

STRATEGIC ROAD MAP

PETROLEUM AND COAL RELATED PRODUCTS DIVISION COUNCIL (PCDC)

EXECUTIVE SUMMARY

Petroleum and Coal related products Divisional Council (PCDC) works for standardization in the field of petroleum, lubricants, biofuels, solid mineral fuels, gaseous fuels, bitumen, coal tar, organic chemicals, dye-intermediates, plastics (including adhesives and composites), rubber, cosmetics, fragrance & flavour ingredients, and toys. The fields under PCDC are variegated and hence PCDC is represented by all possible stakeholders to formulate Indian Standards relevant to the current and future market needs while utilising past experiences.

Since inception, PCDC has published around 1500 Indian Standards of which 798 are product specifications, 579 test methods, 39 code of practices, 25 terminology standards and 8 safety standards. Many of the product standards including those of petroleum products, cosmetics, coal, toys and rubber hoses are referred in various regulations to make their compliance mandatory for manufacturers. For biofuels alone around 15 standards were published in recent past, as and when required by the Ministry of Petroleum and Natural Gas (MoPNG). Further, while aligning the Harmonised System (HS) codes with the Indian Standard specifications, Department of Chemicals & Petrochemical (DCPC) has requested for preparation of Indian Standards for various organic chemicals, plastics, and rubber related products. Based on such requirements, a number of Indian Standards have been reviewed and around 25 new Indian Standards are published. Availability of up-to-date Indian Standards helps in regulating imports of substandard materials, in streamlining local market with better quality products/raw materials for Indian industry and to consumer, and to improve the quality of Indian goods enabling them to compete better for exports. Alongside, it helps in achieving United Nations Sustainable Developmental Goals) UNSDGs related to socio-economic, environmental, and human safety issues.

As the global macro-economic factors are fast changing, there is urgent need to develop a resilience, self-correcting agile system to realign the Indian Standards to such evolving world

order. Hence, this strategic roadmap is prepared to help identify the gaps where Indian Standards need to be either prepared or updated and implemented.

The strategic road map thus aims to identify the futuristic growth areas; latest technology upgradations and relevant stakeholders to participate in the standardization activity. It also supposed to address gaps in the existing standards, promoting imports substitutes, controlling varieties, improving quality of export goods, etc.

The road map will also help identify priority areas in the above-mentioned sectors by gauging socio-economic and environmental aspects.

1. INTRODUCTION

- 1.1** The Strategic Road Map of Petroleum and Coal related products Divisional Council (PCDC) is being developed as a document to reflect the vision of national standardization in the DC's domain and to provide a broad standardization roadmap with a five-year perspective. It is expected to serve as an up-to-date overview of the basis for Sectional Committees to develop their respective standardization plans to be shared with all interested stakeholders.
- 1.2** The Road Map covers the main objectives and current strategies in consideration of the socio-economic, regulatory and other environmental issues in which the Division Council operates.
- 1.3** The aim is also to align the work program of all technical committees with business needs, current trends and to allow respective committees plan their work, set right priorities, identify the benefits of having national standards, and to ensure adequate resources for projects throughout their development.
- 1.4** The market share of the sectors under PCDC is given in the table below, to give an overall idea about the market value and need of standardization to define quality of the products:

Sl. no.	SECTOR	PRODUCTION in our country	IMPORT	EXPORT	% GDP	FUTURE GROWTH EXPECTATION
1.	Petroleum Products A. Public Sector B. B. Joint Venture C. Private Sector D. Total (A+B+C+D) Fractionator + Bitumen	19.172 MMT (June 2021)	262.9 MMT (2019-2020)	Exports of petroleum products from India reached 55.9 MMT in FY21 from 60.5 MMT in FY16.	7.8	Crude oil consumption is expected to grow at a CAGR of 3.60% to 500 million tonnes by 2040 from 221.56 million tonnes in 2017. Country's Gross Domestic Product (GDP) is expected to increase to USD 8.6 trillion by 2040.
2.	Lubricants	2.8 MMT in 2018	—	For 2018 Lube export value is 272.8 USD million, about 10.3% increase.	—	Lubricant demand in India to grow by nearly 3% annually through 2024
3.	Biofuels	670 TKL for 2019	—	In FY 2020-2021 (Apr-Nov), Biodiesel of around 1,529.97 USD million value was exported to Singapore	Road transport sector accounts for 6.7 per cent of India's Gross	Biodiesel demand for 20% blending target is expected to grow 19.8 and 31.1 Million KL by 2020 and 2030 respectively

