REQUEST FOR PROPOSALS

for supporting

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

under

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

from

Industry and Academia

In line with the Government's vision plan for a future ready India by 2047 BIRAC invites proposals under its schemes i4 (SBIRI and BIPP) and PACE (AIR and CRS) which fall under the scope of various priority areas as highlighted by Government of India at various platforms.

Scope of the call

Under the present call of i4 and PACE schemes, proposals are invited only in areas aligned to Priority Areas in following fields:

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

Areas that will be considered under the present call are as follows**:**

Healthcare

1. **HPV related diseases**
    - Development of cost effective, validated tests (as per international standards) for screening/ early detection of HPV types (focus on types other than HPV 16/18)
    - Vaccine surveillance, sero-surveillance and infection monitoring tests that would be easy to deploy in population settings such as lateral flow devices
    - Diagnostics- tests that can demonstrate viral activity/functionality, possibly persistence and oncogenicity (focus to be on types other than HPV16/18)

2. **TB**
    - TB vaccines (including therapeutic vaccines)
    - Drugs that can decrease duration of standard TB drug treatment
    - Drugs for treatment of XDR and MDR TB (both lung and extra – pulmonary TB)

- Aerosol model in Guinea Pig and other tissue specific models
- Host mediated therapies, adjunct therapies and phage therapy
- Drugs for Opportunistic mycobacteria
- Designing novel clinical trials for short duration therapy- bio markers

3. **Malaria**
    - Alternative to Artemisinin (ART) Derivatives
    - Adjunct drug to ART to treat Cerebral Malaria
    - Vaccines for malaria

4. **Other Areas**:
    - Diagnostics based on Artificial Intelligence (AI) for detection of TB, malaria and other diseases, management of chronic conditions, delivery of health services and drug discovery
    - Quick diagnostics and treatment (including vaccines) for SARS-2 variants and seasonal viral infections
    - Diagnostics, drugs, therapeutics and vaccines for Neglected and rare diseases
    - Medtech interventions to address challenges of healthcare system at Primary, Secondary and Tertiary level
    - Regenerative Medicines

Energy, Environment and Secondary Agriculture

- Carbon capture and utilization using algae and other biotechnological means for producing value-added products
- Production of highly efficient cellulase enzyme composition and its techno-economic analysis
- Valorization of lignin to value added chemicals for reducing cost of 2G ethanol
- Use of synthetic biology techniques for:
    - conversion of lignocellulosic sugars into chemicals and materials
    - Production of advanced biofuels (e.g., butanol, isobutanol, alkane, alkene, terpenes) and cosmetics/nutraceuticals/flavour compound (e.g., fatty alcohols, paraffin, carotene, vanillin, saffron etc.)
- Novel way of engineering microbes for simultaneous C5/C6 fermentation
- 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
- Technologies (including IT-based) for better storage, grading, packaging, storing and quality control of agricultural/horticultural produce (including organic produce), marine, dairy and poultry to reduce economic losses and value addition
- Post-harvest value addition of millets including:
    - Improvements in de-hulling efficiency and separation

- Improvement in shelf-life and packaging of millet-based products
- Innovative millet-based products

Agriculture

- Authentic data collection from the fields using satellite imaging, image-recognition software, IoT, drones ("Kisan drones") and machine learning, followed by its monitoring and analysis by AI-based applications for crop selection, pest control, precision farming, analyse soil quality, digitization of land records, spraying of insecticides and nutrients, crop assessment, predicting crop losses, estimating yields and economic gains, and information dissemination to farmers
- Technologies for enhancing water use efficiency (Smart irrigation), energy efficient equipment, soil health management, organic value chain development, innovations in biofertilizers and biopesticides
- Farm mechanization
- Technologies contributing to boost production of oilseeds and pulses

Veterinary Sciences and Aquaculture

- New Therapeutics for Lumpy skin disease, Foot and Mouth Disease (FMD), and Brucellosis.
- Development or validation of assays/kits for use in multiple species for brucellosis and to differentiate infected and vaccinated animals (DIVA) in FMD and brucellosis
- Point of care diagnostics, vaccines and therapeutics for disease management in livestock and aquaculture
- Technologies for animal reproduction
- Advanced technologies based on artificial intelligence and biosensors for automated monitoring of fish production/farming
- Bioactive compounds from marine actinobacteria

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
- **up to TRL 6** (Early-stage validation) for SBIRI
- **TRL 7 and above** (Late-stage validation up to pre commercialization) for BIPP

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 years 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.

