved labs, please [click here>>](#)

Foreign Manufacturers Certification Scheme (FMCS)

- BIS has been operating a Foreign Manufacturers Certification Scheme (FMCS) since the year 2000 and now under the [BIS Act 2016 and Rules & Regulations](#) framed there under.
- Under FMCS, licence is granted to a Foreign Manufacture for the use of Standard Mark on a product that conforms to an Indian Standard (IS).
- Scheme is applicable for the grant of licence for all [products](#) except [Electronics & IT Goods notified by MeitY](#).
- Licence is granted by Foreign Manufacturers Certification Department (FMCD) located at BIS Headquarters, New Delhi.

[More information about FMCS>>](#)



Laboratory Recognition Scheme

BIS also operates “Laboratory Recognition Scheme (LRS)” through which different types of laboratories in India and outside India are recognized.

- LRS is governed by the provisions under Section 13 (4) of The BIS Act 2016 and Rule 32 of the BIS Rules, 2018.
- Scheme covers guidelines for recognition and de-recognition of the laboratories

Objectives:

- To ensure that Indian laboratory adhere to the requirements for foreign certification.
- To make sure that when certification is given to laboratories, conformity assessment procedures are followed.
- Numerous testing facilities are being developed through various projects.
- To guarantee that testing laboratories both inside and outside of India adhere to rules.
- **BIS Laboratories or Recognized Lab:**
 - [Group-1 List of BIS Recognised Laboratories: 289](#)
 - [Group-2 Specialized Labs / Other Labs – Facilities Of Which Are Being Utilized By BIS: 260](#)
 - [BIS labs: 8](#)



International Cooperation

- Founder member of ISO
- Represents India through Indian National Committee (INC) in the IEC as a member
- Participating (P) member of 500+ committees and Observer (O) member in 180+ committees of ISO
 - India holds the Secretariat of 11 ISO committees and Convenorship of 21 ISO working groups.
- Participating member of 120 Technical Committees and observer member in 54 Technical Committees of IEC.
 - India holds the Chairmanship of the IEC Systems Committee on 'Low Voltage Direct Current (LVDC) and LVDC for electricity access' and of IEC/TC 33 'Power capacitors and their applications'
- Member of regional standards bodies like Pacific Area Standards Congress (PASC) and South Asian Regional Standards Organization (SARSO).
- 31 Memorandum of Understanding (MoU) & 8 Bilateral Agreements
 - MoU b/w [ETSI⇌BIS](#), [CEN-CENELEC⇌ BIS](#) and [CEN \(EN-115\)⇌BIS](#)



Telecommunication Engineering Centre (TEC)



Introduction

TEC is the technical wing of DoT (Department of Telecommunications), Ministry of Communications and acts as a National Standards Body (NSB) for Telecom sector

Functions:

- Specification of common standards for 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
- Designated National Enquiry point for WTO-TBT for telecom sector

TEC has four Regional Centres (RTECs): RTEC (NR) at New Delhi, RTEC (ER) at Kolkata, RTEC (WR) at Mumbai and RTEC (SR) at Bengaluru



Technical Activities: TEC

Technical activities are carried out through various specialized core divisions of TEC

List of divisions in TEC

- [6G Technologies](#)
- [Access Lab \(AL\)](#)
- [Administration \(A\)](#)
- [Control Lab \(CL\)](#)
- [Convergence & Broadcasting \(C&B\)](#)
- [Customer Premises Equipments & Terminals Lab \(CPE & TL\)](#)
- [Fixed Access \(FA\)](#)
- [Future Networks \(FN\)](#)
- [Indigenous Manufacturing Promotion & TBT Enquiry Point \(IMP & TEP\)](#)
- [Industry Coordination \(IC\)](#)
- [Information Technology \(IT\)](#)
- [Internet of Things \(IoT\)](#)
- [Mobile Technologies \(MT\)](#)
- [MTCTE](#)
- [Personnel & Training \(P&T\)](#)
- [Radio \(R\)](#)
- [Regional Coordination \(RC\)](#)
- [Safety Lab \(SL\)](#)
- [Standardization \(SD\)](#)
- [Telecom Security \(TS\)](#)
- [Telecom Skill Development \(TSD\)](#)
- [Transmission \(TX\)](#)
- TEC is also responsible for [conformity Assessment](#) activities and has been appointed as Designating Authority (DA) for Telecom Equipment
- M2M WGs at TEC have released various [Technical Reports](#) (Release 1, Release 2 and Release 3).