					Domestic Product (GDP).	
4.	Solid Minerals Fuels (Coal)	715.95 MMT in FY21.	In the last financial year, Indian exports stood at \$290.18 billion, down 7.4 percent from \$313.36 billion in 2019-20	—	—	India's combined import bill for fossil fuels is projected to triple over the next two decades, with oil by far the largest component. Domestic production of oil and gas continues to fall behind consumption trends. In business as usual scenario net dependence on imported oil will rise to more than 90% by 2040, up from 80% today.
5.	Gaseous Fuels	25.99 BCM FY21	29.88 BCM FY21	—	—	Gas will be the strongest-growing fossil fuel and will increase by 0.9 percent from 2020 to 2035.
6.	Organic Chemicals	816 TMT FY21	Imports of Organic Chemicals in India decreased to	17742.51 (Export Value-USD in Million in 2018	7% of the country's Gross Domestic	The demand for specialty chemicals is expected to rise at a 12% CAGR in 2019-22.

			3858.64 USD Million in 2020		c Product (GDP).	
7.	Dye- Intermedia tes	60,000 tonnes 6.6 per cent of world production	55,868.000 Metric Ton in 2017	3230.67 (Export Value -USD in Million)	—	The domestic chemicals sector's small and medium enterprises are expected to showcase 18-23% revenue growth in FY22.
8.	Plastics (Including Adhesive , Composite and Toys)	around 1.7 million metric tons (in 2020)	India exported plastics raw material worth US\$ 280.38 million in March 2021	2338.89 USD Million in 2020	—	PP demand in India grew at a CAGR of around 8.51% during 2015-2019 and is expected to achieve a healthy growth rate in 2022 - 2030. PET resin demand is projected to grow at a CAGR of 6.75% in 2022-203 PVC in the country is estimated to achieve CAGR of over 6.81% during 2015- 2030. Pipe grade PVC accounts for over 40% of the overall demand as it is used in the

						production of water-distribution and underground irrigation pipes.
9.	Rubber	According to the Rubber Board, India produced 7.12 lakh tonnes of natural rubber(IN 2020)	458.17 in Rs. Crore (2017 – 2018)	277.30 in Rs. Crore (2017 – 2018)	—	Rubber industry possesses a lot of potential for growth if the government policies are correctly implemented. It is about to reach a target of Rs. 80,000 crore.
10.	Cosmetics	It was estimated to be valued at about 20 billion U.S.	India Raw materials imports are worth US\$ 160,775 million, product share of 33.57%.	India Raw materials exports are worth US\$ 23,153 million, product share of 7.16%.	—	India Cosmetics products market is projected to grow at a CAGR of 4.23% during the forecast period 2020 - 2025.
11.	Fragrance & Flavour Ingredients	Global fragrance & flavour industry is worth \$24.10 Billion and India contributes approximately \$500 million		—	—	Growth rate in India is approximately 11% in the last few years but is projected to grow exponentially in the upcoming years due to rising personal care, brand awareness, increasing

					disposable income, growing demand in middle class people and affordable price of fragrance in the form of mass perfumes & deodorants. The natural fragrance market size is projected to reach USD 4.3 million by 2024 from USD 2.7 million in 2019, at a CAGR of 9.6%.
12.	Toys	Indian toy market is US\$1.23 Billion in 2020 with only 40% domestic production.	About 60% of demand is met by imports	--	Indian toy market expected to grow at a CAGR of 12.2% during 2021-2026

2 OBJECTIVES

2.1 The main objectives of this Strategic Road Map are as follows:

1. To provide a national framework for development of Indian Standards that are in line with market need, reliable, market driven and implementable;
2. To review the existing standards for their relevance to market needs and work for their updation, if need by revising / amending them;
3. To emphasize safeguards in respective areas of environment protection, health, and safety of consumers;

4. To assess and encourage active participation of all member organizations (stakeholders) in the standardization activity of different Committees under PCDC and to regularly review the composition of Committees; and
5. To promote participation of relevant experts in international standardization in the areas where interest of Indian industry lies.

