

Draft STANDARDS NATIONAL ACTION PLAN 2022

Bureau of Indian Standards

ABOUT BIS

Bureau of Indian Standards (BIS), the National Standards Body (NSB) of India was established under the *BIS Act*, 1986 and came into existence on 1 April 1987 assuming the functions of the erstwhile Indian Standards Institution (ISI). The ISI came into being on 6 January 1947. The *BIS Act*, 2016 came into force on 12 October 2017 superseding *BIS Act* 1986. *BIS Act*, 2016 provides for the establishment of a national standards body for the harmonious development of the activities of standardization, conformity assessment and quality assurance of goods, articles, processes, systems and services and for matters connected therewith or incidental thereto.

BIS through its core activities of standardization and conformity assessment, has been benefiting the national economy by providing safe, reliable and quality goods; minimizing health hazards to consumers; protecting the environment, promoting exports and imports substitutes; controlling over proliferation of varieties, etc. The standards and certification schemes of BIS apart from benefitting the consumers and industry also support various public policies especially in areas of product safety, consumer protection, food safety, environment protection, building and infrastructure development, etc.

BIS also represents India in international standards bodies like International Organization for Standardization (ISO) and via the Indian National Committee in the International Electrotechnical Commission (IEC) and participates actively in the international standardization work undertaken in these bodies. BIS presents the national viewpoints on new areas taken up for international standardization and on various draft international standards during the process of development of these standards so that the country's interest is protected and reflected in these standards. This also enables the BIS technical committees to consider adoption of the International Standards as Indian Standards, with or without modifications, in order to enable our products and services to integrate with global trade and commerce.

STANDARDIZATION SYSTEM IN INDIA

- **BIS and its Mandate**

BIS operates under the framework of the *BIS Act* of 2016 and the Rules and Regulations framed thereunder. As mandated in the *BIS Act*, 2016, BIS may establish, publish, review and promote the Indian Standards in relation to any product, process, system or service. BIS may also adopt as an Indian Standard any standard, established by any other institution in the country or abroad.

- **Standard Setting Process of BIS**

The Indian Standards are developed by technical committees that are representative of various stakeholders having interest in the relevant subject of standardization under the scope of such committees through a process of consultation so that views of all are given due consideration and a consensus is evolved in formulating a standard. The stakeholders involved in national standardization can broadly be categorized as industry, consumers/users, technologists (R&D and scientific institutions, academia, individual subject experts, etc) and government departments/regulators.

The process of standards development of BIS is aligned with accepted international best practices that are based on the core principles of openness, transparency, impartiality and consensus. The process begins with the identification of the standardization needs of the given sector or subject following which the development of the standard is taken up and planned by the relevant technical committee. Apart from consultation within the technical committees, draft standards are also open for public views/comments.

A standard by definition is a voluntary document and therefore its implementation is not compulsory unless compliance to it is mandated through a regulation/order or when it forms a part of a contract between the concerned parties.

- **Standardization by Other Bodies in India**

BIS formulates Indian Standards across various technology areas and in the service sector, except for some specific areas like drugs and pharmaceuticals, roads and bridges, railways and telecommunications. Apart from BIS there are other bodies that carryout domain specific standards development in their respective subject areas. Such standards are for sector specific applications or organization specific use or for the purpose of regulating the relevant sector. A vast majority of these bodies that are developing domain specific standards are part of the Government system, and few of them are dedicated standardization bodies. While in most cases the area of work of these bodies and BIS are explicit and there is conscious effort to avoid any overlap or duplication of work, there are however few cases where parallel work is taking place in BIS as well as such domain specific bodies such as in the areas of food safety and telecommunications.

As the NSB, it is the responsibility of BIS to ensure that there is absolute synergy and coherence in the standardization work that is taking place across various bodies in the country and to avoid the possibility of any duplication, overlap or conflict in such work. Conflict or duplication of work is avoided where parallel standardization work is taking place in BIS and other domain specific bodies through close coordination between BIS and the respective bodies. BIS is also consciously working towards an overall objective to ensure that there is only one standard nationally on any subject in the country.

CONTEXT OF STANDARDS NATIONAL ACTION PLAN (SNAP)

Standardization supports economic growth, enhances competitiveness and fosters technological developments. It is also a tool to influence public policies such as health and safety, protection of the environment and safeguard consumer interests. By ensuring a level playing field and defining common criteria of acceptance of goods, standards are also being used extensively as tools to support regulatory framework and to facilitate trade. Standards are

therefore considered as key facilitators of all economic activities. Given the above, standards development has to be based on a strong foundation with systems that are aligned to meet the current and anticipated standardization needs, prioritized and coordinated in such a manner so as to remain effective in addressing emerging issues.

- **STANDARDS NATIONAL ACTION PLAN (SNAP)**

In context of the above, BIS had framed the Standards National Action Plan (SNAP) in the year 2019, proposing a set of actions that would enable BIS to fulfil its mandate as the NSB and deliver standards according to the market needs in an efficient and timely manner. The SNAP 2019 had evolved following an elaborate process of consultation with stakeholders which included industry, ministries and government departments, regulators, scientific and research bodies, academia, consumer bodies and civil society organizations as well as experts from BIS technical committees and supplemented by an assessment of national socio-economic considerations through a process of secondary research in order to set the standardization priorities. SNAP 2019 identified five key strategic objectives along with a set of action points and a number of key standardization subjects/topics to be taken up for standardization. SNAP 2019 had an implementation timeframe of 3 years which ended in 2022 following which framing of the next version of SNAP was taken up.

This version of SNAP has been developed through the coordinated efforts of a large group of constituent stakeholders from the industry, government, scientific and R&D institutions, academia, consumer groups and civil society organizations and presents the standardization vision of a broad cross-section of stakeholders.

The SNAP envisions to also determine the strategic initiatives that BIS as the national standards body needs to consider so as to:

- i. Create strong and trusted eco-system for national standards development in the country that is broad-based, inclusive, responsive and efficient in meeting the challenges posed by economic and technological developments;
- ii. Support uptake of current technologies and best practices by industry and business through standards so as to create competitive advantage, enter new markets and foster innovation;
- iii. Promote the key message and benefits of standards among the policy makers, industry and public at large; and
- iv. Align national standardization efforts to enhance the competitive position of Indian products and services and establish a Brand India quality in the global market, while addressing critical issues of sustainability and climate change.

Accordingly, SNAP 2022 defines the standardization vision and mission of BIS, identifies the strategic imperatives of BIS, draws an action plan towards addressing these through various initiatives, enumerates a set of sectoral priorities in standardization, identifies key standardization topics/subjects that are to be taken up assigning the priorities, to be implemented in the next five years, i.e. 2022 to 2027. For all these initiatives and associated actions, the BIS technical committees would play a key role and serve as a guiding force.

- **VISION**

The vision represents aspirations and desired future position of BIS as an efficient and vibrant standard making body.

Reckoned as the custodian of the national standardization system and a National Standards Body of global repute, delivering benefits to the nation and Indian society.

- **MISSION**

The mission defines what BIS needs to do to achieve the standardization vision.

Through a network of experts who are representative of all stakeholder interests, formulate Indian Standards that address national and market priorities, support sustainable development, health and safety, trade, public policy, and are highly regarded by the public.

- **DRIVERS OF FUTURE STANDARDIZATION IN INDIA**

Development of Indian Standards has to be supported by a system that is capable of responding quickly to the standardizations needs of the market and in addressing emerging national priorities. Looking ahead, BIS would continue with the efforts to encourage government, consumer bodies, professional organizations, industry, academia and other stakeholders to engage with BIS as partners and create standardization solutions to support the national objectives. Key to such partnerships being their participation in standards making which require commitment of the stakeholders, particularly the government and industry.

In envisioning the role that BIS as an NSB has to play in so far as standardization is concerned, it is essential to understand the various social, economic, environment and technology factors that would influence and define future standards making.

The following primary drivers of future standardization have been identified where it is felt that standards will be relevant and have significant impact.

1. Economic growth and trade

India's economic progress and aspirations make it imperative for the country to have access to global markets, enhance its exports and become a significant contributor in world trade. Standards have long been known to impact trade in so much as to facilitate free movement of goods and services across international borders. However, standards of trading partners if not aligned has the potential to create technical barriers to trade. In the context of the above, alignment of national standards with global standards would, therefore, be a key element of future standardization work of BIS.

