इस्पात मंत्रालय
MINISTRY OF
STEEL

सत्यमेव जयते
Government of India

SRTMI

Scheme Guidelines for Advancing R&D and Accelerating Innovation in the Indian Iron and Steel Sector

Steel Research and Technology Mission of India

www.srtmi.com

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1. Introduction

Recognizing the need to accelerate innovation and R&D in the Indian steel sector through a collective effort, the Ministry of Steel and industry stakeholders came together to formalize a shared vision for setting up a centralized platform for innovation. This vision materialized with the signing of the Memorandum of Association (MoA) with major steel players, laying the foundation for structured collaboration. In 2015, **Steel Research & Technology Mission of India (SRTMI)** was officially registered under the Societies Registration Act, 1860, marking a significant milestone in strengthening India's steel R&D ecosystem and fostering industry-academia partnerships.

The Steel Research & Technology Mission of India (SRTMI) aims to bridge critical gaps in innovation and research & development (R&D) in the Indian steel sector. For decades, the industry has largely focused on operational improvements, with limited emphasis on groundbreaking technological advancements that can drive long-term transformation and sustainability. Recognizing the pressing need to develop radically new, path-altering technologies tailored to India's unique resources and industrial landscape, SRTMI was conceived as a dedicated platform to foster cutting-edge research and technological self-reliance.

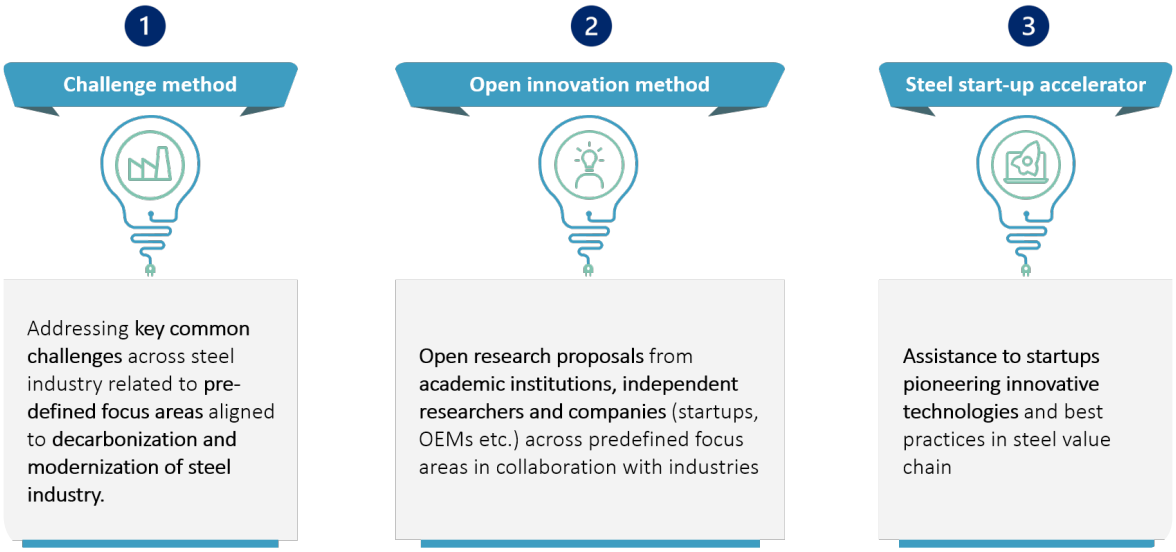
The Indian steel industry is a cornerstone of the nation's economic growth, infrastructure development and global trade competitiveness. Strengthening its technological foundation is imperative to address key challenges in areas such as decarbonization, process optimization, digitalization, resource efficiency, product innovation and circular economy. A robust research ecosystem that brings together research laboratories, startups, academic institutions, independent researchers and enterprises is essential for developing indigenous solutions that enhance global competitiveness while ensuring environmental sustainability.