Mandatory Testing and Certification of Telecom Equipment (MTCTE)

Department of Telecommunications (DoT) vide [Gazette Notification No. G.S.R. 1131\(E\) dated 5th September 2017](#) amended the Indian Telegraph Rules, 1951 ([Amendment 2017](#)) to introduce MTCTE

Objectives of MTCTE

- ✓ that any Telecom Equipment does not degrade performance of existing network to which it is connected;
- ✓ safety of the end-users;
- ✓ protection of users and general public by ensuring that radio frequency emissions from equipment do not exceed prescribed standards;
- ✓ that telecom equipment complies with the relevant national and international regulatory standards and requirements.

TEC is implementing MTCTE and has specified Essential Requirements (ERs) for various telecom equipment, which would need to be met before TEC grants the certification.

- Equipment needs to be tested only in [TEC designated CAB](#), or recognized CAB of MRA partner country and based upon test reports, certificate shall be issued by TEC.
- Surveillance of products under MTCTE is carried out by Licensed Service Area (LSA) field units of DoT.

[More information about MTCTE](#)



TEC Standardization Guide (Policy)

TEC approved a policy document 'Standardization Guide' based on ISO/IEC Guide 21-1 for adoption of standards of TSDSI & international standards bodies into National Standards.

- It outlines the process to be followed and the procedure to be used by TEC, while ratifying/ adopting TSDSI /international telecom standard as National standard in India.

Main points of Standardization Guide:

- TEC will adopt standards after wide public consultation process instead of ratification
- Standards adopted by TEC as National Standards shall be voluntary unless made mandatory by its use, reference or adoption by regulation/ Government directive.
- Adoption may be parallel adoption i.e., during standard development phase (where TEC is participating in standard development) or after publication of the standard by TSDSI / international standard body.
- TEC shall implement the standard adoption process with the help of institutional framework which will consist of: Telecom Standards Advisory Committee (TSAC); Consultative Committees (CC); Task Force (TF) setup for the purpose; Standardization Secretariat;
- IPR shall not be subject matter of adoption.
- If after adoption of TSDSI/ any other SDO standard by TEC, the Global Standards Body like ITU etc. accepts/adopts a revised/ amended version of the parent International Standard, then TEC may adopt such revised/ amended version. For more information, please [click here>>](#)

International collaboration

TEC participates & follow programmes of standardization bodies such as ITU, 3GPP, OneM2M, ETSI, IEEE, IETF, APT, OCEANIS etc. (directly/indirectly)

3rd Generation Partnership Project (3GPP)

- Adopted/adopting 3GPP standards transposed by Indian SDOs like TSDSI

OneM2M

- TEC has approved adoption of TSDSI transposed oneM2M Release 2 in September 2020 and Release 3 in August 2022.

International Telecommunication Union (ITU)

- National Working Groups (NWGs) have been constituted in TEC in line with ITU-T Study Groups
- Each NWG has members from the industry, academia, government, research organizations etc.

Telecommunication Standards Development Society, India (TSDSI)



Introduction...

- Indian Telecom Industry, comprising operators and manufacturers, Academia and R&D organizations formed TSDSI on 7th January 2014, with an objective to contribute to next generation telecom standards and drive the eco-system of IP creation in India.
- It is an autonomous 'not for profit' SDO for Telecom products and services in India
- Department of Telecommunications (DoT) & Ministry of Electronics and Information Technology (MEITY), Govt. of India are jointly supporting TSDSI as India's Telecom/ICT SDO.

Functions:

- ✓ Develop standards to support new requirements based on research & innovation;
- ✓ Take Indian requirements to global standards organizations;
- ✓ transparent, open-to-all-members process for making standards;
- ✓ Creating and Safe-guarding related IPRs;
- ✓ to create standards-based manufacturing expertise in the country;
- ✓ Providing guidance and leadership to other developing countries;



Technical activities of TSDSI are conducted in two Study Groups

Key focus areas:

- ## Study Group 2- Services & Solutions

- Security-Trust-Privacy-Data Protection
- Applications and Service Layer Standards, AI/ML
- Smart Infra, Critical Communications, Cloud & IoT



TSDSI standardization roadmap 2021-23

TSDSI released its [Standardization Roadmap 2.0 \(2021-2023\)](#) to identify technology topics that are strategically important for carrying out technical studies or developing standards

- Roadmap identified 16 topics, arranged in 9 clusters.
- Topics covered in the roadmap are in addition to the ongoing work in the Study Groups or any other item introduced in the Study Groups for development of standards.



