



BRICS Young Scientists Forum (BRICS-YSF)
South Africa Conclave, 31 July - 03 August 2023

Applications Invited For
BRICS Young Innovator Prize 2023

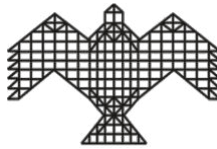


DEPARTMENT OF SCIENCE & TECHNOLOGY
(Government of India)

Hosted by the Department of Science and Innovation (DSI), South Africa
Organised by the Technology Innovation Agency, South Africa



Modernizing the manufacturing, agriculture and mining industries and the
circular economy



National Institute of Advanced Studies
Indian Institute of Science (IISc) Campus, Bangalore, India

About the BRICS Young Innovator Prize

In line with the established tradition of previous BRICS Chairships, South Africa will host a wide range of BRICS activities in-person leading up to and following the Summit. One of these activities is the BRICS Young Innovator Prize.

The BRICS Young Innovator Prize is a special recognition of young talented entrepreneurs and researchers, whose outstanding innovations (inventions, products, applications, and services) will make a profound impact on the socio-economic, environment and condition of life in BRICS societies. The BRICS Young Innovator Prize is a platform for BRICS young scientists and entrepreneurs to share their best practices in innovation and venturing.

This initiative was introduced in 2018, during South Africa's BRICS chairship. Ever since, it has become an important stage for BRICS youths to display their innovation talents and strengthen exchanges and cooperation. The winner of the Young Innovator Prize will be granted through contests among the youths from BRICS countries.

The upcoming 8th BRICS Young Innovator Prize will be convened in-person as part of the BRICS Young Scientist Forum which will be held from 31 July to 03 August 2023 in Qheberha, Eastern Cape Province of South Africa.

1. THEMES

Science, Technology, and Innovation (STI) have significant transformative potential. For developing countries, STI, and specifically innovation, can support economic growth and employment, create livelihoods at grassroots level, and improve government performance and service delivery. While innovation is not the only factor to foster economic growth, industrialisation, and inclusive development, it remains a significant and vital catalyst.

The main themes of the BRICS Innovator Prize 2023 will be based on the following thematic areas:

1.1. Modernising Manufacturing

Production trends in manufacturing are evolving from labour-intensive mechanical processes to more sophisticated high-tech applications and processing. The increased use of technological innovation in manufacturing is considered instrumental in industrialisation, driving higher production performance, and improving manufacturing value addition and productivity. Low innovation levels in manufacturing are one of the factors preventing numerous countries from moving to the higher value-added activities needed to boost economic growth. Other high-level problems include an over-reliance on low tech solutions, processing inefficiencies in some industries, limited local market attractiveness, inability to seize new market opportunities, and low levels of locally developed high-tech manufacturing Small, Medium, and Micro Enterprises (SMMEs). As a result of the global move towards a low carbon economy and greener practices, conventional manufacturing industries are expected to meet environmental requirements and lower their carbon footprint. The thematic sub-themes should be in the following: areas -

- **Advanced Electronics:** advanced electronics include devices that provide for the processing of information; sensing, transmission, communication; etc.
- **Mechanisation/Automations:** Mechanisation is normally defined as the replacement

of a human task with a machine. Automation involves the entire process, including bringing material to and from the mechanized equipment.

- **Production technologies:** Production technologies refer to all measures and facilities for the industrial production of goods. The basis is the transfer of scientific knowledge into technologically controllable and economically usable production systems.
- **Smart factories:** Smart factories refer to cyber-physical systems that use advanced technologies such as artificial intelligence (AI) and machine learning to analyse data and drive automated processes.
- **Additive manufacturing:** refer to the process of joining materials to make objects from 3D model data, usually layer upon layer, as opposed to subtractive manufacturing methodologies.

1.2. Modernising Agriculture

Agriculture is a key driver for food security and rural economic development. Challenges in the agricultural sector include the loss of arable land, high input costs (seeds, machinery, and pesticides), low technological innovation, and inadequate advisory services. From a productivity perspective, the challenges of sustainable rural economic growth are exacerbated by the divide between the first and second economies. Global agricultural competition is also fierce and often subsidised. Food safety requirements for exports continue to increase. The thematic sub-themes should be in the following areas:

- **Breeding and Reproduction:** In biology, breeding refers to the process of reproduction, typically plants or animals, to produce offspring. It can only occur between a male and a female plant or animal.
- **Animal Health and Nutrition.** Animal nutrition entails the study of the composition and characteristics of the material consumed by the animal, the way this material is metabolised (converted, utilised, and excreted) in the digestive tract and body cells of monogastric animals (pigs, broilers, layers), ruminants (sheep, cattle, goats), and lower digestive tract fermenters (horses, ostriches).
- **Plant Health and Nutrition:** Plant health and nutrition is a term that considers the interrelationships of mineral elements in the soil or soilless solution necessary for plant growth and reproduction, plant metabolism and their external supply.
- **Post-Harvest Technologies:** Post harvest technologies refer to science and techniques applied to agricultural produce after harvest for its protection, conservation, processing, packaging, distribution, marketing, and utilisation to meet the food and nutritional requirements of the people in relation to their needs.

