

# REQUEST FOR PROPOSALS

*for supporting*

**Development, validation & pre-commercialization of products/technologies through Biotechnological interventions**

*under*

**i4 (BIPP & SBIRI) and PACE (AIR & CRS)**

*from*

**Academia and Industry**

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The Government of India has initiated several National Missions in order to achieve individual goals that together ensure the well-being of its citizens. The Missions help to create an enabling environment for sustained growth of various areas. In line with this, BIRAC invites proposals under its schemes i4 (SBIRI and BIPP) and PACE (AIR and CRS) which fall under the scope of various missions announced by Government of India.

## **Scope of the call**

Under the present call of i4 and PACE schemes, proposals are invited only in areas aligned to Mission Programmes launched by Government of India in following fields:

- **Healthcare**
- **Energy, Environment and Secondary Agriculture**
- **Agriculture, Veterinary Sciences and Aquaculture**

Research areas that will be considered under the present call are as follows:

## **Healthcare**

- Use of Artificial Intelligence (AI) in the areas of healthcare for detection of disease, management of chronic conditions, delivery of health services and drug discovery (**National Mission for Artificial Intelligence**)
- Creating self-learning systems in digital fields like radiology, pathology, and genomics to augment the future of healthcare (**National Mission for Artificial Intelligence**)
- Devices and Diagnostics for Maternal and Child Health (**Atal Jai Anusandhan Biotech UNaTI (Undertaking Nationally relevant Technology Innovation) Mission-GARBH-Ini & National Health Mission**)
- Development of indigenous and cost-effective therapies for combating Anti-Microbial Resistance & Development of rapid and cost-effective diagnostic kits to identify AMR pathogens (**Atal Jai Anusandhan Biotech UNaTI (Undertaking Nationally relevant Technology Innovation) Mission: Mission Antimicrobial Resistance**)

- Development of vaccines for the diseases of epidemic potential (**Atal Jai Anusandhan Biotech UNaTI Mission- Ind-CEPI MISSION**).
- Drugs, Therapeutics and Diagnostics for Non-communicable disease (including rare diseases) (**Ayushman Bharat & National Health Mission**)
- Medtech interventions to address challenges of healthcare system at Primary, Secondary and Tertiary level (**Ayushman Bharat**)
- Solutions to promote faster recovery and rehabilitation of disabled (**Deendayal Disabled Rehabilitation Scheme**)

### **Energy, Environment and Secondary Agriculture**

- Safe and cost effective CO<sub>2</sub> capture and utilisation technologies (**Mission Innovation: Accelerating the Clean Energy Innovation Enhanced Energy Efficiency**)
- Efficient and Sustainable Biofuels (**Mission Innovation: Accelerating the Clean Energy Innovation Enhanced Energy Efficiency**)
- Technologies to treat waste (solid, liquid and gaseous) to generate fuel, energy, recycle materials and useful products such as food, feed, polymers, chemicals, etc through biotechnological interventions (**Atal Jai Anusandhan Biotech Mission UNATI - Clean Energy Mission; National Mission for Waste to Wealth**)
- Technologies for Solid and Liquid Waste Management (**Atal Jai Anusandhan Biotech Mission UNATI - Clean Energy Mission and Smart cities mission**)
- Technologies for treatment of faecal sludge and septage (**Atal Jai Anusandhan Biotech Mission UNATI - Clean Energy Mission and Smart cities mission**)
- Biotechnological means for River surface cleaning/water body restoration (**Namami Gange mission**)
- New technologies for Industrial Effluent Monitoring (**Namami Gange mission**)
- To provide integrated and complete cold chain and preservation infrastructure facilities without any break, from the farm gate to the Consumer (**National-Mission-On-Food-Processing**)
- To establish value addition with infrastructural facilities like sorting, grading, packaging and processing for horticulture including organic produce, marine, dairy, poultry, etc. (**National-Mission-On-Food-Processing**)
- Development of technology packages for production of GMP grade medicinal plant extracts for export markets (**Phytopharmaceutical Mission for North East Region**)
- Production of safe and efficacious phytopharmaceuticals from medicinal plants for unmet medical needs using modern scientific tools for Phytopharmaceutical drug development. (**Phytopharmaceutical Mission for North East Region**)

### **Veterinary Sciences and Aqua culture**

- Focus on improving quantitative and qualitative availability of feed and fodder and life stock productivity through Biotechnology interventions (**The National Livestock Mission (NLM)**)