International Collaborations

- Letter of Intent to Co-operate with ARIB (Japan), ATIS (US), CCSA (China), TTC (Japan)
- Cooperation agreements with international SDOs: ETSI (Europe), Open Connectivity Foundation (OCF)
- MoU with 5G IA, ATSC, GCF, IEEE-SA, TAICS, TIA (US), TTA (Korea), WWRF
- Member of ITU
 - Associate member of ITU-R SG5 and ITU-T SG15.
 - TSDSI members are also contributing to Focus Groups on Machine Learning for Future Networks (FG ML5G) and Autonomous Networks (FG AN).
- Organizational Partner (OP) of 3GPP
 - TSDSI has transposed 3GPP specifications from Release 10 to 17 (total 428 documents) into TSDSI Standards (<https://tsdsi.in/3gpp/>)
 - TSDSI's 5Gi standard has also been formally merged with the 3GPP 5G Standard and implemented into the 3GPP Rel-17 NR specifications.
- Partner Type I of oneM2M
 - TSDSI has Transposed oneM2M Specifications Rel. 2 and Rel. 3 into TSDSI Standards. (<https://tsdsi.in/onem2m/>)
- Constituent SDO of Global Standards Collaboration (GSC)

Automotive Research Association of India (ARAI)



Automotive Research Association of India (ARAI)

- **ARAI** was established in 1966 and is the leading automotive R&D organization set up by Automotive Industry with Government of India.
 - Working in harmony with its Members, Customers and Government
 - provides services and expertise in the areas of Engineering Services, Certification & Standardization, Research & Development, Technology Development and Knowledge Initiatives.
- Govt. approved ARAI to carry out mandatory certification testing of vehicles, engines, and automotive components to ensure they follow the Indian regulatory standards.
- ARAI is certified to ISO 9001, ISO 14001, ISO 27001 and ISO 45001; and is also accredited for its testing and calibration scope as per ISO/IEC 17025 by QCI-NABL.
- ARAI has 6 GR groups (subsidiary technical bodies of UNECE WP.29):
 - ✓ 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
- Published 290+ standards
- Recognized by international certification authorities of Singapore, Netherlands and Australia for carrying out tests as per their standards and regulations.

Other Standards Developing Bodies in India

Statutory provisions under Section 10 (2) (c) of BIS Act 2016 and Section 30 of BIS Rules, 2018 confer upon BIS, powers to recognize any SDO in India for development of standards.

Industries and professional bodies, which formulate sector specific standards are:

- [Bureau of Energy Efficiency \(BEE\)](#)
- [Ministry of Environment, Forest and Climate Change \(MoEFCC\)](#)
 - [Central Pollution Control Board \(CPCB\)](#)
- [Export Inspection Council of India \(EIC\)- Ministry of Commerce](#)
- [Quality Council of India \(QCI\)](#)
- [Standardization Testing and Quality Certification \(STQC\) Directorate – MEITY](#)
- [Central Electricity Authority \(CEA\) - Ministry of Power](#)
- [Ministry of Road Transport and Highways \(MoRTH\)](#)
- [Agricultural and Processed Food Products Export Development Authority \(APEDA\)](#)
- [Directorate of Marketing and Inspection \(DMI\)- Ministry of Agriculture](#)
- [Food Safety and Standards Authority of India \(FSSAI\)](#)

Dedicated Standards bodies

- [Railways Design & Standards Organization \(RDSO\)](#)
- [Directorate of Standardization \(DoS\) – Ministry of Defence](#)
- [Inter Plant Standardization in Steel Industry \(IPSS\)](#)