1.3. Modernising Mining Industries

Mining has made a significant contribution to the global economy for more than a century. The sector remains extremely important in terms of employment, Gross Domestic Products (GDP), exports, and total fixed investment. Many of the challenges facing the domestic minerals sector over the medium to long term are common worldwide. As mining commodity prices continue to slump, smaller mines face closure and the post-mining rehabilitation and regeneration of mine land therefore becomes critical. The thematic sub-themes should be in the following areas:

- **Automation and digitisation:** Digitising the mining process changes it from a manual, paper-based operation to a digital platform that incorporates siloed systems,

automation, AI, etc. to streamline operations and significantly improve business outcomes.

- **Mining beneficiation:** Beneficiation, or value-added processing, involves the transformation of a primary material (produced by mining and extraction processes) to a more finished product, which has a higher export sales value.
- **Sustainable mining technologies:** Sustainable mining technologies refers to those techniques that help reduce the negative environmental, social and governance impacts of mining operations, ensuring that the needs of future generations can also be met.
- **Health and Safety:** this refers to the safeguarding of the health and safety of mine employees and communities affected by mining operations.
- **Environmentally responsible technologies:** Environmentally responsible technologies refer to those technologies that will reduce carbon emissions in operations and mitigate adverse environmental impacts.

1.4. Exploiting new sources of growth: The Circular Economy

The Circular Economy approach offers numerous opportunities for socio economic growth and environmental protection. The approach can contribute to GDP, provide a new source of employment, increase profit margins at firm level and maximise resource utilisation efficiency. For developing countries, the Circular Economy can reduce reliance on increasingly scarce raw materials, increase disposable income for individuals, enhance utility and convenience, and improve living conditions and health. Consequently, intensifying the circularity of the economy provides a new model for sustained and resilient economic growth and job creation. The thematic sub-themes should be in the following areas:

Developing new technologies: These new technologies include big data, AI, block chain and the Internet of things (IoT), amongst others.

- **Reduction of waste:** The Circular Economy is based on three principles namely, the elimination of waste and pollution, the circulation of products and materials and the regeneration of nature.
- **Improved reuse of materials:** The circular economy is a model of production and consumption, which involves sharing, leasing, reusing, repairing, refurbishing, and recycling existing materials and products.
- **Reduction of landfill sites.**
- **Addressing plastic waste.**
- **Net zero:** Net zero refers to the reduction of greenhouse gas emissions to as close to zero as possible. A materials transition that applies Circular Economy principles involves lower impactful ways to produce materials that can help to realise global net-zero goals.

2. TIMELINE AND STRUCTURE

2.1. Project solicitation

Only (one) 1 project is recommended for each BRICS country in each thematic area, and no less than (four) 4 projects in total.

2.2. First round of evaluation:

The first round of evaluation will be conducted by each BRICS country. In principle, one (1)



project in each field will be promoted to participate in the final evaluations during the event.

2.3. Final evaluation: The final evaluation will be held in-person in August 2023 during the BRICS Young Scientists Forum and the presentation of each project is limited to a (ten) 10 minutes pitch. The jury will score all the final projects which will then be ranked in the order of their score. The top (three) 3 highest-scoring projects will be the award-winning projects and other projects will be the merit projects for the BRICS Young Innovator Prize.

3. REQUIREMENTS AND ELIGIBILITY

3.1. The Innovations shall focus on the following four thematic areas:

- Modern Manufacturing.
- Modern Agriculture.
- Modern Mining; and
- Circular Economy.

3.2. The innovations should emanate from universities, research institutes or innovators who are not yet in the market.

3.3. The project must be innovative and has been transformed from scientific and technological achievements.

3.4. The innovation should be in a phase of limited product testing, discontinuous production, certification, or preparation of the product for market.

3.5. The innovation should not infringe upon the intellectual property of any third party and the Intellectual Property Rights (including patent, standard, thesis, etc.) and must be owned by the project team members.

