



BIRAC announces
6th Call for Proposals under SPARSH
on
WASTE to VALUE



About SPARSH.....

SPARSH (Social Innovation Programme for Products: Affordable and Relevant to Societal Health) is the Social Innovation Programme of BIRAC aimed at promoting the development of innovative solutions to society's most pressing social problems through biotechnological approaches. Since its inception, the program has been investing in high impact ideas and innovations that could address unmet needs and challenges that are neglected.

Till date, five calls for proposals have been launched under the program. The first two calls of SPARSH were aligned with UN Millennium Development Goals 4 and 5 i.e., “*Reducing child mortality and improving maternal health*”. The third and the fourth call for proposals were on “*Waste to Value*”, and “*Ageing and Health*”, respectively. The focus of SPARSH third call also reflects the mandate of Swachh Bharat Mission which aims at elimination of open defecation, conversion of unsanitary toilets to pour flush toilets, etc. The Fifth call “*Innovative Diagnostic tools for Soil and Plant Health*” was launched on 26th January, 2016 for entrepreneurs and start-ups in the field of soil and plant health assessment.

Objectives

1. Identify and provide support to cutting edge innovations towards affordable product development that can bring significant **social impact and address challenges of inclusive growth**.
2. Provide support in form of **impact funding of biotech product innovations** (with social goals) that can be **scaled**.
3. Create and foster a **pool of social innovators** in biotech and provide a **platform** to share best practices, understand intricacies of business models in social innovation and network.

The Scheme has two components:

a) Product Development

Funding is provided to support innovations towards affordable product development that can bring significant social impact and address challenges of inclusive growth. 20 projects have already been supported and 8 products/prototypes/technologies have been developed.

b) Social Innovation Immersion programme (SIIP)

SIIP is an immersion fellowship scheme aimed to create a pool of social innovators/entrepreneurs who could identify specific social needs & gaps, and bridge them using biotechnological approaches (product or services). So far, 18 social innovators have been mentored through BIRAC – SIIP partners; 50 novel solutions identified; 12 prototypes have been developed

6th Call for Proposals

WASTE to VALUE

Addressing the challenge

Increasing urbanisation and growth of population along with the rising standards of living due to technological innovations have contributed to an increase both in the quantity and variety of solid wastes generated by industrial sectors such as sugar, pulp and paper, fruit and food processing, sago / starch, distilleries, dairies, tanneries, slaughterhouses, poultries, etc.

The U.S. Environmental Protection Agency (EPA) defines solid waste as "*any garbage or refuse, sludge from a wastewater treatment plant, water supply treatment plant, or air pollution control facility and other discarded material, including solid, liquid, semi-solid, or contained gaseous material resulting from industrial, commercial, mining, and agricultural operations, and from community activities.*" The principal sources of solid waste are residential households and the agricultural, commercial, construction, industrial and institutional sectors. India has approximately 36.5 million tonnes of waste generated annually. India will see a rise in waste generation from less than 40,000 metric tonnes per year to over 125,000 metric tonnes by the year 2030. Despite requirements for pollution control measures, these wastes are generally dumped on land or discharged into water bodies, without adequate treatment, and thus become a large source of environmental pollution and health hazard.

Industrial solid waste encompasses a wide range of materials including paper, packaging materials, waste from food processing, oils, resins, solvents, paints, ceramics, glass, metals, plastics, rubber, leather, wood, straw, abrasives, etc..

As per OECD (Organisation for Economic Co-operation and Development), Agricultural waste is waste produced as a result of various agricultural operations. It includes manure and other wastes from farms, poultry houses and slaughterhouses; harvest waste; fertilizer run-off from fields and pesticides that enter into water, air or soils. Agricultural waste is the most widely available and also the most wasted energy and biomaterial source. While some of it is used for cattle fodder huge amounts of paddy straw, cane trash and other farm wastes are simply burned in the fields escalating the pollution problems. India now produces 98 million tonnes of paddy with roughly 130 million tonnes of straw of which only about half is used for fodder.

The poultry sector also produces waste products such as eggs shells, slaughter waste, hatchery waste, feathers, poultry droppings and litter manure. The huge quantity of waste generated may pose a serious threat to the environmental safety by leading to contamination of groundwater and being a source for growth of insects, vermin and pathogenic micro-organisms.

As a result of heavy consumption of fish worldwide, a considerable amount of fish waste is produced yearly. Similar to most food industries, fish-processing operations produce waste, both in solid (e.g. scales, fins, tails, bones, viscera, skin, heads) as well as liquid (e.g. water discharge from cleaning and rinsing, brine, blood water) form. Hence, there is an increasing need to address waste management of fish and fish products.

Animal wastes contain substantial amounts of insoluble and hard-to-degrade structural proteins like collagen, elastin and keratin. These by products are often rich sources of protein, which can be extracted and hydrolyzed to be used as feed or functional ingredients. Most of these by-products also contain other organic and inorganic nutrients that are of value if a technology for

their extraction is developed.