To restrengthen impact of SRTMI on steel industry, SRTMI is launching its new R&D schemes which aims to provide better and flexible opportunities for all the stakeholders including ISPs, SSPs, DRI producers, induction furnace community, OEMs, etc. to collaborate with wide range of innovators and researchers including academic institutions, research institutions, independent innovators, startups, etc. Through this dynamic collaboration, the initiative by SRTMI will drive the Indian steel sector towards sustainability and modernization.

2. Categories of Schemes

A structured approach to research and development is essential to address critical challenges in the steel sector and drive transformative advancements. SRTMI is introducing a set of strategic schemes aimed at fostering innovation, strengthening industry-academia collaboration and accelerating the adoption of sustainable technologies. The schemes will create a robust ecosystem for breakthrough solutions across different focus areas, as highlighted in Figure 2. **The Challenge method, Open innovation method and Steel startup accelerator**, which are defined in section 4, 5 and 6 respectively, will collectively support pioneering research, encourage open innovation and nurture early-stage startups, ensuring a competitive and future-ready steel industry.

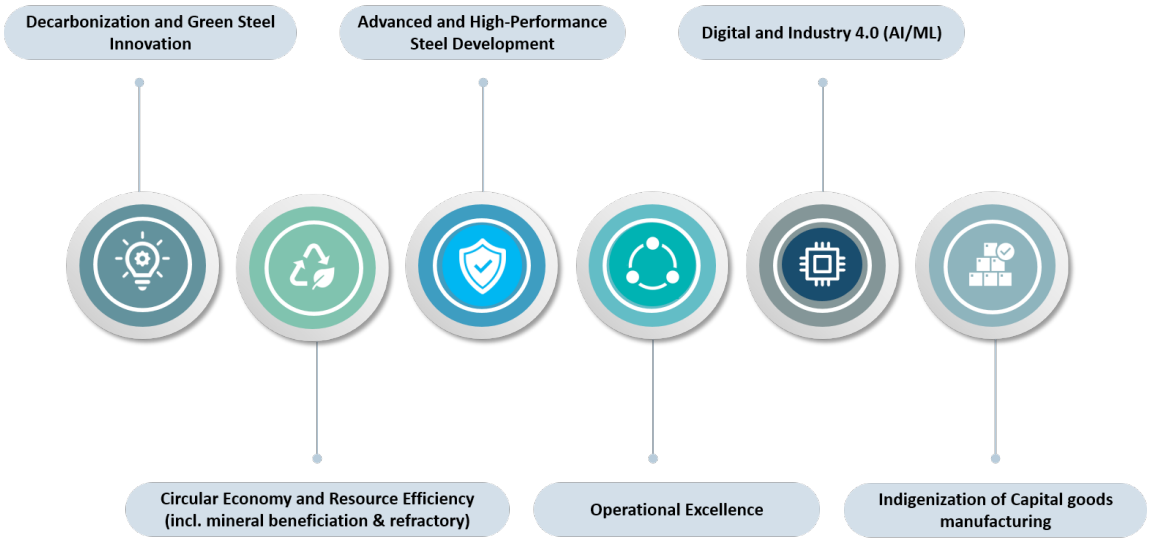
Figure 1: Different categories of R&D schemes under SRTMI



3. Key Focus Areas

The research and development (R&D) schemes under the Steel Research & Technology Mission of India (SRTMI) will be strategically aligned to drive innovation and sustainability in the steel industry. These focus areas are designed to address key challenges and opportunities, ensuring the sector remains competitive, environmentally responsible and technologically advanced. Decarbonization and Green steel innovation will accelerate the transition to low-carbon steel production, while resource efficiency and circular economy will optimize material usage and waste reduction. Advanced and high-performance steel will support the development of next-generation materials for diverse applications and operational excellence will enhance productivity, quality and cost effectiveness. Digital and industry 4.0 will enable smart manufacturing through automation, AI and data-driven solutions, whereas the indigenization of capital goods manufacturing will strengthen domestic capabilities in critical steelmaking equipment, reducing import dependencies. Together, these initiatives will pave the way for a more resilient and future-ready steel industry in India. Highlighted below are the key focus areas.