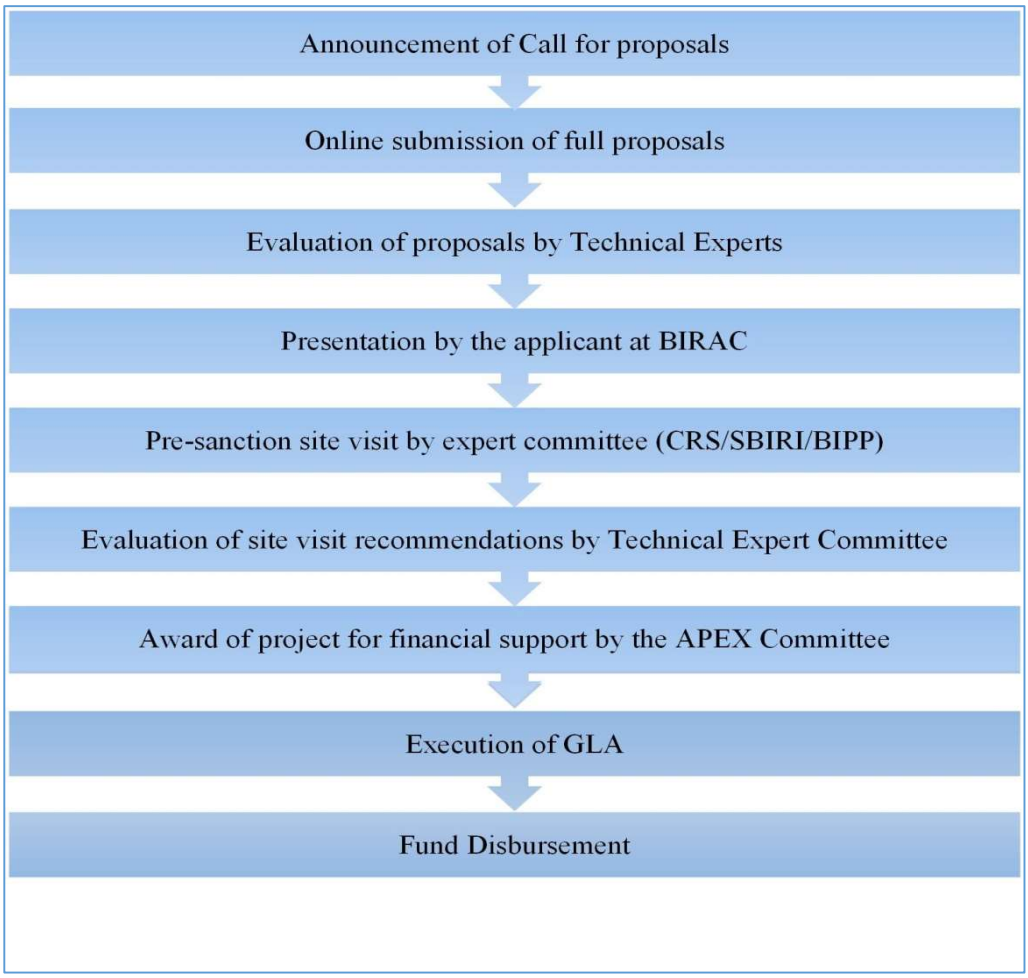
Ineligibility

- 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 15th October, 2022 and shall close on **30th November, 2022 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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