As India endeavours to be self-reliant and a global manufacturing hub, the country would need to integrate with global supply chains, sourcing from across the world while being a preferred supplier in the global market. The key determinant in this effort would be to have the ability to build a Brand India quality of its goods and services that would have global reckoning. To build strong manufacturing capabilities, it would be important to support industry in uptake of new technologies and best industry practices, including in the MSMEs, thereby driving competitiveness and building market confidence through the ability of the industry to deliver on quality, reliability, safety and security, benchmarked against the best global standards.

Standards would be a key enabler in building such capabilities in Indian industries and businesses.

The above considerations will create a demand for standards in many new areas and on different aspects, and the need for alignment with global standards where relevant. Standards will therefore be a key facilitator of all economic activities and significant contributor towards fulfilment of India's economic aspirations.

2. Public policy and regulation

There is an increasing understanding amongst the policy makers across government departments and agencies of the value and importance of standards in pursuing public policies. This has resulted in an increase in applying standards when implementing government policies, programmes, projects and in procurements. The administrative ministries in the government and regulatory bodies are in particular referencing standards when addressing issues of health, safety, security, environment and consumer protection.

There are innumerable opportunities where existing national standards can support the policy and regulatory objectives of the government. Simultaneously, there would be many instances where there would be the need for developing standards in new areas that may need to be regulated by the Government in future. Further, rapid application of emerging technologies, particularly digital technologies across sectors is creating a number of policy challenges and throwing unique regulatory requirements. This would create additional opportunities for standards to act as excellent basis for regulations in order to build an ecosystem of trust and confidence.

3. Digital engineering and other enabling technologies

Emerging and enabling technologies have become all pervasive, integrating with other conventional technologies across various sectors. These technologies are influencing our lives more than ever before. Technologies like AI, machine learning, IoT, big data, cloud computing, quantum computing, additive manufacturing, telecommunication technologies and many others are driving almost everything that we do today. Digital technologies are impacting society in terms of enabling access of public services to wider cross-sections of society, providing better livelihood and in building a more inclusive society. By their very nature, these technologies generate a large volume of data resulting in issues of data governance and data privacy. Standards have been and would continue to be key facilitators in the integration of technologies and provide the mechanism for building trust on a digital and data driven economy by ensuring interoperability, reliability, security and privacy.

In addition to the above, as an organization, BIS would also like to reap the benefits of technology and digitalize its standardization processes thereby bringing in greater degree of openness and transparency in its operations and enabling standardization processes to be more efficient and agile. Further, in line with future demands of the market, BIS would also have to deliver Indian Standards in digitized form and content that would enable the use of standards directly by machines being machine readable and interpretable. Digital technologies would also create opportunities for BIS to consider various innovative standardization solutions where standards and its content can be provided as software.

4. Climate change and Sustainability

Addressing the adverse impact of climate change and ensuring sustainability are key global concerns of the times. With the occurrence of climate related adversities and disruptions, increased instances of climate uncertainties and natural disasters, alarming pollution levels, loss in biodiversity, depleting natural resources and energy related crises reaching alarming proportions, these issues severely impact India as well. India also has global commitments to fulfil towards mitigating climate change impacts and in achieving the targets set under the UN Sustainable Development Goals (UN SDG) 2030.

Climate considerations, carbon emissions, carbon capture and storage, achieving carbon neutrality, net-zero, circular economy, resource efficiency, etc are some of the key issues that would drive the national standardization work across various sectors of the economy. The contribution of standards in addressing the UN SDGs is now an accepted fact and therefore sustainability and green growth would in parallel drive future national standardization efforts. It would also be essential that standardization takes a holistic approach when incorporating climate impact/sustainability considerations and address entire product life cycles. There would be the need to address aspects such as use, repair, maintenance, recycling, end of life criteria and disposal of products while developing standards. Engagement with relevant stakeholders on a continuous basis would be a key element in facilitating the efforts made to address sustainability and climate change in standards particularly when solutions are fast evolving with various technology interventions.

THE STRATEGIC IMPERATIVES

BIS would continue to pursue the strategic objectives set out in the previous version of the Standards National Action Plan so as to provide the right direction to the vision and mission set out here.

In this regard, the following strategic imperatives have been embraced in SNAP 2022:

- 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 taking place in the country
- Strengthen our participation and influence in 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

THE TRANSCENDING PRIORITIES

BIS has identified a number of transcending priorities of national standards development that are arising from major global concerns, various technology enablers and other national socio-economic imperatives.

- **Sustainability**

In keeping with India's commitment on the UN SDG 2030 and Paris Agreement on Climate Action, there will be specific focus in developing and updating standards so as to address these issues. Climate change mitigation and adaptation through reduction in carbon emissions, carbon foot-printing and life cycle analysis, carbon capture and storage, application of circular economy, ensuring resource efficiency, promoting alternate fuel technologies and renewable energy use, reducing embodied energy and improving thermal performance in buildings through building design and construction, etc would be some of the approaches/considerations in standards development.

A framework that can provide guidance to the technical committees on how sustainability issues are to be addressed in Indian Standards would be developed. Some of the UN SDGs that are considered to be important from standardization perspective are Climate Action (SDG 13), Good Health and Wellbeing (SDG 3), Gender Equality (SDG 5), Clean Water and Sanitation (SDG 6), Affordable and Clean Energy (SDG 7), Responsible Consumption and Production (SDG 12), Industry, Innovation and Infrastructure (SDG 9) and Sustainable Cities and Communities (SDG 11), and are considered as high priority areas of work. A broad range of aspects that could potentially help in addressing sustainability and climate change through standards include the use of natural resources, ensuring energy efficiency and water efficiency, reducing wastes, use of waste and recyclable materials, reducing pollution in land, air and water, protection of natural habitats, protection of biodiversity, carbon neutrality and net-zero, carbon foot-printing and LCA, application of technology and innovation around these issues, economic performance and development, addressing health and safety, social equity (including concerns like gender responsiveness and accessibility for persons with disabilities and the elderly), quality of life, etc.

- **Health, Safety and Security**

Health, safety and well-being are always national priorities and are at the centre of various government initiatives and programmes aiming at social well-being and upliftment. Standards can support the implementation of such policies and programmes and therefore act as key enablers. Standardization covering healthcare services, health informatics and medical devices, personal protection, occupational health and safety, public health, accessibility, elder care, etc would be of primary consideration. Consumer protection from the point of view of product or service quality, reliability and product related information and labelling as well as from security considerations in terms of cyber security and data privacy would also be amongst the many dimensions that would have to be addressed through standards.

- **Digital economy and advanced technologies**

Digitalization presents a major change in how we live and interact as a society, and in how we work and carry out our businesses. Data generation and their conversion into innumerable digital solutions help industry and businesses to make informed decisions, be efficient and to develop innovative products and services. This digital transition however comes with associated costs and risks, and many of its applications have raised particular concerns related to issues of transparency, privacy and security. BIS has been working on addressing many of these issues and standardization in this area would continue to be a priority in national standardization efforts. Technologies like AI, ML, IoT, big data, additive manufacturing, block chain and DLT, quantum computing, etc and the application of these technologies in areas like smart manufacturing, smart cities, smart grid, smart agriculture, and many others, along with associated issues of cyber security and data protection, would be some of the major areas of future standardization work.

Digital technologies are integrating with other traditional technology areas such as in building and construction, power distribution, transportation, agriculture, manufacturing & automation. This would call for extensive coordination and deeper exchanges not only between the sectoral experts and digital technology experts who are involved in development of standards but also among the various agencies and institutions administering policies across various sectors.

- **Service Sector**

The service sector in India holds a major share of the country's GDP. This sector is also known to be a major contributor to the country's exports and creates a large number of employment opportunities. Recognizing the importance of the service sector and its growth the Government provides various incentives to the sector and have also identified 12 Champion Sectors for focussed attention. These include sectors like health care, tourism, education, communications, transportation, information technology, banking, finance and management among others.

The availability of standards on services are few as compared to those available in the manufacturing and agriculture sectors when taking into account the relative share of each of these sectors to the national economy. It is felt that availability of standards would be one of the important interventions required to give impetus to sectors of the economy. BIS, accordingly, has established relevant technical committees, identified relevant expertise, carried out stakeholder consultations and is working on the development of standards across the champion sectors.

There is also a major shift in the manufacturing sector from employing traditional business models to an outcome based, product as a service model. The increasing servitization of manufacturing while providing standardization opportunities on new aspects, would create different challenges in addressing standardization needs of such business models.

Standardization in the service sector would continue to be a focus area of work and will be accorded high priority. Service sector standardization would need to cover few critical aspects:

- Development of cross-cutting horizontal standards as well as sector specific vertical standards.
- Development of standards defining service quality (including of product as a service) and for developing service infrastructure
- Development of standards defining the occupational role and skill levels in the sector
- Taking leadership in developing international standards that has the potential to facilitate trade in services.