Other Key actors influencing standards development

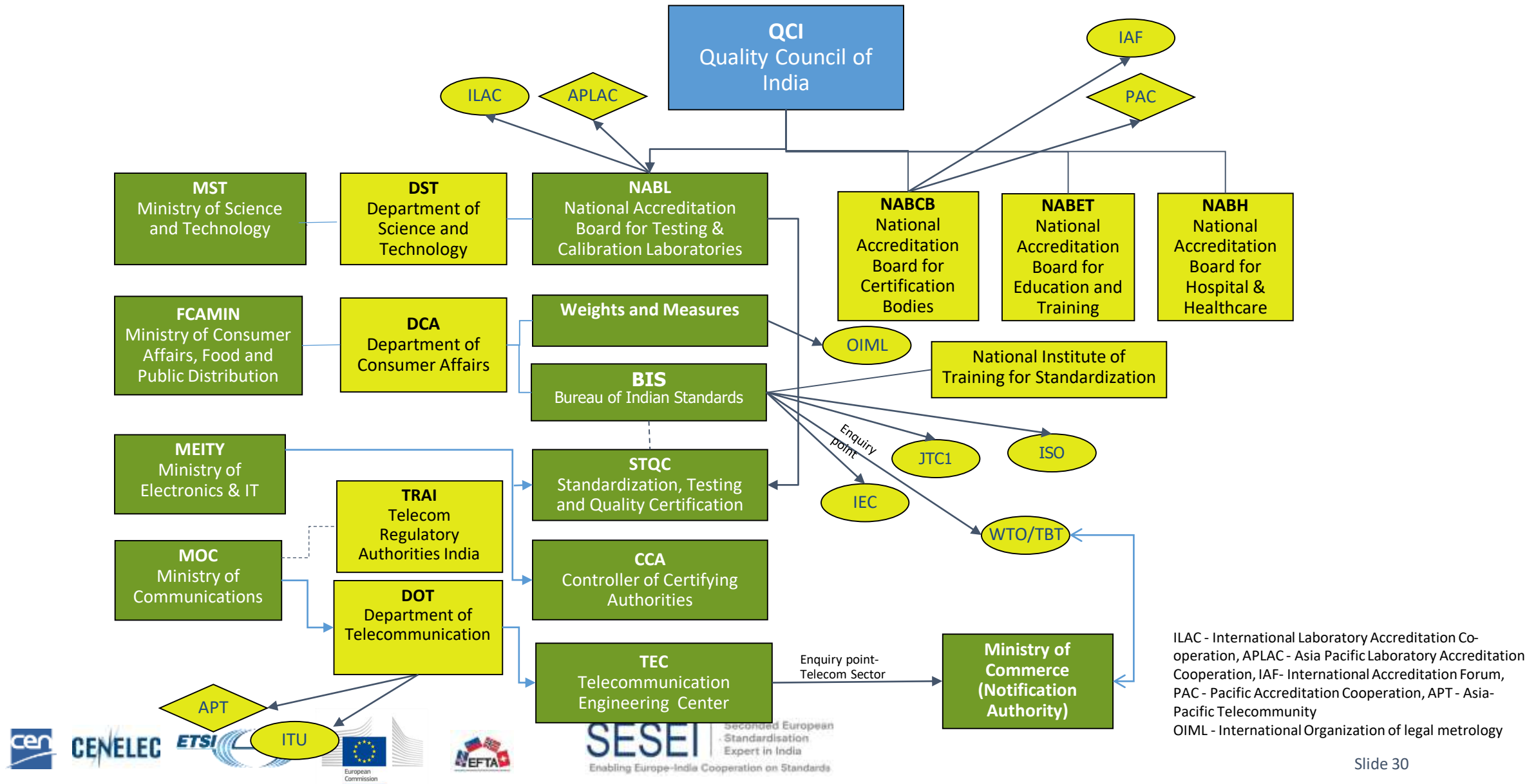
There are several key actors that influence standards development in the country such as:

- **Government Ministries/Agencies to ensure that standards are aligned with their respective sectors and regulatory requirements :**
 - Ministry of Electronics and Information Technology (MEITY), Ministry of Power (MoP), Ministry of New and Renewable Energy, Ministry of Environment, Forest and Climate Change (MoEF&CC), and Ministry of Commerce and Industry (MCI), Ministry of Housing and Urban Affairs (MOHUA), Ministry of Road and Transport Highways (MoRTH) among others.
- **Industry Associations to provide inputs, expertise, and recommendations to influence the development of standards that are relevant to their respective industries. :**
 - Confederation of Indian Industry (CII), Federation of Indian Chambers of Commerce and Industry (FICCI), Associated Chambers of Commerce and Industry of India (ASSOCHAM), Manufacturers` Association for Information Technology (MAIT), EBG federation, Cellular Operators Association of India (COAI), Data Security Council of India (DSCI), Global ICT Standardization Forum for India (GISFI), Broadband India Forum (BIF), IET India and The Energy and Resources Institute (TERI) etc.
- **Research Institutions and Academia:** They conduct research, provide technical expertise, and participate in standardization activities.
 - Indian Institutes of Technology (IITs), Indian Institute of Science (IISc), DST, C-DOT, CEWiT, C-DAC, Council of Scientific and Industrial Research (CSIR) and National Laboratories etc.