In addition to all of the above, urbanization has resulted in generation of over 160,000 Metric Tons (MT) of municipal solid waste daily in the country. The released waste emit GHGs like methane and carbon dioxide and add to air pollution. The problems caused by mismanagement of solid and liquid wastes can be significantly mitigated through the adoption of environment friendly waste to energy technologies that will allow treatment and processing of wastes before their disposal.

The waste streams or by-products from different industries currently stay unusable and go to disposal, or find only partial, low value utilisation. Significant quantities of compounds with potential for valorisation into high value products are lost in waste-streams. Furthermore, disposing of these streams in landfill causes environmental issues due to their high landfill leachate and methane-emissions. The presence of such vast amount of waste represents both an opportunity, and a necessity for finding a suitable use for all the above-mentioned waste or by-products and utilize it for production of bio-based materials.

Development of environment friendly, energy-efficient and cost effective technologies from wastes having market potential to cater to people’s needs in rural and urban areas is the demand for today. The specific challenge is to achieve a sustainable and scalable solution for development of value added products. With this mandate, the **focus of the 6th call of SPARSH** is on **turning biological residues and wastes into greener everyday products** through innovative biotechnologies and bio refineries approach.

The type of waste to be utilized and valorised may include:

WASTE	BIOTECHNOLOGICAL INTERVENTIONS	VALUE
<p>Agro industries</p> <ul style="list-style-type: none"> • Agriculture residue • Horticulture industries • Agricultural weeds • Livestock and Poultry • Waste from aquatic industries • Food processing industries <p>Industrial waste</p> <ul style="list-style-type: none"> • Dairy • Distillery • Paper and pulp • Tannery <p>Municipal Solid waste</p> <ul style="list-style-type: none"> • Domestic and kitchen waste • Waste from restaurant and canteens • Others <p>Other waste</p>		<p>Biobased Products</p> <p><i>Chemicals</i></p> <ul style="list-style-type: none"> • Bio-based plastics and polymers • Textiles • Fine and Speciality chemicals • Platform chemicals <p><i>Food and Feed</i></p> <ul style="list-style-type: none"> • Nutraceuticals • Food ingredients/additive • Pigments • Dietary supplements <p><i>Others</i></p> <p>Biofuels & Bioenergy</p> <ul style="list-style-type: none"> • Biofuel • Biogas • Electricity <p>Environmental remediation (Efficient ways for disposal)</p>

SCOPE OF THE CALL

Under the present call, proposals are invited only under “**Affordable Product Development**” category and NOT under Social under Immersion Programme (SIIP).

Technologies that have reached at least proof of concept (PoC) stage and can be developed to a commercial product will only be considered. The scope of the call will be limited to industrial exploitation for the development of cost effective, novel and innovative approaches for:

1. Development of low-energy consuming technologies for bioconversion of waste into
 - i. Added-value products
 - ii. Clean burning fuel
2. Enzymatic processing to recycle protein-rich waste into valuable products
3. The application of keratinolytic enzymes for valorization of waste
4. Tapping the energy in the waste products as a green energy source for next generation self-powered devices
5. Mitigating the environmental pollution load
6. Other related technologies

TYPES OF PROJECTS SUPPORTED

What is supported?

1. Projects that propose a process/product innovation with significant potential impact or commercial potential
2. Developed process should be sustainable from an economic and environmental point of view
3. Should require only short term development
4. Should be scalable
5. Proposals should try and encompass the model of integrated bio refinery
6. Should be capable of delivering a range of products, either novel or equivalent to existing products.
7. Technologies targeting “zero waste” concept resulting products should have a significant market value
8. The Technology Readiness Level (TRL) at the end of the project should be 6-7 (*Pilot Scale Demonstration of the technology*).

What is not supported?

- Ideas or concepts/exploratory research ideas that have not been proven & Projects with no element of novelty
- Solutions that require long term development
- Proposals without preliminary data and technology commercialization objectives
- Existing technologies involving conversion of waste to animal feed

- Commonly known solution such as composting or vermicomposting
- Proposals focussing on construction and demolition waste, mining waste, e-waste and hazardous waste
- Projects with no plan towards saleable (implementable) technology/ products/services
- Funding cannot be used to support PhD student research or any other academic research. The grant is not a research fellowship

OPERATIONAL GUIDELINES

Proposals are invited only for “**Affordable Product Development**” under two categories as below:

A. Validation of process or technology

B. Pilot Scale Implementation

WHO CAN APPLY?