INITIATIVES ON THE STRATEGIC IMPERATIVES

BIS would take up various initiatives to address the strategic imperatives as given below:

i. Strengthen participation of all stakeholder interests in standardization

Success of standardization is heavily dependent on an extensive and effective consultation process involving subject experts from all parties concerned that have a stake in the subject of the standard being developed. It is therefore critical to onboard, engage with and obtain opinion of all such relevant interest groups when developing standards. BIS would continue to encourage the government, professional organizations, industry, consumers and other relevant stakeholders to engage with BIS for developing standards to support various national objectives. Awareness generation among the policy makers, professionals, consumers and civil society, including that of the next generation on the benefits and impact of standards as relevant to them and the importance of their participation in the process of standards development in light of the above would be pursued aggressively. BIS would also work on ways to identify where specific interests of various stakeholders are getting addressed in different standardization projects and find mechanisms to facilitate flow of such information to them so that their interest is generated for participating in the standardization work. It would also be necessary to encourage senior management of industries, businesses and academia to support and incentivise participation from their organizations/institutes in standardization work so that there is sustained involvement, participation and contribution of relevant experts. BIS on its part would continue to work for ensuring involvement of the right expertise and in supporting and facilitating the participation of these experts.

Initiatives:

- Prepare an Annual Strategic Priority document highlighting the various measures being undertaken to address strategic imperatives and standardization priorities.
- Convene Leadership Forums to inform national standardization strategies and priorities to industry, government and other relevant stakeholders.
- Issue Weekly Standards Bulletin covering information on standardization proposals considered as well as of standardization projects that have been initiated, apart from information on standards published and withdrawn.
- Make public the international work programmes and the information about delegate attendance at ISO/IEC technical committee meetings.
- Seek expression of interest at the time of establishing new committees or taking up new areas of work / new subjects for standardization, as may be necessary.
- Create a database of 'experts' for each technical committee, apart from the 'mailing list' of relevant stakeholders.
- Reorganize/restructure technical committees as necessary, so as to facilitate effective dealing of standardization subjects by appropriate subject experts.
- Ensure diversity in technical committees including gender equality, while ensuring balance of representation in all areas of activity.
- Provide opportunities for industry representatives to take leadership of committees
- Encourage Standardization Cells, professional bodies, R&D/scientific bodies to take up responsibility of developing base documents. Appropriate mechanisms to facilitate offloading of such work to capable entities would be considered.

- Explore possibilities of involving research scholars in standardization projects.
- Encourage industry and academia to support, incentivise and institutionalize participation in standardization in their respective organizations/institutes.
- Share positive updates on participation and contribution of members of technical committees with their nominating organizations.
- Develop suitable interactive platforms enabling stakeholders to provide inputs as well as interact and discuss amongst themselves on standards related issues (e.g. Discussion Forum/Expert Opinion Forum/ Forum for potential contributors/ Student engagement platform).
- Create a Knowledge/Resource Portal accessible to technical committees.
- Provide an improved sales portal and an improved search mechanism for standards on BIS portal/website.
- Enable interested stakeholders to follow the progress of a standard or its change in status and be notified of new proposals.

ii. Improve ability of the standardization system to respond to the needs of stakeholders and support national priorities

In a technology driven and fast changing environment it is necessary to have mechanisms in place to proactively assess and capture the standardization needs involving multiple stakeholder interfaces.

BIS would proactively work with the government, industry and professionals to identify standardization areas and various issues that could potentially be addressed in standards and endeavour to provide such standardization solutions in a timely manner, particularly those required to support public policy objectives around health, safety, environment, sustainability and climate change. BIS would also take conscious steps to make its processes more open so as to provide confidence in the system and encourage wider participation in standards development. Where necessary, BIS would spearhead necessary coordination and alignment between multiple departments/agencies administering multiple policies around a product or group of products relevant to standardization subject(s) so as to ensure convergence of purpose and objectives.

BIS would further work for establishing mechanisms for regular interactions with sector specific innovators and start-ups in addition to R&D bodies in order to capture innovation and technology driven imperatives of standardization.

Efforts would also be made to find mechanisms to enable objective assessment of the impact of existing standards and to utilize such feedback in reviewing and updating standards. Generation of scientific and research data that would form the basis of standardization decisions would be encouraged. In identified cases, BIS would consider extending financial support in undertaking research and development that would lead to standardization.

Initiatives:

- Make public an Annual Work Programme on standardization subjects.
- Work for effective collaboration/coordination with policy makers and regulators in eliciting standardization needs and for their early involvement in standards projects for ensuring synergy in decisions/responses/purposes.
- Strengthen the existing mechanisms for obtaining stakeholder inputs on standards under development or under review.
- Explore various options to seek feedback on implementation of standards with a structured approach.

- Improve upon the provisions for online submission of standardization proposals and for submission of comments on draft and published standards.
- Develop suitable interactive platforms enabling stakeholders to provide inputs as well as interact and discuss amongst themselves on standards related issues (e.g. Discussion Forum/Expert Opinion Forum/ Forum for potential contributor's/Student engagement platform).
- Encourage and support the generation of scientific and research data for standardization purposes, including funding such activities in identified cases.
- Enable stakeholders who are interested to follow the progress of a standard or its change in status and be notified of new proposals
- Provide open access to information on standards development projects and their status with respect to targeted timelines.
- Coordinate with relevant Ministries/Departments, trade bodies, export promotion agencies, etc on standards and trade facilitation.

iii. Build capability and capacity of various sections of stakeholders for effective participation in standardization

Those involved in BIS technical committees as well as those actively contributing to standardization from outside should have a clear understanding of the standardization processes (national and international) and their underlying principles such as openness, transparency, impartiality and consensus, effectiveness and relevance, coherence and performance-based standards. This would result in greater confidence amongst the participants on BIS processes and lead to a more involved participation from committee members/experts with better appreciation of one's roles and responsibilities in technical committees. In addition, those involved in drafting of standards should be equipped with necessary knowledge and be conversant with the norms on drafting standards covering the form, format, language and presentation of a standard. Where appropriate, experts should be encouraged to share, exchange and enhance their subject knowledge through seminars, symposiums and technical exchanges and exposure visits. All the above, would enable the generation of interest in standardization amongst stakeholders and active involvement, and in effective participation of committee members and other stakeholders thereby bringing excellence in the standardization work. BIS would work on various capacity building measures to achieve the above objectives.

Initiatives:

- Handhold Standardization Cells in industry associations to build their capacity to effectively support standardization work.
- Provide training to technical committee members to enhance their understanding of standardization processes, their roles and responsibilities and in building necessary skills to effectively participate.
- Ensure induction training of newly appointed technical committee members including through online mode.
- Provide training to committee leadership on their roles and responsibilities, calibrated approaches to standardization issues and develop necessary skills in manoeuvring deliberations towards an outcome.
- Conduct training programmes for Chairs, Conveners and Experts of international technical committees and arm them with necessary skill sets.
- Conduct workshops on drafting techniques for technical committee members, Standardization Cells, Professional Bodies, R&D/Scientific Bodies.

- Provide opportunities for knowledge sharing and technical exchanges to technical committee experts.

iv. Innovate and improve processes and tools for efficient and timely development of standards

With rapid technological developments and social evolutions taking place both nationally and across the globe, it is increasingly a challenge for standards development to keep pace with the evolving changes and market needs. There is an ever-increasing need for updating and revising existing standards apart from taking up standardization in new areas. Experts involved in standards development are hard pressed to devote time extensively for such activities and are looking for more flexible and convenient means of technology facilitated participation. Further, looking ahead, the next generation of standardizers would be more at ease with the use of technologies and would prefer working through digital modes and platforms.

Looking at the future, extensive digitization of processes would be a key enabler for effective participation of technical committee members and for BIS to cater to the standardization needs in a timely and efficient manner. Further, the integration of advanced and emerging technologies in various processes, particularly in manufacturing, has raised the need for standards to be available in a format that is more friendly to machines and an automated environment. The form and format of standards as conventionally known has already undergone changes and there would now be a need to have standards in a form that is machine readable and interpretable. BIS would be aggressively working to bring in further digitization in its processes and to make standards available in digital form and content.

To enhance efficiency in its processes and deliver quality output, BIS would also apply project management techniques. This would include features such as prioritization of work, annual action plans, measurement and monitoring parameters, key performance indicators, etc while also focussing on various process improvement initiatives to deliver error-free standards in an efficient and timely manner.