- Modern Biotechnology interventions for development improvement and conservation of Indigenous breeds (**Rashtriya Gokul Mission**)
- Aquaculture Development through Integrated approach and Aquaponics through Bio technology interventions (**National Mission for Protein Supplements (NMPS)**)

## Agriculture

- To develop innovative technologies for increasing water use efficiency (Smart irrigation), adoption of energy efficient equipments, soil health management, organic value chain development, innovations in biofertilizers and biopesticides (**National Mission for Sustainable Agriculture (NMSA)**)
- Development of process/technologies for enhancing the productivity of oilseeds; accelerating the productivity/yield enhancement in pulses through adoption of innovative agronomic technologies and use of improved farm machinery for higher water use efficiency (**National Food Security Mission**)
- Improve productivity by way of quality germplasm, planting material and water use efficiency and to reduce losses through Post-harvest management in various horticulture crops (**Mission for Integrated Development of Horticulture**)
- Authentic data collection from the fields using satellite imaging, image-recognition software, IoT, drones, drone technology and machine learning, followed by its monitoring and analysis by AI-based applications to identify the right solutions (crop selection, sowing, pest control, precision farming, stabilise yield, analyse soil quality, predict advisories for weather, yields, and economic gains from future yields, etc.) and information dissemination to farmers (**National Artificial Intelligence Mission**)
- Development of Biofortified and Protein-Rich wheat, Identification of diverse lines and/or pre-breeding lines for micronutrient content (iron, zinc, and folate) for gene discovery through molecular breeding (high resolution QTL mapping), Bio-accessibility and bioavailability of micronutrients (Fe, Zn, and Folate) in wheat and rice (**Poshan Abhiyaan/ National Mission on Nutrition**)
- Storage, grading, standardization and quality control of agricultural produce to improve their marketability (**Gramin Bhandaran Yojna**)

## Types of projects supported:

- Proposals submitted in research areas listed above would only be considered under the present call
- Products/Technologies should have well established Proof of Principle for AIR and Proof of Concept for CRS proposals
- Projects proposing a process/product innovation should have significant potential impact or commercial potential
- Developed process should be sustainable from an economic and environmental point of view and should be scalable
- The Technology Readiness Level (TRL) at the end of the project should be:
  - **Minimum TRL 3** (Proof of concept established) for AIR
  - **upto TRL 6** (Early stage validation) for SBIRI

- **TRL 7 and above** (Late stage validation up to pre commercialization) for BIPP & CRS

## **What is not supported?**

- Concepts/exploratory research ideas without proper Proof-of-Principle (AIR and SBIRI) and Proof-of-Concept (CRS and BIPP)
- Proposals without preliminary data and potential for product/technology development.
- Funding cannot be used to support PhD student research or any other academic research.
- The grant is not a research fellowship

**Proposals not within the scope of the present call or not supported by preliminary data in the proposed area of research would be summarily rejected**

## **Who can apply?**

### **PACE:**

Academic Institute, University, NGO or Research Foundation, registered/ accredited by a government body can apply either alone, or in partnership with academia or industry (while involvement of industry is optional for AIR Scheme, it is mandatory to have an industrial partner for CRS)

Under the scheme, academia (Public or Private Institute, University, NGO, Research Foundation or trust/society), National research laboratories having a well-established support system for research shall be the primary applicant. The PI has to be a permanent Faculty of the applicant entity. The applicant can apply either:

1. Individually, or
2. Jointly with academic and/or industrial partner

### **PACE - AIR:**

#### ***Eligibility Criteria for academia:***

For Public or Private Institute, University, NGO, or Research Foundation, proper registration/ accreditation from a government body is mandatory like UGC affiliation certification, AICTE, CSIR /DSIR/SIRO certificate etc.

#### ***Eligibility criteria (Technical) for applicants under AIR***

- Applicant must have completed at least one extramural funded project in India (with minimum project duration of 3 years and in the same research activity of the project proposed), project must have been funded by Govt. funding agencies or Industry. Related Sanction order or funding note to be uploaded as a proof.