2.2 Business Environment of the Division Council

The sector-wise strategic business plans, in view of the government prerogatives, policy imperatives, regulatory and legal issues, such as the existence of national legislation/regulations, policy directives, product bans etc., are as follows:

- a) **Petroleum sector:** The oil and gas industry is facing increasing demands to clarify the implications of energy transitions for their operations and business models, and to explain the contributions that they can make to reduce greenhouse gas emissions and to achieving the goals of the Paris Agreement.

In line with such priorities, there are many government prerogatives and policies guiding this field. Some of them include Biofuel policy of India, 2018, Ethanol Blending Program; Bio-Diesel Programme; Auto Fuel Vision and Policy; National Gas Grid; Promotion of LNG / CNG in vehicles, Ji-VAN Scheme to promote Compressed Bio Gas, National Hydrogen Mission, promotion of circular economy to make valuable products from waste, Bio-ATF, etc.

NITI Aayog has also initiated 'Methanol Economy' program to reduce India's oil import bill, greenhouse gas (GHG) emissions, and converting coal reserves and municipal solid waste into methanol. Accordingly, an Indian Standard for M15 fuel has been published and other specifications are under consideration.

A large no. of Indian Standards on biofuels and blended fuels were published as and when required by the regulatory authorities like MoPNG, MoRTH, etc. Taking cue from National Biofuel policy 2018, a series of Indian Standards on ethanol blended fuels with motor gasoline were published. Since most of the product standards under

petroleum sector are referred to in the gazette notifications of MoPNG, Customs and CMVR, it is envisaged that the standards are updated with the changing technologies. There may be a possibility of the need to develop standards of more varieties of fuels derived from plastic waste or waste biomass, etc. There is need to formulate Indian Standards for needle coke specification and speciality solvents in view of upcoming increasing demand of industrial uses.

Biodegradable lubricants and greases need to be looked into. Further, many instrumental test methods are available in the market and there is a need to prepare equivalent Indian Standards. Reference to automated thermometers need to be identified to replace mercury thermometer in test methods, in line with international practice.

- b) Bitumen sector:** Though bitumen is petroleum based, it is primarily used for laying roads and construction and is guided by the guidelines of Ministry of Road Transportation and Highways (MoRTH) and Indian Road Congress (IRC). Many scientific advances are observed in modified bitumen grades and there is a possibility of some new subject areas of standardization. There is a special focus now on using bitumen as a possible means to counter the menace of single use plastic by blending used plastic in the bitumen mix at the time of laying the roads. For this in consultation with MoRTH possibility of releasing specifications with higher percentage of plastics to be looked into.
- c) Coal sector:** Coal is one of the core sectors for industrial growth in our country. Even though there is no need for new product specifications for coal, lot of solid biofuel briquettes and pellets are emerging and thus there is lot of scope to develop new product specifications as well as test methods standards. There is also renewed interest into coal gasification and producing methanol. The concerned Committee of PCDC, need to keep such changes as part of their 5-year plan focus.
- d) Plastics including plastic containers:** Plastics have become an integral part of every industry and seeped into the regular day-to-day activities of common people. There are always new emerging polymers and thus there is a need for the experts to keep an eye on the upcoming areas, which currently may vary from absorbents to compostable plastics and biodegradable plastics for various uses. Single used plastics need to be well defined or identified in the product standards. Many standards may be required to be

prepared in this sector owing to their presence in almost all sectors. Biodegradable, compostable plastic materials, reused, recycled and post-consumer recycled plastics materials, in line with the Environmental regulations notified by the Government of India, need to be identified for standardization, thus taking care of tackling plastic pollution. Indian experts participate actively in the international standardization work in this sector and so adoption of ISO test methods which is already under consideration by one of the Committee need to be looked into.

- e) **Cosmetics and fragrances:** Cosmetics are regulated under the provisions of the Drugs and Cosmetics Act, 1940 and rules made there under. At present 37 categories of finished cosmetic products have been standardized, but still there are always new cosmetic products arriving in the market. There are various categories of cosmetic products for which standards are not available which needs to be addressed for the same. Further there is request for preparing a horizontal standard to look into the basic requirements of similar types of cosmetics. Futuristic subjects like safety based Horizontal standard/ parameters can be the way forward. This may allow faster innovations for consumers to access while safety of product is confirmed and ensured by manufacturer. This approach is in the interest of Progressive India and help Make in India policy become stronger.