Initiative:

- Develop an advanced digital platform having the following components:
 - Improved Standards Portal with online drafting tools and work progressively towards creating an online authoring platform.
 - Suitable interactive platforms, such as Discussion Forum/ Expert Opinion Forum/ Forum for potential contributors/Student engagement platform
 - Knowledge/Resource Portal.
 - Comprehensive standards database inclusive of archived/withdrawn standards and an improved search mechanism for standards.
 - Improved Sales Portal.
- Apply project management to standardization work, including in publication of standards.
- Build capabilities in experts in technical committees for drafting standards following the drafting guidelines in IS 12 while ensuring the use of simple and gender-neutral language.
- Introduce measures that would facilitate better drafting of standards by technical committees and quality editing in publication (e.g. a checklist to help in drafting and editing standards based on IS 12 requirements)
- Build/enhance mediation capabilities and other soft skills to the leadership/key individuals and experts/member secretaries of technical committees.

- Work on making standards available in digital form and digital content.
- Strengthen the existing structures available for ensuring consistency in approach and a well-coordinated and coherent dealing of lateral issues in standardization such as of climate change, sustainability, circular economy, accessibility, gender responsiveness, digital technologies, etc.

v. Promote synergy, coherence and cooperation in standardization activities taking place in the country

The need for coordination and collaboration between various organizations, institutions and agencies that are developing standards or are engaged in standardization for voluntary application, regulatory purpose or organizational use, is ever increasing. This is more so in the wake of increase in convergence of technologies, particularly ICT. The administrative control and policy making in the government in one particular subject area may often involve multiple departments and bodies, including of regulatory functions, making such coordination all the more important from the point of coherent standards development. Perceived overlap in the realm of work of BIS and that of other domain specific standards making bodies or regulators/line ministries may lead to duplicity or conflict of work. All these have the potential to create confusion in the minds of the users of standards and hinder implementation.

Since BIS is the NSB and has the mandate to ensure harmonious standardization activities in the country, effective structure and mechanisms have to be worked out by BIS to ensure complete synergy in standardization activities happening across multiple bodies. BIS would take forward the initiative of ‘One Nation One Standard’ and the Scheme for Recognition of Standards Developing Organizations that has already been initiated and look at various other options/approaches to supplement this in order to ensure that there is only one standard available on any one particular subject nationally.

Initiatives:

- Evolve a national strategy and work for an overarching structure for co-ordinating standardization activities in the country under BIS’s leadership.
- Undertake regular and planned interactions with regulators and line ministries and create mechanisms for exchange information on standardization work currently underway across various bodies.
- Conduct joint workshops with other Standards Developing Organizations in the country.
- Strengthen the Scheme of Recognition for Standards Developing Organizations for its effectiveness.

vi. Strengthen participation and influence in international and regional standardization and towards facilitating trade through standards

With the integration of global economies, countries around the world are strategically positioning themselves in international standardization so as to gain competitive edge and achieve economic benefits through standards. As standards and conformity assessment significantly influence global trade, countries are working on ways to effectively influence and drive international standards in their favour. India likewise would need to enhance its footprint in international standardization. To achieve this, India would have to harness the skills and strengths to effectively participate in international standardization, evolve national viewpoints on international standards under development, review the existing national standards against

applicable international standards and make forays into new areas of work that are relevant to India from the point of international standardization.

BIS is actively engaged in international standardization activities, have over the years increased the level of participation and have also been making useful contributions. BIS so far has also been aligning the Indian Standards with international standards of ISO and IEC where appropriate, either identically or with India specific modifications. As a result, the share of Indian Standards that are adoptions of international standards have steadily grown over the years. BIS would continue with its active engagement in international and regional standardization activities and work on increasing its participation and influence on international standards development further. Key areas of India's interest from trade and technology perspective would be identified in coordination with the Government and trade bodies for driving effective participation in international standardization on a continuous basis. BIS would also identify potential areas that are of strategic interest to India for leading the standardization work at international level. In all this BIS would facilitate effective participation of Indian experts.

Opportunities would also be explored for bilateral collaboration with National Standards Bodies (NSBs) of other countries and with Regional Standards Bodies that are of strategic importance to India from trade considerations. BIS would proactively engage with the government and other relevant entities to identify and evolve an action plan in this regard. BIS would also focus on increasing its outreach amongst other foreign standards bodies, especially NSBs of the developing world, to develop understanding of each other's standardization systems and work programmes, share experiences, carry out technical exchanges between experts and conduct awareness and capacity building programmes in areas of mutual interest.

Initiatives:

- Identify and focus on projects where India can contribute and influence international standards development to ensure their wider global acceptance, including where India can offer standardization solutions to the world and lead such projects.
- Prioritize participation in international standards projects and ensure more effective utilization of funding provisions for participation of experts in international and regional meetings and in hosting of international/regional technical committee meetings.
- Review and strengthen the process of mobilizing national opinion, commenting and voting on draft international standards.
- Explore collaboration opportunities with ISO and IEC and with other leading NSBs on emerging issues and other important areas of standardization that are of interest.
- Engage with foreign sectoral standardization bodies who have global acceptance for use of their standards as would be necessary.
- Strengthen engagement with MoU partner NSBs for mutual benefits.

vii. Strengthen national outreach programmes to promote awareness and understanding of the impact and benefit of standards

Increasing awareness about standards and their impact amongst the relevant stakeholders is necessary for having increased implementation and application of standards. Increased use of standards has in turn the potential of generating feedback on the standards which may ultimately result in improvements in the standards and addressing gaps in standardization. This creates a system that is vibrant and agile.

The broad objective of outreach programmes is to create awareness on standardization, of what it is and what it does, and appropriate ways and skills for implementing standards. Outreach efforts should be designed so as to be appropriate to the targeted stakeholder group whether industry, policy makers, regulators, professionals, academia, students, consumers or civil society. While continuing with various standards promotion activities that are presently ongoing, learning from experiences and improving its discourse, BIS would all the while try and ensure consistency in messaging and communication. BIS would also look for innovative ways to raise the level of understanding of standards, targeting the young generation in particular. Where appropriate, BIS would engage with sections of the stakeholder community to join hands in spreading the message of standardization.

Initiatives:

- Develop a communication strategy to reach out to a wider community of stakeholders such as PSUs, trade bodies, professional institutes and civil society, apart from industry and policy makers, in order to create awareness and encourage the use of standards.
- Undertake increased and innovative outreach efforts giving more visibility to current standardization work, where appropriate in partnership with other bodies (in particular industry bodies, professional bodies, academic and R&D institutes), using the following modes, as suitable:
 - short videos & podcasts
 - regular social media posts
 - news-letters, handouts, articles, case studies and other informative publications
 - national level conferences
 - workshops and seminars/webinars
 - exposure visits to research institutes, industries and laboratories
- Develop implementation guidelines and explanatory handbooks on important standards.
- Provide an online platform for discussion/clarification on standards with/by experts from relevant technical committees.
- Conduct training programmes for practicing engineers and work towards framing a Continuing Engineering Education Programme.
- Continue engagements with academic institutes, where applicable including through the Standardization Chairs.
- Pursue with the efforts for introduction of standards in technical education curriculum.
- Create engagement opportunities for young professionals and students so as to involve them in standardization work (e.g. internship programme, young professionals programme, innovators/start-ups programme, projects through research scholars).
- Conduct surveys, collect data and build case studies for assessing/demonstrating the impact of standards and sharing implementation experiences.

KEY STANDARDIZATION AREAS

Taking into account the outcome of various stakeholder consultations undertaken while framing the Standards National Action Plan 2022, inputs from the Strategic Road Maps of each of the Division Councils of BIS, the identified sectoral priorities and analysis of the national socio-economic requirements, key subject areas of national standardization to be taken up by BIS in the next five years along with their priorities have been identified and given in **Annex A**.

Important sectors of the national economy were analysed on the basis of their contribution to national GDP and to trade and various policy level imperatives set by NITI Aayog and Central Ministries were examined to define sector-wise national economic priorities. To set the social priorities, a study of the NITI Aayog reports, various developmental programmes and policy directives of Central Ministries, world body reports on India and UN SDG 2030 was carried out and the impact of these on various aspects like sustainability, health, safety, environment, security, population, employment, social empowerment and inclusivity, gender equality, consumer protection, etc. Based on the above, combined socio-economic priorities as applicable were then arrived at. The priority of a standardization subject has been identified as high, medium and low and has been arrived at depending on socio-economic priority of the relevant sector and the transcending priority considerations as defined in this document.