Figure 2: Focus areas



Prioritizing the above key focus areas, SRTMI aims to propel the Indian steel industry towards a more sustainable, efficient and technologically advanced steel making. Through various R&D schemes, the industry will be equipped to address emerging challenges, foster high-value innovation and strengthen its role in India's economic growth. The following section outlines the structured approach that SRTMI will adopt for each of its R&D schemes to drive impactful research and development, ensuring long-term resilience and achieve global leadership in the steel sector.

4. Scheme guidelines for the Challenge method

The scheme invites industry players to come together and identify key pressing challenges, common across the steel industry. Call for proposals are floated, inviting academia, researchers, industry players, and technology developers to collaboratively develop breakthrough solutions against the identified challenges.

4.1 Objective

To stimulate targeted research and innovation for challenges faced by steel producers in pre-defined critical areas, particularly those aligned with the decarbonization and modernization of the steel sector.

4.2 The Scheme

The challenge method is introduced to collect common challenges across the steel industry from different steel producers. The scheme will be funded by SRTMI. Solutions against these challenges will be developed through collaboration with leading academic and research institutions in the country.

A brief layout of the mechanism of implementation for the scheme is highlighted below:

Figure 3: Mechanism of implementation of Challenge Method

The details of each of the above steps are mentioned below:

4.2.1 Problem identification and prioritization

- Industry challenges will be identified by a Steel Challenge Identification Committee (SCIC), as described in section 8.
- The committee will meet atleast once in a quarter for project identification.
- Project prioritization will be done by this committee based on parameters it sets. These may include parameters like – impact of the project, Capex, risk, resource availability, alignment with national goals, etc.
- For each selected project, the SCIC will define key KPIs. This may include parameters like baseline KPI, target KPI, focus area, impact of the project (financial, environmental),

estimated timeline and budget range required, etc.

- The eligibility criteria of applicants for each project will depend on the nature of the project as decided by the Steel Challenge Identification Committee.

4.2.2 Call for proposals

- Open calls inviting proposals will be floated to research institutions, academic institutions, labs, OEMs and startups etc. Proposals will also be floated on public forums such as the SRTMI website, newspaper advertisements, etc.
- Interested parties may apply to these calls through the web portal of SRTMI.
- The proposals submitted should be as per the "Guidelines for submission of proposal seeking financial support from SRTMI under the proposed schemes", as described in the Annexure 1.

4.2.3 Project evaluation and selection

- Project proposals will be evaluated by Research Project Appraisal Committee (RPAC), as described in section 9.
- The frequency of the evaluation and selection will be once in every quarter.
- The selected proposals will be given final approval for implementation by Governing board of SRTMI.

4.2.4 Project implementation and funding

- Selected projects to be funded with 100% contribution by SRTMI.
- Funding limit will be decided as per nature of the project to be decided by the RPAC.
- SRTMI fund disbursements will be done in phased manner as suggested below:
  - Initial 40%: Upon project approval and signing of MoUs and agreements.
  - Next 40%: Upon achieving milestones as validated by RPAC.
  - Final 20%: Post successful completion of project and approval of deliverables.

4.2.5 Project monitoring

- RPAC will monitor the project on quarterly basis.
- Project monitoring to be done by PMU appointed by SRTMI, chaired by a senior member appointed by RPAC, on monthly basis.
- Project monitoring report to be created and circulated to all relevant stakeholders by the PMU every month for all funded programs.
- Funds disbursement by SRTMI will be based on milestone achievement (depending on the nature of the project) as approved by RPAC.
- Upon successful pilot implementation, large-scale implementation is to be planned in a phased manner in consultation with the industry members.