Fragrances and flavours market is also expanding manifolds. Many synthetic fragrances are being used in regular household items also and so they can be considered for preparing new standards. Developing safety standards for fragrances can also be considered. Test method standards may also be formulated/adopted from time to time, as required by the industry and may refer international standards existing in these sectors.

- f) **Rubber and rubber products:** India is one of the exporters of rubber. The rubber industry has grown a long way along with the number of the standards. Indian industry is participating actively at ISO and such standards prepared by our experts at ISO can be adopted under dual numbering. Further, silicone rubber is used in many products for which standards may be necessary.

g) Organic chemicals and dye intermediates: It is observed that India depends on imports for many of the organic chemicals used as raw materials in various industries. Different Ministries are working together to decrease import dependency and facilitate domestic production in the spirit of Atmanirbhar Bharat. Department of Chemical and Petrochemicals (DCPC) has requested BIS for preparing Indian Standards on such organic chemicals which are of high import value. Around 20 new Indian Standards were published and many more were revised or amended. Around 10 new subjects/products are still under consideration, which shall be taken up on priority. There is also renewed focus in the oil and gas industry towards expanding the product basket and de-risking business through crude to chemicals strategies. There will be products coming into market through fossil fuel as well as bio-fuel pathways. The respective PCDC committee must capture such developments as part of their 5-year plan.

2.3 Benefits Expected from the Work of the Division Council

This Division Council deals with many priority subjects starting from organic chemicals, dye intermediates to solid biofuels, blended fuels, silicone-based products, polymers, synthetic fragrances and cosmetics. Many of the organic chemicals are generally imported by our industries, involving lot of forex transfer to other countries. In order to reduce import dependency and encourage domestic manufacturing sectors in our country, the Government of India has initiated Atmanirbhar Bharat and Make in India schemes to help and encourage Indian manufacturers to foray in these chemical industries. Indian Standards will help in development of such industries by providing quality requirements, test methods, code of practices, etc. Further the manufacturers can achieve United Nations Sustainable Development Goals (SDGs) by adhering to the relevant Indian Standards.

Standards developed by PCDC are primarily product specifications and test methods which provide means to enable objective assessment of process and product. The standards assist in improvement of quality-control activities in a manufacturing sector. The results from the testing, using the relevant standards, give the requisite details of compliance to standards, to all the stakeholders including common consumers.

Many of the products under this Divisional Council are petroleum based organic chemicals and their derivatives. They play a major role in the economy and timely preparation or revision of standards are very much required. In case of automotive fuels, Indian Standards were updated with BS VI emissions compliant fuels, well within the requisite timelines for their implementation in the country, thus allowing smooth migration from BS IV emission compliant fuels to BS VI, across the country. Thus, timeliness for formulation/revision of a standard plays a pivotal role in its implementation. Further these standards of fuels including biofuels play a pivotal role in addressing relevant safety, health, social or environmental concerns and benefit the economy. Many new technologies are emerging in synthetic fuels which help in reduction of carbon emissions, may be standardized.

Indian Standards in the field of Cosmetics are governed by the Cosmetics Act 2020 and are regulated by CDSCO, DGCI. Therefore, formulation of more specifications can help in identifying the new products which are now being sold without any quality specifications pertaining to them.

Harmonization of our standards particularly in test methods will help in using the mostly used test methods in the world. This will help in testing the product as per the latest standards irrespective of the place of manufacture and thus help in checking quality of imported materials. Further participation in the relevant International standardization work enhances the chances of taking care of the national interest.

2.4 Stakeholder Representation

The Petroleum, Coal and related products Divisional Council and its Sectional Committees are well represented by relevant stakeholders and are balanced Committees. They include manufacturers, consumers, scientific and technical organizations, academic and research institutions, government, and regulatory bodies, etc. The composition of each sectional committee is reviewed every three years by the Division Council based on their participation in the work of the committee. The recommendations of the sectional committees on co-options and withdrawals are also considered and approved by the Division Council.