ELIGIBILITY: This category is open to:

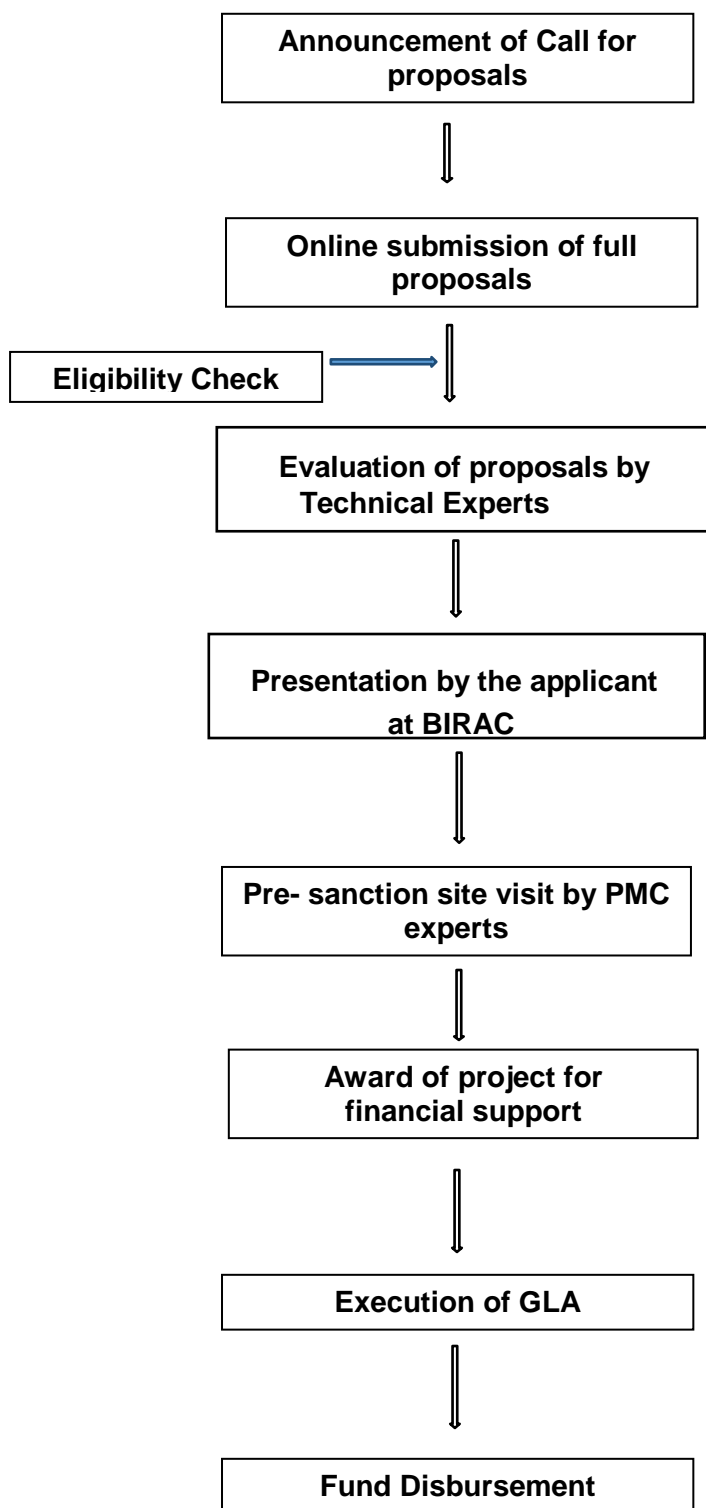
- (i) ***Companies***
 - Companies incorporated under the Indian Companies Act, 2013 having a minimum of 51% Indian ownership.
- (ii) ***Limited Liability Partnership***
 - Limited Liability Partnership (LLP) incorporated under the Limited Liability Partnership Act, 2008 having a minimum half of the persons who subscribed their names to the LLP document as its Partners should be Indian citizens.
 - The Applicant should own the background Intellectual Property based on which the proposal is made.
- (iii) ***Indian institution/ universities/ public research organization***
 - Academic institutions established in India and having NAAC/ UGC/ AICTE or any equivalent recognition certificate or any other Public/Government supported organization
- (iv) ***Partnership Firms/ Society/ Trust/ NGO/ Foundation/ Association***
 - Partnership Firms/ Society/ Trust/ NGO/ Foundation/ Association established in India under the relevant Indian Law having at least half of the stakeholders (partners/ trustees/ members/ associates etc.) as Indians.

NOTE: *Applicants and Co- applicants should not have any other legal disqualification that will prohibit them from participating in the scheme process and execution of necessary agreements thereafter.*

DURATION OF PROJECT

Up to a maximum of 24 months

EVALUATION PROCESS



FUNDING

Funding support to a maximum of Rs. 50 lakhs would be in the form of Grant-in-aid. The fund disbursement would be milestone based in 5 instalments as per the details below:

Instalment no.	When	Amount
1	Signing of Contract	30% of project cost
2	Completion of 1 st Milestone	20% of project cost
3	Completion of 2 nd Milestone	20% of project cost
4	Completion of 3 rd Milestone	20% of project cost
5 (Final) *	Completion of project and submission of final report	10% of project cost

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

INTELLECTUAL PROPERTY RIGHTS

IPR will belong to the applicant

DATE OF CALLS FOR PROPOSALS

The call would open on 15th August, 2017 and shall close on 30th September 2017.

CONTACT

For scheme, please log on to <http://www.birac.nic.in> or contact:

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