5. Scheme guidelines for Open innovation method

5.1 Objective

To encourage innovation by providing an opportunity for steel producers to collaborate with innovators and formulate research proposals which will endeavour to address specific problems of the industry.

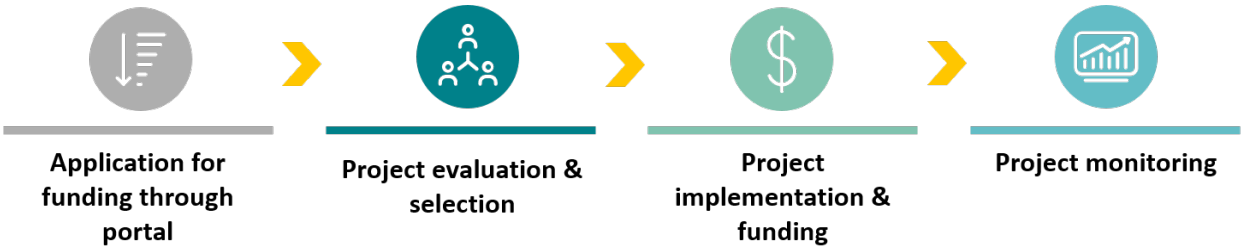
5.2 The Scheme

This scheme is laid out to bring out problems specific to the industry (ISPs, SSPs, IF community, DRI producers, etc.) for which relevant solutions can be developed in collaboration with academic institutions, research institutions, startups, etc. Problems from smaller steel producers and secondary steel producers will also be addressed under this methodology.

Detailed guidelines, eligibility criteria, and funding mechanisms are outlined below to facilitate a transparent and impactful research framework, providing a structured approach to proposal evaluation, selection and implementation.

A brief layout of the mechanism of implementation for the scheme is highlighted below:

Figure 4: Mechanism of implementation of Open Innovation Method



The details of each of the above steps are mentioned below:

5.2.1 Application for funding through the portal

- The applicants, which can be researchers, technology innovators etc, should come up with a project proposal as per the "Guidelines for submission of proposal seeking financial support from SRTMI under the proposed schemes", as described in the Annexure 1.
- The applicants should submit their proposals along with atleast one steel industry which can be partnered through the SteelCollab platform described in section 7. Collaboration with atleast one industry player is mandatory to apply for funding.
- Interested project proponent to apply for funding from SRTMI through web portal under the section of "Open Innovation Method".
- The application portal will be always open.

5.2.2 Project evaluation and selection

- Project proposals will be evaluated and selected by the RPAC every quarter.
- Selected project list will be declared across SRTMI web-portal and social media channels.

5.2.3 Project implementation and funding

- Projects will be co-funded by SRTMI funds and industry with a proportion of 60% contribution from SRTMI and 40% contribution from industry partners.
- SRTMI fund disbursements will be done in phased manner as suggested below:
    - Initial 40%: Upon project approval and signing of MoUs and agreements.
    - Next 40%: Upon achieving major milestones as validated by RPAC.
    - Final 20%: Post successful completion of project and approval of deliverables.
- Agreements/MoUs will be signed (specifying financial obligations, roles and responsibilities of each partnering organization) with associated parties involved in implementation and funding of the project.

5.2.4 Project monitoring

- RPAC will monitor the project on quarterly basis.
- Project monitoring to be done by PMU appointed by SRTMI, chaired by a senior member appointed by RPAC, on monthly basis.
- Project monitoring report to be created and circulated to all relevant stakeholder by the PMU, every month, for all funded programs.
- Funds disbursement by SRTMI will be based on milestone achievement (depending on the nature of the project) as approved by RPAC.
- Upon successful pilot implementation, large scale implementation to be planned in phased manner in consultation with the industry members.