Regular participation of stakeholders is yet to be attained. Lack of participation may be due to lack of knowledge about the standardization activity, lack of availability of time, broad scope

of the Committees, etc. The organizations are to be followed up on regular basis in order to ensure their active participation. Acknowledging actively participating organizations in the meetings, recognition certificate for members providing the drafts, regular stakeholder engagement may improve participation of members in the meetings.

2.5 Objectives of the Strategies

The strategies identified to fulfill the objectives are as under:

Sl no	Objective	Strategies
1	To provide a national framework for the development of Indian Standards that are needed, reliable, market driven and implementable in the areas pertaining to the scope of PCDC	<ul style="list-style-type: none"> • The Sectional Committees under PCDC would be guided to prioritize the work considering the National priorities as well socio-economic and environmental issues. • A core group (Panel) under Division Council to guide the Sectional Committees for selection of new /emerging subjects • A survey/ Questionnaire to the Committee members to ascertain the new subjects, as required by market
2	To review the standards for their relevance to market needs and for their updation to meet the market needs by the way of revising / amending them.	<ul style="list-style-type: none"> • Members would be encouraged to fill review proforma and provide a draft revision along with relevant inputs in the form of Action Research Project (ARP). • Member /Member Secretaries would be encouraged to reach out to stakeholders and help each other in identifying right person through known contacts, while reviewing the standards. • By visiting a manufacturing unit create more clarity on the process as well as market needs

		<ul style="list-style-type: none"> • A strategy group to be created in each Sectional Committee to proactively explore the new areas for standardization • Timelines to be specified and closely monitored
3	To emphasize safeguards in the areas affecting environment, health and safety for overall benefit of consumers.	<ul style="list-style-type: none"> • Strategy groups need to be encouraged to highlight the priority based on effect on environment, health and safety for overall benefit of consumers of a product/subject. • Refer to existing regulations and aligning with them • Refer other country / International standards or literature for assessing the relevant safeguards • Consider the practices prevailing in the industries
4	To assess and encourage the participation of all member organizations (stakeholders) actively in the standardization activity of all the Committees under PCDC and review the composition of the Committees regularly.	<p>Review composition and look into alternate organizations, so as to maintain balance in the Committee</p> <ul style="list-style-type: none"> • Appreciate the members contributing actively to the Committee work • Regular review of Composition and removal of non-participating members
5	To promote participation of experts in International standardization where the interest of Indian industry lies.	<ul style="list-style-type: none"> • Indian industry is regularly participating in the ISO activities in the fields of plastics, rubber, and petroleum. Contributions of the members in the ISO committee can also be appreciated, to motivate others to contribute actively. • Encourage members to send comments on documents from early stages

3 IMPLEMENTATION OF THE STRATEGIC ROAD MAP

The strategic road map of PCDC is proposed to be implemented in the next five years and the progress to be monitored periodically in terms of measurable parameters identifiable against each item. Keeping in view the above broad objectives, it is necessary to give emphasis on its implementation strategy to work out plans, programs, projects etc with clearly defined tasks, resources, and time targets for arriving at the desired benefits. The Road Map would form the basis for the Sectional Committee under the Division Council to frame their individual Standardization Plans. The scope of each Sectional Committee under PCDC is given as Annex A to the document.

For monitoring the implementation of the strategic roadmap, the following steps can be taken:

- (i) Creating alert groups in each Sectional Committee, with a group of active members to verify the market for identifying new subjects, assessing the market needs and inform the upcoming areas for standardization, etc.
- (ii) Evaluation of new subjects received for their formulation.
- (iii) Continuous monitoring of the work progress of the Committee and timeline monitoring by the member secretaries.
- (iv) Interact with members and identify the needs of the members to provide the drafts timely.

4 REVIEW OF PLAN

The Strategic Road Map of the Division Council must be formally agreed upon by the Council and then reviewed periodically. The plan will be reviewed from time to time to evaluate the progress as well to formulate new strategies, whenever required and with the approval of the Council.

ANNEX-A

PCD 01 Methods of Test for Petroleum, Petroleum Products (including gaseous fuels) and Lubricants Sectional Committee

Scope: a) To formulate Indian Standards for Methods for Sampling and test for Petroleum products of synthetic or biological origin including lubricants, greases, speciality products, additives and gaseous fuels (excluding bitumen)

b) To organize correlation schemes for evaluating the accuracy and the performance of fuel and lubricant testing including the engine tests.