- Applicant must have authored one publication (indexed in Scopus/web of science) as first or lead author, or patents (filed) in the same research area of the project proposed for AIR. Applicant must upload the published paper or filing documents related to IP at the time of submission of application
- Evidence of proof of principle (POP) and preliminary data, already gathered by the applicant, supporting the proposal is compulsory and must be submitted in the AIR application. Absence of which can result in disqualification of the proposal.
- A justification on how the project on completion would be CRS ready must be included. Therefore, the proposal should include the strategy for taking forward the outcomes and results towards product development with an industrial partner (CRS scheme guidelines may be referred for further particulars)
- Proposals involving agriculture should have viable product/technology as an outcome that can be considered for advanced trials by the industry/authorized national agencies.
- If the AIR proposal has industry participation then the partnering/ collaborating company/ LLP should be more than 5 year after incorporation. Applicants are encouraged to have industry partners in order to demonstrate translational strategy.
- The final technical objective/milestone of the AIR proposal should reflect technology/result that is near to industry readiness (minimum TRL-3).

#### **PACE-CRS:**

1. Academia\* has to be the Primary Applicant with one or more partners of which at least one is a company\*\*

*\*For Public or Private Institute, University, NGO, or Research Foundation, proper registration/accreditation from a government body is mandatory*

*\*\*Participating company should be registered under the Indian Companies Act, 2013 with at least 51% Indian shareholding i.e., shares of the Company should be held by Indian Citizens holding Indian passport (Indian citizens do not include Person of Indian Origin (PIO) and Overseas Citizenship of India (OCI) holders).*

2. The applicant Company should have adequate in-house facility to address the project implementation (which shall be evaluated during the site visit) or incubated with any of the recognized incubation facility.

#### **Eligibility criteria (Technical) for applicants under CRS**

- Evidence of proof of Concept (PoC) i.e., TRL-3 and validation ready data supporting the proposal is compulsory and must be submitted in the CRS application. Absence of which can result in disqualification of the proposal
- Proposals that have received AIR funding should have the same industrial partner who collaborated for AIR project. Any deviation must be duly justified with clarity on IP governance.
- The CRS proposal should be accompanied by the Commitment Letter by the industrial partner to exercise the first right for monetizing the product/technology

## SBIRI and BIPP

### Eligibility

1. The proposals can be submitted
  - a) Solely by a Company\* incorporated under the Companies Act, 2013 or Limited Liability Partnership (LLP)\*\* incorporated under the Limited Liability Partnership Act, 2008 or Joint Ventures either in the form of Company/ LLP
  - b) by any of the above entities jointly with other private or public partner(s) (Universities or Institutes)

*\* Minimum 51% of the shares of the Company should be held by Indian Citizens holding Indian passport (Indian Citizens do not include Person of Indian Origin (PIO) and Overseas Citizenship of India (OCI) holders)*

*\*\*Minimum half of the persons who subscribed their names to the LLP document as its Partners should be Indian citizens.*

2. ***The Applicant Company/LLP should either:-***

- a) Have adequate in-house facility to address the project implementation (which shall be evaluated during the site visit) or
- b) Incubated with any of the recognized Incubation Facility

3. ***For Academic collaborator:***

Eligible Academia shall mean an entity which is having proper establishment documents:

For Public or Private Institute, University, NGO, or Research Foundation, proper registration/ accreditation from a government body is mandatory like UGC affiliation certification, AICTE, CSIR /DSIR/SIRO certificate etc.