Detailed work programmes would be prepared by the concerned technical committees elaborating the specific subjects from these identified standardization areas. Where necessary and based on a comprehensive assessment by technical committees, other subjects of standardization to supplement these would also be identified and progressively included in the work programme and executed through Annual Action Plans.

IMPLEMENTATION AND MONITORING

The SNAP 2022 defines a time horizon of five years for implementation (2022 – 2027). The success of the strategies outlined here will heavily depend on the actions taken on the identified initiatives as well as the progress made on the standardization topics. The stakeholders who have contributed towards framing of SNAP 2022 would play a very important role in supporting its implementation and delivery. Specific plans, activities and programmes would further evolve as would be necessary and resources as required mobilized by BIS for implementing SNAP 2022. An implementation plan for SNAP 2022 detailing the specific programmes and projects to address the strategic initiatives identified here along with measures to assess successes in achieving the objectives would be framed and applied so as to monitor progress. Annual Action Plan on the standardization subjects/areas would be framed and implemented. A framework to report progress of work periodically, the achievements and the course corrections necessary would also be ensured by BIS.

CONCLUSION

SNAP 2022 has been framed to provide the necessary direction and impetus to national standardization in the backdrop of fast changing environment in which the standardization system is presently operating. BIS would tread the course set by SNAP 2022 with the support and contribution of all entities of the national standardization ecosystem. SNAP 2022 is envisioned to strengthen the standardization system to meet the required standardization needs of the market, paving the way for BIS to fulfil its responsibilities as the National Standards Body.

ANNEX A
KEY STANDARDIZATION AREAS

Sector	Field	Subject Area	Priority	
Chemicals & Petrochemicals	Inorganic chemicals	Speciality chemicals	Medium	
	Dyes & Dyestuff	Dyestuff	Medium	
	Thermal insulation	New age thermal insulation materials	Medium	
	Environmental labelling	Green Labelling of soaps and detergents	High	
	Printing Inks		Inks for sensitive applications like pharma/hygiene products/cosmetics /toys /diapers	Medium
			Eco-friendly inks	Medium
			Non-Intentionally Added Substances (NIAS) in inks	Low
			Positive list of constituents for Inks	Low
	Surface Protection Coatings		Fluoresin based coatings	Low
			Fire retardant paint coatings	Low
			Nano composite material based paints	Low
			Coatings and varnishes	Medium
Environment	Circular Economy	Guidance for specific sectors on Circular Economy	High	
	Carbon Accounting	GHG emission estimation & Carbon footprint of specific sectors	Medium	
	Carbon Capture & Sequestration	Carbon Capture, Use & Storage	Medium	
	Environmental Rating	Environmental Product Declaration - Product Category Rules	Medium	
	Environment Management		Guide for implementation of EMS	Medium
			EMS related tools.	Medium
	Waste Management		Guidelines on discharge effluents from various sources	Medium
			Guidelines on important discharge parameters	Medium
Reuse/recycling of treated used water			Medium	

Sector	Field	Subjects	Priority
Environment (contd.)	Waste Management (contd.)	Residue management in treatment plants	Medium
		Zero Liquid Discharge	Medium
		Guidelines for discharge of emerging contaminants	Medium
		Discharge standards for sewage	Medium
	Water quality	Safe drinking water for travel	Medium
		IoT based smart water quality monitoring and management	Medium
		Source water quality monitoring (online)	Medium
		Water quality monitoring network	Medium
		Non-potable use of water	Medium
		Water Standards – updating limits of radioactivity	Medium
	Nuclear materials for peaceful application	Naturally occurring radioactive materials and contaminants in geological, biological and environmental matrices (water, soil, etc)	Medium
		Limits of radioactive materials	Medium
Packaging - Sustainable packaging	Safe, secure & sustainable paper packaging	Medium	
	LCA of packaging materials	Medium	
Health & Safety	Chemical Hazard	Guidelines on Chemical Hazards	Medium
	Occupational Health & Safety	Hazard identification & risk assessment	Medium
		Quantitative risk assessment for chemical industries	Medium
		Computer risk model assessment	Medium
Building, Construction & Urban Development	Fire Safety	Fire & Life Safety Audit	High
		Fire safety in hospitals, hotels and shopping malls	High
		Fire safety in various manufacturing industries (e.g. pharmaceutical, electrical & electronics, automobile, etc)	High
		Inspection, testing and maintenance of fire protection systems	High
		Fire exposure requirements (review)	Medium

Sector	Field	Subject Area	Priority
Building, Construction & Urban Development (contd.)	Structural Safety	Comprehensive guideline on sustainability and structural safety	High
		Structural audit, retrofitting and stability	High
		Structural Design using Stainless Steel	Medium
		Design of Rack Structures; and guidelines for Metal buildings	Medium
	Housing	Guideline for affordable housing in cold formed steel	High
	Building Materials and Components	New & innovative building materials (including their test methods)	Medium
		New Water Proofing compounds & techniques (e.g. PVC & Hydro swellable water bars, crystalline admixture, bi-polar corrosion limiter, etc.)	Medium
		Hospital furniture (ICU beds, ward beds, etc)	Medium
		Laboratory furniture	Low
		NDT methods	Medium
		Waste based clinker	High
		Test methods for Advanced concrete products	Low
		Test method for pervious concrete	Low
		Hand book on lime	Low
		Hand book on Waterproofing	Low
		Tactile ground surface indicator (TGSI)	High
		Chain of Custody (CoC) of timber	Medium
		Fibre reinforced bars	Medium
	Sustainability in Construction	Indoor Air Quality - Ventilation guidelines	High
		Operational aspects of sustainability in built environment	High
		Water Use Efficiency in buildings	High
		Universal design for accessibility	High
		Circular Economy & Resource Efficiency in use of materials for walling, flooring and roofing	High
Guidelines on sustainable materials/solutions/net zero buildings for use in project stage and after projects		High	

Sector	Field	Subject Area	Priority
Building, Construction & Urban Development (contd.)	Construction Technologies	3D printing; pre-fab and pre-finish volumetric construction	Medium
		Digital Technologies in Construction	Medium
		Pre-engineered building	High
	Construction Practices	Deep excavation	Medium
		Seismic testing of piles	Medium
		Restoration and maintenance of stone masonry, heritage & other structures	Medium
		Safety during construction	High
Contract management	Medium		
Textiles including Technical Textiles	Protech	Clothing for defence personnel	High
		Clothing for other use	High
		Sleeping bags & Rucksack	High
		Protective Nets	Medium
	Sportech	Swimwear and sports wear	Medium
		Sport nets	Medium
		Fabrics for sports application	Medium
		Artificial sports turfs	Medium
		Conductive textiles/Smart Textiles/E-Textiles for different applications in Sportech, Medtech, Protech and indutech etc.	High
	Geotextiles	Geocomposite strips	High
		Woven and knitted geotextiles for all subgrade stabilisation	High
		Geosynthetics clay liners	High
		Drainage composites	Medium
Rockfall protection nets		High	
Geotubes		High	
Geotextiles for Bituminous layer		Medium	
Erosion control coir mat		High	
Textiles Fabric impregnated with cement for erosion control	High		

Sector	Field	Subject Area	Priority
Textiles including Technical Textiles (contd.)	Industrial Textiles	Fabrics & products of industrial applications (filters, pipes & hoses, belts & conveyors, webbings & slings, abrasive cloth, industrial wipes, etc)	Medium
	Packtech	Packs & bags of PP/HDPE for various applications	Medium
		Woven / Nonwoven Laminated or coated Fabric, Waterproof, Rain Gowns	Medium
	Medtech	Community Mask and Medical Respirator	High
		Guidelines for reprocessing of healthcare textile	High
		Dressings, paddings & other products for surgical applications	High
		Dental floss	High
		Scrub suit/patients clothing	High
		Products for maternity applications	High
		Burn sheet	High
		Products for Orthopaedic applications	High
	Leukodepletion filter or textiles used for blood purification	High	
	Mobiltech	Polyester tyre cord	Medium
		Fabrics, felts & other products for automobiles	Medium
	Agrotech	Nets, Mats and Fabric for various agro applications	Medium
		Silage bags/Grow bags & Barrier packaging bags	Medium
		Coir root trainer pots	Medium
	Buildtech	Fabrics for architectural applications	Medium
		Scaffolding nets	High
		Awning & Canopies	Medium
		Inflatables	Medium
		Woven and Nonwoven wall coverings	Medium
		Fabric for signage and hoarding	Medium
Speciality Fibre	Fibres & Filaments of new age materials (Aramid, Basalt, Carbon, Pre-Oxidized, Glass, UHMWPE, etc)	Medium	