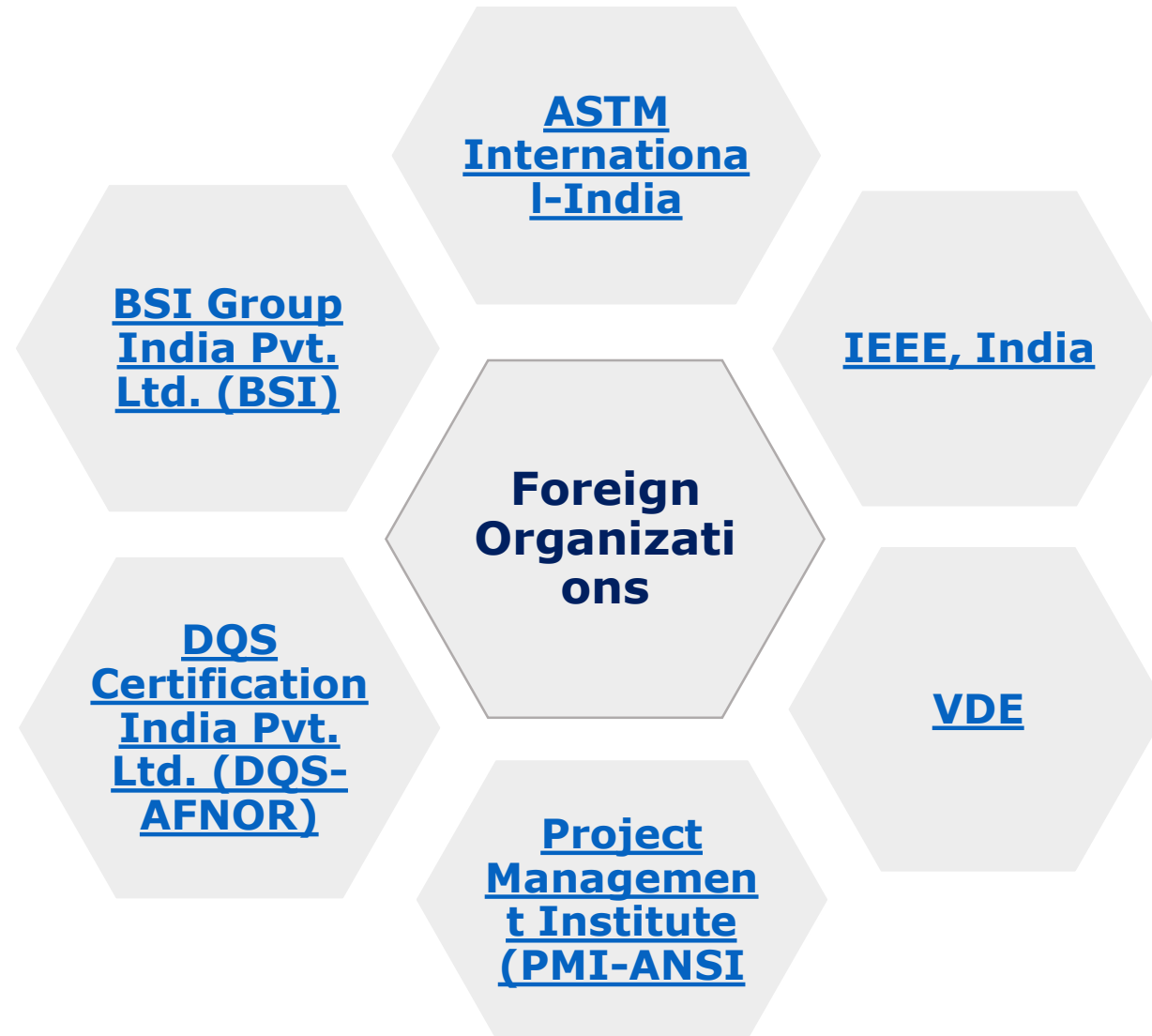
Accreditation, Testing and Certification



Conformity Assessment, Certification



Foreign SDOs in India



Thank you!

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