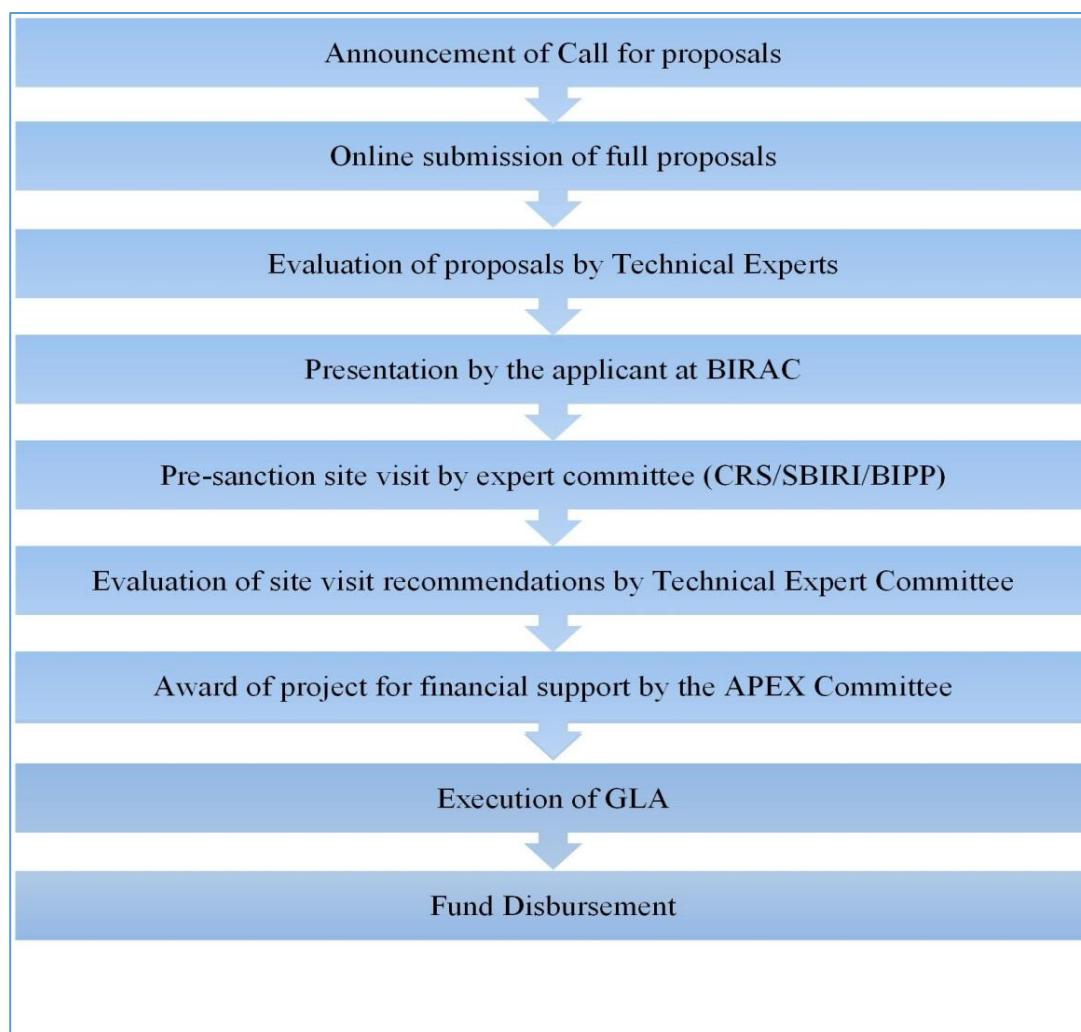
### Ineligibility

- Applicant who had withdrawn their proposal after approval from Apex committee or whose project was foreclosed due to inadequate funds or any other irregularity would be debarred from submitting fresh proposals for next 3 calls (1 year) unless the withdrawal was due to papers not being ready.
- Proposals submitted in collaboration with companies defaulting on repayment of loan or are irregular with regard to repayment of instalments to BIRAC would be considered ineligible

### Duration of Project

- Up to 24 months for proposal submitted under PACE-AIR.
- No specific duration has been fixed for PACE-CRS, SBIRI and BIPP schemes.

## Evaluation Process



*\*Please note that the decision of the committee at any stage of the evaluation would be final and reconsideration requests would not be entertained. The applicant may reapply in the next call providing clarifications to the committee's comments/recommendations.*

## Funding

Funding support will be in the form of Grant-in-Aid and is **scheme specific**. Kindly refer to the guidelines of respective schemes for more details by visiting <http://www.birac.nic.in>

## Fund Disbursement Policy

The fund disbursement is milestone based and will be released in 4-5 installments as per the timeline of the project.

Installment No.	When	Amount (for proposal more than 12 month)	Amount (for proposal less than 12 month)
1	Signing of Contract	30% of project cost	30% of project cost

2	Completion of 1st Milestone	20% of project cost	30% of project cost
3	Completion of 2nd Milestone	20% of project cost	30% of project cost
4	Completion of 3rd Milestone	20% of project cost	NA
5*(Final)	Completion of project and submission of final report	10% of project cost	10% of project cost

*\*Since the last installment is released after conclusion of the project, its nature would be reimbursement.*

### **Duration of Call for Proposals**

The call would open on 1<sup>st</sup> July, 2021 and shall close on **16<sup>th</sup> August, 2021 at 5:30 p.m.**

### **Additional information**

For details related to TRL definitions, schemes and submission of proposals, please log on to <http://www.birac.nic.in>

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