Sector	Field	Subject Area	Priority
Textiles including Technical Textiles (contd.)	Oekotech	Test Method for Volatile Halogenated Organics, Volatile Hydrocarbons (Nonhalogens)	Medium
		Test Method for Chlorinated organic carriers, Polycyclic Aromatic Hydrocarbons (PAHs)	Medium
		Indian Green Textile Standards	High
	Silk & Silk Products	Grading of Eri and Muga Silks	Medium
		Spun silk	Medium
	Coir & coir products	Coir products for horticultural applications	Low
		Coir brushes	Low
	Physical Methods of Test	Smoothness test for fabrics	Low
	Aquaculture	Polyester/Nylon fish cage	Medium
	Rope and Net	Helideck Net	Low
	Textiles Floor covering	Woven and Non-woven Carpet Backing Cloth	Low
		Artificial Grass made of Synthetic Yarn for Landscape	Low
	Manmade fibre Yarns	Yarns & Filaments of nylon and polyester	Low
	Clothtech	Laces and tapes of narrow fabrics/Braids	Low
		Elastic Narrow fabric	Low
		Labels and badges	Low
	Ready Made Garments (Man-Made Apparel)	Kids wear safety requirements	High
		Apparels for women & girls	Medium
		Apparels for men & boys	Medium
		Various Woven Fabrics of nylon & polyester	Medium
Textiles Machinery and Accessories	FR Treated Nonwoven Fabric based Disposable Bed Sheets, Bed rolls, Curtains and Pillow Covers for Hotels, Hospitals, Railways and other travel industry	Medium	
	Carding (specifically Metallic Staves), Drawing and Spinning (e.g., Baxter Flyer)	Low	
Jute & Jute Products	Spare Parts of Jute Machinery	Low	
	Jute Products	Jute Sacking Bags for various applications	Low
	Jute	Jute and allied fibres (Ramie, Hemp, Flax, Sunn, Sisal, Banana etc) and their related products	Low

Sector	Field	Subject Area	Priority
Leather & Leather products	Leather Materials and Allied Products	Sustainable manufacture of leather	High
		Carbon Foot Print of leather and tanning materials	High
		Leather-Vocabulary	Medium
		Shorter-term Biodegradability test	High
	Footwear	Standards on therapeutic footwear	Medium
Petroleum, polymers & related products	Polymer-Plastics	Finished goods made up of plastics	Medium
		Microplastic	Medium
	Polymer - Rubber	Safe handling practices for the rubber raw materials	Medium
		Guidelines/protocols/good practices for packing, storing and handling of cup lump.	Medium
		Raw materials and identification of hazardous substances.	Medium
		EoLT (End of life-Tyres)	High
		Recovered Carbon Black	High
		White/Latex reclaimed Rubber	High
		Characterisation of polymer bound rubber chemicals	Medium
	Petroleum and Related Products	New Generation Fuels – EBMS, E20, M15, H-CNG, B10, ATF	High
		Flash Point of Diesel, Methanol (M100) and MD95 fuel, Motor gasoline - RON95, Pyrolysis oils	High
		Categorization of products having similar specifications with Custom Dep't.	Medium
		Lubricants based on trends in engine design/hardware change, metallurgy change, regulations on emission norms, injection technology, after treatment devices (SCR, DPF, DOC, CatCon, etc.), alternate fuels, and advancements in industrial lubricants, including dedicated lubricants, high performance lubricants	Medium
		Auto and industrial lubes and greases (revisions)	Medium
		Test methods of lubricants	Medium
		Additive label for lubricants	Medium
		Natural / Green Lubricants	High
	Coal and Related Products	Ash fusion temperature for biomass	Low
		Biomass for steelmaking	Medium
		Safety of Solid Biofuels	Medium

Sector	Field	Subject Area	Priority
Petroleum, polymers & related products (contd.)	Cosmetics	Horizontal standards in Cosmetics	Medium
		Testing of Cosmetics - Alternate methods	Medium
	Fragrance and Flavour	Synthetic Menthol	Medium
Transportation including e-mobility	Aerospace	Aero engine components and testing	Medium
		Aircraft safety equipment/sensors,	Medium
		Titanium Fasteners used in Aircraft	Medium
	Automobiles	Clean energy transition and integration in automobiles	High
		Fire mitigation requirements	High
		Green economy through recycled content, EPR, waste disposal and resource efficiency	High
		Airbags	High
		Child restraint system	High
	Bicycle	Aluminium alloy, carbon fibre and titanium bicycles	Medium
		E-bicycles	Medium
		Critical components of bicycles	Medium
	Drone	Drone	High
	Road Safety	Safety installations (crash barriers, bollard's etc)	High
		Safety - Critical components of vehicles	High
	Packaging Logistics	Handling and storage of Hazardous material	High
		Composite Drum used in chemical industry	Medium
		Slip sheet	Medium
		Multi-model container for transportation of vehicle	Medium
	Marine	Battery used for Marine propulsion	Low
	Navigation	Navigation of Aircraft to Satellite	Low
Transportation	Transportation of specially abled people	High	

Sector	Field	Subject Area	Priority
Transportation including e-mobility (contd.)	Electromobility	EV Battery Swap	High
		Dual Gun Charging of Heavy Electric Vehicles	High
		BMS for Electric Vehicles	High
		Cloud based charging system	High
		High capacity EV Chargers	High
		Safety of EV Charging infrastructure & batteries	High
		Recycling of EV batteries & Reuse of EV Battery System in stationery storage	High
		Batteries including transportation of batteries	High
Machinery, Engineering & Manufacture	Industrial Production	Anchor fastener	Medium
		Railway Bearings	Medium
	Machine and Machine Tools	Hydraulic Torque wrench	Medium
		Safety of Press brakes	Medium
	Smart Manufacturing	Cyber-physically controlled smart machine tool systems	Medium
	Industrial Automation	Model-Based Standards Authoring	Medium
		Nuclear Digital Ecosystems	Medium
	Robotics	Exoskeleton Robots	Medium
	Robotics	Legged Robots including bipods	Medium
	Metrology	Gas Flow Meters	Low
		Evaluation of Uncertainties in fluid flow	Low
	Sports Goods	Protective Equipment for Sports	Medium
		Physical Training Equipment	Medium
	Toys	Toy safety standards	Medium
	Household products	Lock cartridge	Low
		Gas Stoves of non-metallic body	Medium
		Gas Hobs	Medium
		Burning appliances for clean and bio-based fuels	High
	Material Handling Equipment & Ropeways	Balance ropes in mines	Medium
		Electromagnetic examination of ferromagnetic steel wire rope	Medium
Safety in Rides		High	

Sector	Field	Subject Area	Priority
Machinery, Engineering & Manufacture (contd.)	Fuel related products	Green Energy generation and storage related equipment (e.g. Green Hydrogen, Green Ammonia, Bio-diesel)	High
		Cryogenics Container and its components	Medium
		Cryogenics operational requirements	Medium
	Pumps	Horizontal Split Case Pumps	Medium
		Vertical Turbine Pumps	Medium
	Pressure Vessels	Unfired Pressure Vessels Coded (revision)	Medium
	Machinery	Safety of mobile machines working underground	High
		Paver Machines	Medium
	Refrigeration and Air-conditioning	Cold Chain Equipment	Medium
	Printing Machinery	Colour Printing Machines - commissioning, operation and testing	Medium
Digital Printing machinery		Medium	
Electrical Energy & Power	Smart Grid	Cyber Security (Security Risk Assessment and Industrial Automation & Control System Security)	High
	Batteries	Secondary Batteries - Reuse of Secondary Batteries	High
	Grid Integration	Interconnection and Interoperability of Distributed Energy Resources	Medium
	Transformers	Guidelines for repairing Transformers	Medium
		Converter Transformers	Medium
		Transformer for Solar application.	High
		Voltage Regulation Distribution Transformers.	Medium
		Transformer Installation, commissioning and maintenance (revision)	Medium
Electrical Appliances, Equipment & Lighting	Luminaries	Ultra-violet Germicidal devices	High
		Grounded Recessed Luminaries	Medium
		Luminaries for specific application (e.g. swimming pool, clinical areas of hospitals, etc)	Medium
		Extra-Low-Voltage lighting systems for ELV Light sources.	Medium
		National Lighting Code (revision)	High
		Drone Lighting	Medium
		Guidelines for lighting specific locations (e.g. interior illumination, public thoroughfares, etc)	Medium