6. Scheme guidelines for Startup accelerator

6.1 Objective

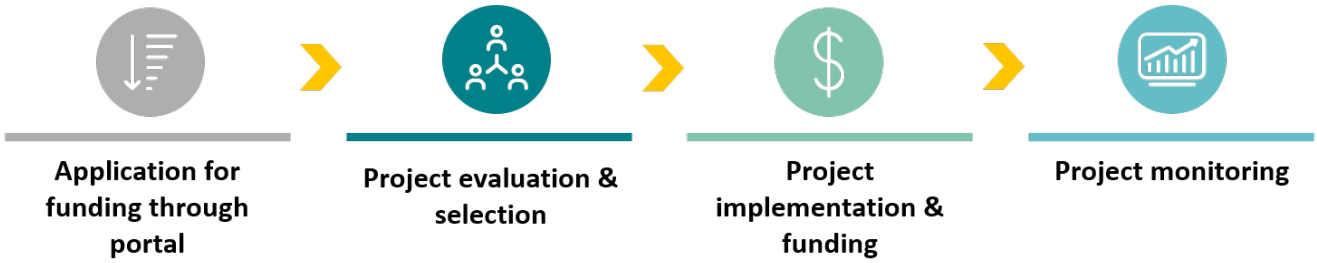
SRTMI also aims to harness the potential from startup community to accelerate research & development in Indian steel sector. Apart from academia, SRTMI will encourage the startups in India to come forward and contribute to open up new avenues in sustainability and modernization of steel sector.

6.2 The Scheme

The scheme is laid out to encourage startups to add value to steel industry with innovative solutions that drive innovations in steel industry.

A brief layout of the mechanism of implementation for the scheme is highlighted below:

Figure 5: Mechanism of implementation of Startup Accelerator Method



Detailed guidelines, eligibility criteria and funding mechanisms are outlined below to facilitate a transparent and impactful research framework, providing a structured approach to proposal evaluation, project selection and implementation.

6.2.1 Application for funding through the portal

- Startups should come up with a project proposal as per the "Guidelines for submission of a proposal seeking financial support from SRTMI under the proposed schemes," as described in the Annexure 1.
- Interested startups to apply for funding from SRTMI through web-portal under 'Steel Startup Accelerator'.
- The applicants can explore partnership with steel industry through the SteelCollab platform described in section 7.
- The startup should be recognised as per guidelines of Department for Promotion of Industry and Internal Trade (DPIIT) to be eligible for the funding.
- The application portal will be always open.

6.2.2 Project evaluation and selection

- Project proposals will be evaluated by the Startup Project Appraisal Committee (SPAC), as described in section 10.
- Selected projects list will be declared across SRTMI web-portal and social media channels.

6.2.3 Project implementation and funding

- Projects will be co-funded by SRTMI funds and industry with a proportion of 75% contribution from SRTMI and 25% contribution from industry partners.
- SRTMI fund disbursements will be done in a phased manner as suggested below:
    - Initial 40%: Upon project approval and signing of MoUs and agreements.
    - Next 40%: Upon achieving the major milestones as validated by the SPAC.
    - Final 20%: Post successful completion of project and approval of deliverables.
- Agreements/MoUs will be signed with associated parties involved in implementation and funding of the project.

6.2.4 Project monitoring

- SPAC will monitor the project on quarterly basis.
- Project monitoring to be done by PMU appointed by SRTMI, chaired by a senior member appointed by SPAC, on a monthly basis.
- Project monitoring report to be created and circulated to all relevant stakeholder by the PMU, every month, for all funded programs.
- Funds disbursement by SRTMI will be based on milestone achievement (depending on the nature of the project) as approved by SPAC.
- Upon successful pilot implementation, large scale implementation to be planned in phased manner in consultation with the industry members.