PCD 03 Petroleum Products and Related Products of Synthetic or Biological Origin Sectional Committee

Scope : To formulate Indian Standards for terminology; petroleum, petroleum products, biofuels (liquid and gas), fuels produced through synthesis route, specification for natural gas and codes of practice for storage, handling, transport and application.

PCD 06 Bitumen, Tar and Related Products Sectional Committee

Scope: To formulate Indian Standards for terminology, methods of sampling and test and specification for bitumen including bitumen cutback and bitumen emulsion, bitumen additives, modified bitumen, industrial bitumen, bituminous mixes.

PCD 07 Solid Mineral Fuels and Solid Biofuels Sectional Committee

Scope: To formulate Indian Standards for a) Terminology, methods of sampling and test, codes of practice, classification by size and type, petrographic analysis and specification for solid mineral fuel b) Terminology, methods of sampling and test, codes of practice, classification and specification for raw and processed materials originating from arboriculture, agriculture, aquaculture, horticulture and forestry to be used as a source for solid bio-fuels.

PCD 09 Organic Chemicals, Alcohols & Allied Products Sectional Committee

Scope: To formulate Indian Standards for terminology, method of sampling and test and specifications for organic chemicals, ion-exchange resin for general industrial use, alcohols & allied products.

PCD 12 Plastics Sectional Committee

Scope: To formulate Indian Standards for terminology code of practice, safety and specifications for thermosetting & thermoplastic resins-bonded & moulding materials, natural & synthetic polymers, synthetic resin bonded laminates thermoplastic films & sheets, additives including plasticizers, cellular plastics, finished plastic articles, composites & reinforced plastics (excluding sanitary wares, plastic pipes for water supply and plastics packaging), safety of toys, natural & synthetic adhesives (excluding for plywood industry and electrical tapes), Environmental aspects.

PCD 13 Rubber and Rubber Products Sectional Committee

Scope : To formulate Indian Standards for terminology, environmental aspects, code of practice, specifications for natural rubber, synthetic rubber, reclaimed rubber, vulcanized rubber and rubber products (excluding rubber conveyors and transmission belting, rubber cables and rubber products for automobile industry), hoses and hose assemblies, elastomeric isolators, raw materials for rubber and rubber industry, flexible and semi-rigid cellular materials [made of rubber and thermoplastic rubbers (TPE & TPR)] and coated fabrics.

PCD 18 Fragrance and Flavour Ingredients Sectional Committee

Scope: To formulate Indian Standards for terminology, methods of sampling and test, codes of practices and specifications for fragrance and flavouring ingredients.

PCD 19 Cosmetics Sectional Committee

Scope : To formulate Indian Standards for terminology, methods of sampling and test, codes of practice and specifications for raw materials for cosmetics and toilet goods (excluding soaps) and for finished products.

PCD 21 Plastics Packaging Sectional Committee

Scope : Formulation of Indian Standards on rigid, semi-rigid and flexible plastics containers, closures and their methods of test and To coordinate with the work of ISO/TC 61 ‘Plastics’ and ‘ISO/TC 122 (Plastic Packaging only)’ so far as it concerns its own scope.

PCD 25 Lubricants and Their Related Products Sectional Committee

Scope : To formulate Indian Standards for terminology; lubricants, bio-lubricants, lubricating oils, greases and their related products like fluids and greases for electric vehicles (hybrid and battery electric vehicles), hydraulic fluids, corrosion preventives, quenching and cutting oils, lubricant produced through synthesis routes and codes of practice for storage, handling, transport and application.

PCD 26 Dye Intermediate Sectional Committee

Scope : To formulate Indian Standards for terminology, method of sampling and test and specifications for Dye intermediates.

PCD 27 Methods of Sampling and Test for Plastics Sectional Committee

Scope : To formulate Indian Standards for terminology, methods of sampling and test for plastics.

PCD 29 Methods of Test for Rubber and Rubber Products Sectional Committee

Scope: To formulate Indian Standards for methods of sampling and test of rubber and rubber products.

PCD 30 Toys Sectional Committee

Scope: To formulate Indian Standards for terminology, specifications, test methods, code of practice and safety of toys including hand-made toys.