3.6. The age of the applicant must be under 40 years as on 31 July 2023, and a citizen of any BRICS countries; and

3.7. Each applicant can only choose one theme for the awards.

How to submit

The projects must be submitted by the BRICS respective Ministries of Science, Technology and Innovation until **08 July 2023**, according to each member's rules, by e-mail addressed to subachandran@nias.res.in and bricsysf@nias.res.in

All submissions must contain the following documents:

- Application form (completed, signed and dated);
- Project description: A MS Word document consisting of not more than five pages, including not more than four pages of graphs, drawings, charts and/or illustrations, in the following format:
- Copy of passport;

The application form must contain the following information:

- A brief description of the project and its innovative component (up to 100 words);
- Problem definition the project

- Target audience of the project;
- Current indicators (over the past 2 years): what stages have been passed, what significant marks in development have been hit, what are the financial / quantitative indicators;
- Development strategy (for the next 1-2 years);
- Potential prospects of application (possible use of technology in 3 years or more);
- Current project request (what resources are needed; financial budget and for what purpose);
- The applicant's role in the project and the total number of people in the team indicating their competencies or areas of responsibility in the project;
- Links to the website and social network pages of the project;
- Domestic / international awards / diplomas (if there are any)

All personal and project information must be submitted in English.

The e-mail with the application form, documents and archives of the project must not exceed 20 Mb.

Inconsistent, incomplete or late submissions will not be accepted.

The application form cannot be changed in their respective contents after they have been sent to the Ministry.

The project description must include:

- A brief description of the contestant's innovative technology consisting of not more than six hundred (600) words, that conveys the essence of the contestant's solution, omitting full details of technology, training and/or design;
- A detailed description of the proposed solution including an outline of how it is supposed to address a clearly defined social, economic, developmental or environmental challenge;
- An explanation of the broad outline of the proposed product in layman's terms, stating the benefits of said solution over existing solutions.

The description alluded above may include any/all of the following resources:

- A PowerPoint presentation consisting of not more than 12 slides;
- A video of eight minutes reachable by link visualisation.

Both formats are acceptable, neither has an advantage over another when rating.

Please, note that adjudicators do not evaluate grant or investment obtainment as well as certification. Both possession and lacking are accepted, neither has an advantage over another when rating.

Selection Process

Pre-selection

The project that does not meet the requirements of the regulation, whether by format, content, incorrect category, submitted documentation or other criterion that precludes exempt analysis of plagiarism, will not be considered.



There will be a primary selection of the submitted projects by the Ministries of Science, Technology and Innovation of each respective BRICS country, which can be done on a competitive basis or through a process of nomination.

Up to four projects will be sent by the BRICS STI Ministries to the Department of Science and Technology, India, which will check the prerequisites and organise the contest.

The organisers of the BRICS Young Innovator Prize contest will reserve the right to reject submissions without notice, including the cases supplying false registration information and/or non-compliance of the Terms and Conditions or the guidelines of the BRICS Young Innovator Prize contest.

There is no legal recourse possible against the decision of disqualification. The adjudicators' decisions including both procedural and reasoning will be final and will not be open to contest or review.

The selected projects will be presented to an adjudication panel, during the sixth BRICS YSF, which will choose the winners based on the established criteria.

Presentation of applications to an Adjudication Panel

The participants will be required to make a presentation of their projects to an expert panel comprising representatives of the BRICS member states.

The presentation of the project can be edited until the day before the in-person presentation. On the eve of the day of performance the presentation file must be sent to the organizers in its final edition and cannot be changed at the day of presentation.

The presentation of each project is limited to 10 minutes.

All information provided during the presentation must be in English. Usage of translation devices or translator services is not allowed.

The presentation must be individual. Only 1 person is accepted for each presentation.

The participation in Q&A session must be individual. Only 1 person is accepted for each project. The participation of other delegates is not allowed.

Usage of paper / electronic notes / cues during the presentation is allowed. Both reading and speaking are rated equally, neither has an advantage over the other when rating.

The prototype could be demonstrated by photos, videos or in-person at the discretion of the participant. All formats are accepted, neither has an advantage over the other when rating. The lack of demonstration is allowed but can cause the loss of points by criterion, "Consistency of the technical information presented: presentation of procedures that prove the technical functionality of the product or process."

The adjudication panel will comprise independent experts designated by the BRICS member states. Each BRICS member state will designate one independent expert to ensure balance, fairness and transparency in the adjudication process.

The adjudication panel will choose the winners without establishing the classification of the other candidates. It may not grant the Prize if it considers that there are no qualified projects.