7. SteelCollab platform

SteelCollab is a dynamic matchmaking platform that connects the steel industry with researchers/innovators, fostering collaboration on critical challenges and breakthrough innovations. Major steel producers can share pressing challenges, while researchers and institutes can showcase their ideas for industry leaders to explore. By enhancing visibility and awareness, SteelCollab enables meaningful connections, paving the way for impactful advancements in steel technology, sustainability and modernization.

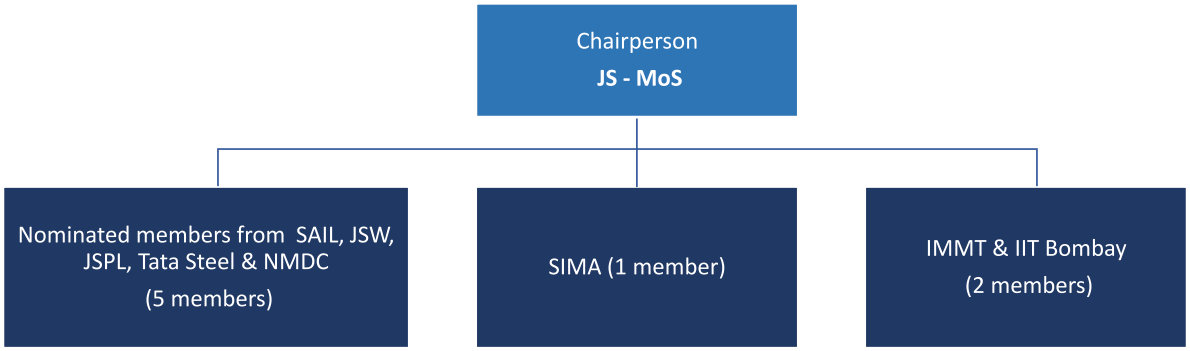
This platform will facilitate problem statements from industry players to be posted on the portal. Similarly innovators/researchers/startups can also post their research interests on the platform. Both industry players and academia/startup/ innovator will have the opportunity to collaborate through the portal and bring out projects to be implemented with co-funding from SRTMI and industry.

This platform will also host hackathons at regular intervals to maximize participation from innovator/startup/academia community.

8. Steel Challenge Identification Committee (SCIC)

The committee will help in identifying common challenges across the steel industry in the "Challenge Method" R&D scheme. The structure of this committee is as given below.

Figure 6: Steel Challenge Identification Committee (SCIC)



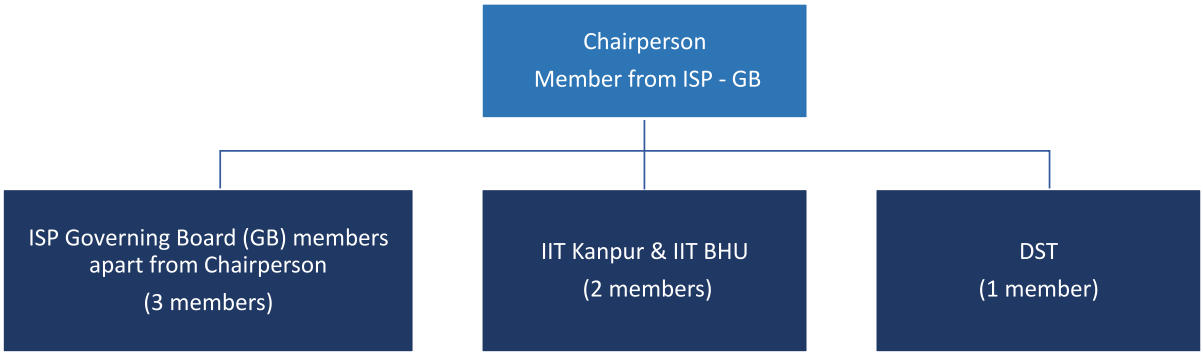
Proposed committee composition

- SCIC to be formed by the Governing Board, on a rotational basis for a term of 2 years.
- The SCIC committee to be chaired by Joint Secretary of Ministry of Steel
- SCIC to comprise of 5 members from the Governing Board members of ISPs (namely, SAIL, JSW, JSPL, Tata Steel and NMDC), 1 member from SIMA and 1 member each from IIT Bombay and IMMT.
- The Governing Board of SRTMI will have authority to approve or alter the composition or terms of the committee.