Sector	Field	Subject Area	Priority
Electrical Appliances, Equipment & Lighting (contd.)	Appliances	Washing Machines	Medium
		Induction Hobs	Medium
		Various Fans & Regulators (revision)	Medium
	Equipment	Welding Additive Equipment	Medium
	Switchgear	LV Switchgear & Control gear	Medium
		DC Switchgears	Medium
Ferrous and Non-Ferrous metals	Steel and alloys steels	Zn-Al-Mg Coated Steels	Medium
		Wear & Abrasion Resistant Steel	Medium
		Hot Rolled Steels for Line Pipes	Medium
		Continuous Galvanizing Grade (CGG) Zinc Alloys	Medium
		Induction Tempered Spring Steel Wire	Medium
	Stainless steel	Triply Material for utensils	Medium
		Stainless Steel Structural Steel	Medium
		Stainless Steel Ingots/Billets/Blooms for Re-Rolling	Medium
	Pipes, Tubes and sections	Electric Fusion Welded Stainless Pipes for High Temperature Applications	Medium
		Stainless Steel Pipes & Tubes for various applications	Medium
		Single Wall Copper and Zinc Coated Steel Refrigerator Condenser Tubes	Medium
		Pipes & Tubes for Transportation of Bio-PNG	High
		Steel Sections for architectural applications	Medium
		Steel Pipes & Tubes for Solar Applications	High
		Fire Resistant Steel Pipe & Tubes	Medium
	Feedstock for Iron	Feedstock for Iron	Medium
	Refractories	Carbon Bricks Refractories	Low
		Silica Refractory Ramming Mass	Low
	Aluminium and aluminium alloys	Aluminium Stock	Medium
		Aluminium Hard Alloy Plates, Sheets & Coils	Medium
	Test Methods	Eddy Current Testing of Steel Wires	Low
		Test Methods for Mechanical Property Evaluation using Miniature Specimens at Ambient and High Temperature Conditions under Static and Cyclic Loading	Low
		Characterization of Intrinsic Threshold Stress Intensity Range	Low
Gammagraphic Evaluation of Integrity of Shielding Structures		Low	
Non-Destructive Fineness Confirmation of Precious Metal by ED-XRF		Medium	
Chemical Analysis by instrumental methods		Medium	

Sector	Field	Subject Area	Priority
Ferrous and Non-Ferrous metals (contd.)	Powder Metallurgy	Tungsten Base Heavy Alloys	Medium
		Powder Additive Manufacturing (3D Printing)	Medium
		Un-Notched Charpy Impact Test for Powder Metallurgy Products	Low
		Molybdenum Specific Material for High Temperature Sintering Furnace	Low
	Welding Electrodes	Flux Cored (Tubular) Electrodes & Rods for Metal Arc Welding of stainless steel, heat resisting steel and low alloy steel	Medium
Transport and Logistics Services	Transport Services	Cold Chain Logistics	Medium
		Transportation of Dangerous Goods	High
		Public Transport Services	Medium
		Cargo Transportation Services	Medium
		Packers and Movers Services	Medium
		Courier Services	Medium
		Multimodal Transportation Services	Medium
	Supply Chain Management	Warehouse Management	Medium
		Logistics services for high value goods	Medium
Medical Value Travel Services	Health, Fitness and Sports Services	Yoga Services	Medium
		Gym Services	Low
		Physical Activity, Sports and Injury Management	Low
		Healthcare services	Medium
	Medical Value Travel Services and Wellness Services	Medical Value Travel Services	Low
		Wellness Services	Low
IT and IT enabled Services	IT and IT enabled Services	Cloud Services	Medium
		Digital Signature Services	Medium
	Retail, E-commerce & E-payments Services	E-commerce- Principles and Guidelines for self-governance	Medium
		E- Subscription	Medium
Environmental & Related Services	Environmental Services	Greenbelt Development and Management	Medium
		Assessment of Environmental Monitoring Services	Medium
		Street and Public Facility Cleaning Services	Medium
		Forest Fire Management	Medium

Sector	Field	Subject Area	Priority
Environmental & Related Services (contd.)	Drinking Water Supply, Wastewater and Storm Water Systems and Services	Management of Assets of Water Utility	High
		Emergency/Disaster Management System in Water Utility	High
		Water Loss investigations in Drinking Water Supply System	High
		Provision for Alternate Water Supply during Crisis	High
	Biodiversity	Biodiversity Assessment	Medium
		Traditional Knowledge including AYUSH	Medium
		Biological Invasive	Medium
		Sustainable Forest Management	Medium
		Ecosystem Services and Valuation	Low
		Protection of aquatic ecosystem	Medium
Construction and related Services	Construction & related Engineering Services	Geotechnical Investigation Services	Medium
		Project Management Services	Medium
		Valuation of Immovable Properties	Medium
		Construction and Demolition Waste Management Services.	High
		Conservation of Heritage Structures	Medium
		Facility Management of Buildings	Medium
		Structural Design and Proof Checking Consultancy Services.	Medium
		Structural Auditing, maintenance and Retrofitting Services	Medium
		Service provisions in construction industry (pre, during and post construction)	Medium
Business & Legal Services	Business Services	Security Services	Medium
		Business Process Management	Medium
		Business Consultants	Medium
		Ageing Societies / Senior Care	High
		Management Consultancy	Medium
Tourism and Hospitality Services	Travel, Tourism & Hospitality Services	Sustainable Tourism	Medium
		Hospitality	Low
Financial Services	Banking and Financial Services	Interfaces of digital financial services providers	Medium
		Fintech services	Medium
		Insurance policy documents and declarations	Medium

Sector	Field	Subject Area	Priority
Audio Visual Services	Media and Entertainment Services	Education and skill development in M&E sector	Low
		Cinema Theatres	Low
		Radio Stations	Low
		Event Management	Low
		Sound and Music in M&E sector	Low
		New Media Services	Low
Education Services	School Education and related Services	E- Learning Services	Medium
		Foundational Learning Services	Medium
	Higher Educational, Skill Development and related Services	Coaching Centre Services	Medium
		Campus facilities and accommodation Services	Medium
		Skill Development Services	Medium
Basic Services	Basic Standards on Services	Service Classification	Low
		Service Communication	Low
		Service Contract	Low
		Service Monitoring	Low
		Service Performance Indicators & Measurements	Low
		Customer Expectation and perception measurement	Low
		Service Use/perception data analytics	Low
		Service Delivery Channels – modes of communication / delivery/customer interaction	Low
		Service process risks	Low
		Service level agreements	Low
		Use of ICT in Services	High
		Customer data security	High
		Human Resource – specific skill/attributes requirements for services	Low
		Template for vertical services standards	Low
Electronics	Electronics Products and Manufacturing	PCB's	Medium
		Energy Consumption Rating	High
		Component manufacturing	High
		Semiconductor manufacturing	High
		Wearable Devices	High
		e-waste management	High

Sector	Field	Subject Area	Priority
Information Technology	Digital Technologies	Artificial Intelligence	Medium
		Internet of Things	Medium
		Blockchain and DLT	Medium
		Big Data	Medium
		Geographic Information System	Medium
	IT Services	Data Maturity Assessment and Data Governance	Medium
		Trustworthiness	Medium
		Digitally delivered services	Medium
		Natural Language Processing	Medium
		RFID/ Geo-Tagging	Medium
	IT Security Techniques	Data Privacy	High
		Cyber Security	High
		Mobile Security Guidelines	High
ICT	Metaverse	Medium	
	Smart Cities ICT aspects	Medium	
Management & Systems	Environmental Social Governance (ESG's)	Internal Investigation	Medium
		Fraud Control Management Systems — Guidance for organizations responding to the risk of fraud	Medium
		Efficiency measurement	Medium
		Promotion and implementation of gender equality	Medium
		Performance Indicator for Enviro-Economic-Social-Governance benefits and Impact Assessment for Environmental Social Governance (ESG's)	Medium
	Management Techniques	Facility management- Role in sustainability and resilience	Medium
		Facility management-Existing performance management in facility management organizations – State of the industry	Low
		Life cycle costing in Procurement	Medium
		Technology in facility management	Low
		Asset management- Guidance on the alignment of financial and non-financial functions	Medium
		Principles and guidelines for development and implementation of sustainable finance products and services	Medium
		Sustainable Human resource management	Medium
		Guidelines for the application of ISO 9001 in policing organization	Low