Selection of Winner

Each presentation of the project will be evaluated according to the following criteria:

- Innovative impact of the project (its novelty, trending, social impact, relevance to the current challenges the society of the BRICS countries faces)- 10 points
- Short term applicability (current demand and relevance) - 5 points
- Long term applicability (prospective demand and relevance) - 2 points
- Technical feasibility (accessibility of implementation, how much the presentation displays an understanding of how to implement this technology)- 5 points
- Market feasibility (business model of the project, its applicability and advantage over competitors) - 5 points each adjudicator evaluates feasibility for its own local market.
- Quality of the presentation of the project (clarity, consistency of information, grammar and methodology) - 5 points

After this evaluation, an oral defence, followed by a Q&A session, will define the ranking of the winners according to the following criteria:

- Consistency between written and presented project: logic of presentation, persuasiveness, clarity and structure of information, strength of argumentation and evidence base - 5points
- Consistency of the technical information presented: theoretical basis of other authors, presentation of procedures that prove the technical functionality of the product or process - 10 points
- Visioning: quality of long-term planning, how much this project can be influential in a few years - 5 points
- Project team: expertise and competences of the team members - 5 points.
- Assessment step is always 1 point.

After the presentations, the adjudication panel will have a meeting to complete the final scoring before the announcement of the winners. The decision of the adjudication panel will be final and irreversible.

Reward for Winner

Successful participants will receive the following prizes after applicable verification and subject to compliance with the rules and conditions of BRICS Young Innovator Prize contest:

First Prize: Twenty-five thousand Dollars (USD 25,000) or the currency equivalent in BRICS member states to the First Prize winner as determined by the adjudication panel of the BRICS Young Innovator Prize contest.

Second Prize: Fifteen thousand Dollars (USD 15,000) or the currency equivalent in BRICS member states to the Second Prize winner as determined by the adjudication panel of the BRICS Young Innovator Prize contest.



Third Prize: Ten thousand Dollars (USD 10,000) or the currency equivalent in BRICS member states to the Third Prize winner as determined by the adjudication panel of the BRICS Young Innovator Prize contest.

The organizers reserve the right to introduce some extra nominations (it could be either with cash prize or without it) to pursue the goal to recognize additional outstanding qualities of the projects presented as well as the innovators themselves such as the best presentation, jury's award etc. Information about extra nominations will be provided on the opening day of the Forum.

Intellectual Property Rights

Each contestant is solely responsible for taking the necessary actions that they deem appropriate to protect their intellectual property rights, prior to filing a submission with the BRICS Young Innovator Prize organisers. Such actions may include obtaining legal counsel such as advice from an attorney or a professional experienced in intellectual property law. The Terms and Conditions of this contest do not prescribe or give preference to any specific course of action or strategy (e.g. filing for patents) as such decisions remain the business prerogative of the contestant. The BRICS Young Innovator Prize organisers disclaim any responsibility to take action to protect the intellectual property rights of any contestant.

General

By entering the BRICS Young Innovator Prize, the contestant agrees:

- That the organisers of the contest have no duty of confidentiality with respect to the materials that their submission comprises, and acknowledges that the filing of a submission and participation in the public presentation may be deemed to be the publication of their invention;
- That the organisers of the contest may publicly disclose or reproduce any part or all of the contestant's submission as well as any presentation materials;
- That if the contestant becomes a finalist that they will not enforce any IPRs that they own or control or their solution against any person who uses this solution for their personal use;
- To waive any moral rights to materials submitted in relation to the BRICS Young Innovator Prize contest;
- That the organisers of the contest may use the place of residence, image and likeness of the contestant in publications and promotional materials. Conversely, the organisers of the contest agree that the contestant may use the description «BRICS Young Innovator Prize» in publications in relation to the contest. However, the contestant is not authorised to use the BRICS 2021 Summit logo, nor state or imply that the organisers of the contest approve or endorse the contestant or the contestant's solution;
- That the organisers of the contest may photograph and/or create videos, and/or visual or audio-visual works of all or any part of the presentations and Q&A sessions and awarding of prizes and may use, reuse, publish and republish, display and reproduce these images in whole or in part, with or without alteration or modification, without the contestant's inspection or approval;
- That they do not have any interest (whether under copyright or otherwise) in any of the images or any creative works incorporating those images.

Projects and documents will not be returned to the candidate and will not be considered in future calls of the Prize.

Ministries will not be responsible for proposals not received as a result of possible technical problems and network congestion.

The presentation of the registration implies the acceptance of the present Terms and Conditions by the candidates, as well as full responsibility for the information provided.

The decisions of the adjudication panel shall not be subject to appeals or challenges at any stage of the process.

The authors authorise the prize organisers to use their names and images in any type of media.

The organisers of the prize will not participate in the profits obtained from the project.

The authors of the awarded projects are protected by the right to present them in exhibitions, meetings, congresses and to allow their dissemination by the press or any other means, with or without commercial purposes.

The omissions and any doubts or situations not provided for in the rules shall be judged and decided in a sovereign manner by the organisers of the prize or by the Adjudication Panel.

Contact

For any further information contact

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