9. Research Project Appraisal Committee (RPAC)

Research Project Appraisal Committee (RPAC) will be responsible for defining the eligibility criteria for potential applicants for the call for proposals, evaluating proposals by applicants and project selection for funding. Also, the committee will monitor the progress of the project quarterly. The structure of this committee is as given below:

Figure 7: Research Project Appraisal Committee (RPAC)



Proposed committee composition

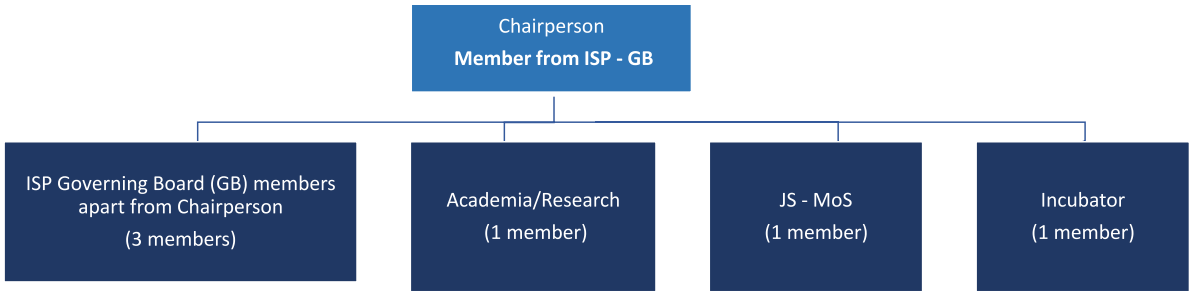
- RPAC to be formed by the Governing Board from an identified pool of members on a rotational basis for a term of 2 years.
- The identified pool of members to be represented across Integrated Steel Plants (ISPs), Academia/Research institutes and representatives from the Government.
- The chairperson of the RPAC will be a member from the Governing Board members of ISP.
- RPAC to comprise of 3 members from the Governing Board members of ISPs (apart from the Chairperson), 1 each member from IIT Kanpur and IIT BHU and 1 member from DST.
- Members from the proposed groups will be requested to be part of the technical evaluation meetings on a rotational basis.
- Roles and responsibilities for this committee include laying out eligibility criteria for proposals, evaluation, selection and monitoring of projects on quarterly basis.

- The stakeholders/members associated with the companies/institutions that have submitted the proposals will not be part of this committee.
- The Governing Board of SRTMI will have authority to approve or alter the composition or terms of the committee.

10. Startup Project Appraisal Committee (SPAC)

The Startup Project Appraisal Committee (SPAC) will be responsible for evaluating and selecting the projects proposed by startups. Also, the committee will monitor the progress of the project, quarterly. The structure of this committee is as given below:

Figure 8: Startup Project Appraisal Committee (SPAC)



Committee composition

- SPAC to be formed by the Governing Board from an identified pool of members on a rotational basis for a term of 2 years.
- The identified pool of members to be represented across Integrated Steel Plants (ISPs), Academia/Research institutes, representatives from the Government and incubators.
- The chairperson of the SPAC will be a member from the Governing Board members of ISP.
- The committee to comprise of 3 members from industry (ISPs being Governing Board members), 1 member from academia, 1 member from the Ministry of Steel (Joint Secretary) and 1 member from incubators.
- Members from the proposed groups will be requested to be part of the technical evaluation meetings on a rotational basis.
- Roles and responsibilities for this committee include evaluation, selection and quarterly monitoring of the projects.
- The stakeholders/members associated with the companies/institutions that have submitted the proposals will not be part of this committee.
- The Governing Board of SRTMI will have authority to approve or alter the composition or terms of the committee.