Sector	Field	Subject Area	Priority
Management & Systems (contd.)	Management Techniques (contd.)	Indicators/Template for impact assessment for SDG's	Medium
		Rating for tourism city	Low
	Risk and Resilience	Risk Maturity model	Medium
		Cyber Resilience	Medium
		Guideline for the implementation of IS/ISO 31000 amongst Indian Industries	Medium
		Risk Management for corporates	Medium
		Energy resilience	Medium
	Statistical Techniques	Quality of Measurement Results - Criteria for Repeat/Replicate Testing	Low
		Guidelines on Statistical Software	Low
		Data Ethics	Medium
Healthcare	Medical Devices	Anaesthetic & Resuscitation Equipment (Respiratory gas monitors, Voice prostheses)	High
		Rehabilitation Appliances & Equipment's (Club foot braces, Folding cans, Therapeutic footwear, Standing frame, Spinal & Ankle Foot orthoses, Pressure relief cushions)	High
		Medical Diagnostic Kits (General and Disease specific diagnostics)	High
		Dentistry Equipment (cements, spoons & bone cutters, diamond rotary cutters, scalers & excavators, intra oral camera)	High
		ENT instruments (Ossicular reconstruction prosthesis, VNG machine)	High
		Neurosurgery Instruments (digital rection time apparatus, Algometer)	High
		Obstetric Instruments (menstrual cups, IUCD, Biomarkers for semen exposure)	High
		Ophthalmic Instruments (Glaucoma drainage devices, Microsurgical Keratome Blade, Ocular Prosthesis), AR/VR in ophthalmic diagnostics and therapy)	High
		Orthopaedic Instruments & Implants (Arthroscopy System, Non-active surgical implants, Osteosynthesis implants, Metal intramedullary nailing systems)	High
		Surgical instruments & implants (Surgical Mesh Implants for Hernia, Surgical ligation devices, Liposuction devices used in plastic surgery, Cryoablation for cancer therapy, Robotic surgical devices, AR/VR for surgical planning, Electrosurgical unit, Surgical training devices)	High
	Cardiovascular Equipment (cardiac occluders, pericardial patch)	High	
	Health Informatics	Remote Care Monitoring	Medium
		Randomized Clinical Trials (RCT) of software as device	Medium
		Digital therapeutics	Medium
		Gene, Genome, Proteomics, Epigenetics	Medium
Aayush (Process & RCT)		Medium	

Sector	Field	Subject Area	Priority
Healthcare (contd.)	Hospital Equipment	Sterilization processes	Medium
	Forensic Sciences	Protocol for examination of a victim and accused of sexual assault	Medium
		Autopsy table	Low
	Hospital Planning & Management	Hand Hygiene performance and compliance	Medium
		Collection & transport of samples by medical laboratories	Medium
		Maintenance management of medical devices	Medium
		Medical Air-Conditioning Systems	Medium
	Medical Biotechnology	Nanoparticle Characterization Systems	Low
	Medical Laboratory Instruments	Laboratory ware (glass & plastic)	Low
		Medical laboratory analytical equipment and culture preparation instruments	Low
		Medical Laboratory furniture	Low
		Ultrapure water purification system	Low
	Veterinary Science	Planning considerations for Veterinary Hospital and Clinics	Low
		Veterinary instruments (catheter, IV cannula, endometrial forceps)	Low
Agriculture	Agriculture Inputs	New Pesticide Formulations	Medium
		Bio-pesticides	High
		Botanical Pesticides	High
		Nano fertilizer	Medium
		Bio-stimulants	Medium
		Label claim based innovative fertilizer formulations	Medium
		Chemically inert, environmentally safe, chelated micronutrients for use in agriculture	Medium
	Agricultural equipment and machinery	Drones used in agriculture	High
		Use of Artificial Intelligence (AI) / Internet of Things (IoT) in Agriculture, Block chain in agriculture	High
		Test codes and procedures for potato combine harvester, trash mulcher, trash shredder, sugarcane ratoon management devices, tractor mounted sprayers, fertilizer applicator for sugarcane, strip till drills, roto till drills, power harrow (rice harrow), rotary plow/puddler, roto cultivator, heavy duty puddlers, super seeder, self-propelled weeders, self-propelled forage harvester (3/4 wheels), ridger tiller, disc mower, electrostatic sprayer, soil scanner and pest scanner	Medium
		Performance requirement and test codes for electrical and electronic tractors	Medium
		Performance requirement standards for alternate fuel and dual fuel use in tractors	Medium
		Testing procedure and performance parameters related to HST /CVT /IVT transmissions	Medium

Sector	Field	Subject Area	Priority
Agriculture (contd.)	Agricultural equipment and machinery (contd.)	Conversion of AIS published under CMVR and OECD standards into Indian Standards	Medium
		Guidelines for contract farming and commercial farming	Medium
		Guidelines for Hydroponic farming	High
		Guidelines for Vertical agriculture	Medium
Food Sector	Food Products	Minimally processed fruits and vegetables	Medium
		Traditional food products manufactured by MSME sector	Medium
		Emerging packaged waters in the form of alkaline water, black water, fortified water, copper+, sparkling water, flavoured water etc.	Medium
		Fortified foods/ Enriched foods	High
		Fish cutlet and fish momo's	Medium
		Virgin coconut oil	Medium
		Coconut copra	Medium
		Preserved chapatti	Medium
		Ripening chamber for fruits	Medium
		3-D printed food products	Medium
	Food Quality Assurance	GMP/ Food Safety Guidelines for tea, coffee and cocoa	High
		Food safety guidelines for tea, coffee and cocoa	High
		Food fraud - pre-emptive methodologies	Medium
	Food Analysis	Test method for identification of constituent oils in blended oil	Medium
		Methodology for manufacturing of biomolecules (in food and agriculture) using genetically modified microorganisms	Medium
		Test methods for detection of microplastics in food items	High
		Validation of rapid testing kits through specified criteria/ SOP for formulation of standards	Medium
	Food Processing Equipment and Machinery	Test code of equipment and machineries related to cold plasma technology	Medium
		Horizontal standards on energy efficient food processing equipment and machineries	Medium
Water Resources	Ground Water	Aquifer Storage and Recovery Techniques	Medium
		Guidelines for Aquifer mapping	Medium
		Impact assessment techniques for artificial recharge structures	Medium
		Guidelines for surface runoff harvesting using Small Structures	Medium
		Ground Water Harvesting Using Unconventional Measures	Medium
		Groundwater Flow Monitoring	Medium

Sector	Field	Subject Area	Priority
Water Resources (contd.)	Coastal Zone Water Management	Control of Salt Water Intrusion	Medium
		Preventions of Coastal Hazards	Medium
		Coastal Erosion Protection	Medium
		Anti-Erosion Works in Coastal area	Medium
	Disaster Mitigation and Management	Glacial Lakes Outburst Floods	Medium
		Anti – Erosion Works on River Course	Medium
		Design and Construction of Fuse Plug to Facilitate Breaching	Medium
		Flood Forecasting Using Real Time Reservoir Inflow	Medium
		Flood Map of India	Medium
		River Morphology and Flood Plain Study	Medium
	Hydro Structure Construction, Operation maintenance	Standardization on Dams Safety Management, Planning and Rehabilitation	High
		Life Cycle Assessment of Dams	High
		Sediment Management and disposal	Medium
		Guidelines on Performance of Old or Existing Hydraulic Structures	Medium
		Guidelines on Treatment of Defects in the Foundation of Masonry and Concrete Dam	Medium
		Optimization and Simulation of Reservoir Operation	Medium
		Dam Safety Protocol and Retrofitting	High
		Dam Break Analysis	High
		Roller Compacted Dams	Medium
		Rubber Dams	Medium
		Adit Gates Design	Medium
		Ventilation of Underground Power Houses	Medium
		Performance Monitoring of Hydraulic Structures	Medium
		Piano key Weirs	Medium
		Installation, Maintenance and Operation of Instruments in Tunnels	Low
		Standards on Geological investigations in Himalayan Region	Low
	Water Resources Management	Efficient Use of Water Resources	High
		Interlinking of Rivers	High
		Standards on Artificial Ponds/ Lakes	Medium
		Canal Automation	Medium
Water Use Efficiency		High	
Inland Water Transportation Design		Medium	

Sector	Field	Subject Area	Priority
Water Resources (contd.)	Water Resources Management (contd.)	Rejuvenation of Traditional Water Resources	High
		Water Audit	Medium
		Piped Irrigation Network	Medium
		Seepage Losses in Reservoirs	Medium
		Evaporation Control in Canals	Medium
		Integrated watershed management	Medium
	Environment Impact Assessment	Environment and Social Impact on River Training Works	Medium
		Climate Resilient Water Security	Medium
		Assessment of Environmental Flow	Medium
		Conservation of aquatic ecosystems in reservoirs and lakes	Medium