Annexure I:

GUIDELINES FOR SUBMISSION OF PROPOSAL SEEKING FINANCIAL SUPPORT FROM SRTMI UNDER THE PROPOSED SCHEMES

1. General:

a) Name and address of the applicant (Academia/Research Institute/Startup) including telephone, mobile, email, website, accreditation status in case of Academia/Research Institute and fulfilment of criteria laid by DPIIT (Department for Promotion of Industry and Internal Trade) in case of startup.

b) Brief profile of the applicant:

- For academic institutions/research institutes: Overview of research focus, key projects, expertise, achievements, and capabilities. (Latest annual report, institutional profile, or brochure may be provided, if available)
- For startups: Details of the company, including products/services, technological innovations, achievements, and growth milestones. (Latest company profile or brochure may be provided, if available.)

c) Name and address of the industry partner including telephone, mail, email, fax nos. (Give address of the registered office and head office)

d) Brief profile of the industry partner including product portfolio, capacities, annual revenue etc. (latest annual reports and company brochure may be given) – not mandatory in case of startups.

2. Executive Summary highlighting objective, focus areas, timelines, expected outcomes/ impact, estimated project cost, etc.

3. Research proposal details:

(a) Title of the proposal

(b) Details of the proposal including:

i) Objectives of the research.

ii) Key focus areas

iii) Gap identification (technological, resource, baseline KPI, desirable KPI, etc.)

iv) Details of new or improved technology to be developed

v) Details of current Technology Readiness Levels (TRL)

vi) If the proposed project involves technology upgradation for process development, please specify the expected benefits in terms of:

- Reduction in energy consumption
- Optimization of raw material usage

- Enhancement in productivity
- Reduction in emissions
- Increased waste utilization

vii) Status of work done in national/global territory (if any)

viii) Details of IPR/Patents held by self and collaborators (if any)

ix) Implementation strategy for the proposed project, covering literature review, patent analysis, laboratory research, pilot plant/prototype development, design and engineering, field trials, and pre-production activities.

(c) Techno-economic assessment:

i) Please give a comparison of technical parameters and detail of the technology which is proposed to be implemented as a result of the project, vis-à-vis the international technological trends, in this area**.**

4a) Has this proposal been submitted to any other funding agency in the last 3 years (like Ministry of Steel, DST (Department of Science and Technology), TIFAC (Technology Information, Forecasting & Assessment Council), DSIR (Department of Scientific and Industrial Research) or some financial institution): If so, what was the outcome and any decision/ recommendations or the concerned funding agency: or

4b) Is it presently under consideration by any other agency?

5. Financial Outlay and Time Schedule:

i) Financial Outlay

Please provide an estimated cost breakdown for the proposed project, including major expense categories such as equipment, raw materials, consumables, manpower, travel, contingencies, and institutional overheads.

ii) Project timelines

Provide Activity sequence and time schedule for each activity via Gantt Chart

6. CVs of the Key Project Personnels from applicant organization and collaborating agencies with Contact details including: Telephone no., Mobile No., emails etc.

7. Declaration in writing to be given along with the R&D proposal: Applicants stating that the Scheme Guidelines/ Terms & Conditions are acceptable to them.

8. Envisaged Outcome of the project:

Please provide a detailed description of the envisaged outcomes of the proposed project, highlighting industry impact. Also, outline the potential for commercialization and the broader benefits in terms of industry adoption, sustainability, and efficiency improvements and revenue generation.

(Signature of the Project proponents)

Note:

(a) This format serves as a guideline, and individual project proposals may be structured flexibly while ensuring the key aspects are addressed.

(b) Authorisation letter duly signed by the Head of the respective organisations is to be submitted by academic and research institutes.

(c) The above mentioned guidelines may be altered by Governing Board members as per requirements.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