Cooperation on R&I

EU – India

Ahmedabad, 15 September 2017

EU Delegation to India
Research & Innovation Section

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Why Engage in Research & Innovation (R&I)?

- R&I are drivers for economic development and competitiveness.
- More R&I is needed to develop in a sustainable way and ensure quality of life.
- All countries need to increase efforts on R&I!
- India: Make in India and related initiatives: Clean India; Clean Ganga; Digital India; Skills; StartUp …

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Challenges for the Country Require R&I

- Geographic situation : hotspot for climate change.
- Large populated: prone to health problems (non-chronic) and chronic: diabetes;
- Promoting human capitl: training; skills
- Transformation efforts: energy, inland connectivity, urbanisation and river bassin management.

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Why collaborate with the European Union?

- Open to the World: for EU science has no borders; want to cooperate with the best to increase scientific excellence.
- EU researchers and innovators are used to cultural/linguistic diversity and cross-border cooperation ➔ facilitates cooperation with other countries.
- Due to its fragmentation (many small countries, etc), R&I actors create networks which are open to non- Europeans.
- The EU is home to many first-rank R&I institutions and research infrastructures.

Why collaborate with the European Union?

… because the EU is a world leader in Research and Innovation:

- 24% of global expenditure on research
- 32% of high impact publications,
- 32% of patent applications
- Some of the best universities in the world (25 in top 100)
- Some of the most innovative companies (1/4 of world's top 2000 R&D investors)

… and the world's largest trading bloc:

- Over 500 million mainly affluent people in 28 countries

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How to Engage with EU

- EU's R&I programme is called **'Horizon 2020'** for period 2014-2020: Open to the World!
- Budget: €80 billion for seven years (2014-2020)
- Funding: collaboration projects; mobility of scientists and technological development
- Calls for proposals published in bi-annual Work Programmes
- On 27 October 2017, last Work Programmes for 2018-2020 will be published: be ready !

Horizon 2020 organised around three priorities

Excellent Science Funding
(€24,441 million, 2014-2020)

European Research Council (ERC) Frontier research by the best individual teams	**13,095**
Future and Emerging Technologies Collaborative research to open new fields of innovation	**2,696**
Marie Skłodowska-Curie actions (MSCA) Opportunities for training and career development	**6,162**
Research infrastructures *(including e-infrastructure)* Ensuring access to world-class facilities	**2,488**

Industrial leadership funding

(€17,016 million, 2014-2020)

Leadership in enabling and industrial technologies (LEITs) (ICT, nanotechnologies, materials, biotechnology, manufacturing, space)	**13,557**
Access to risk finance Leveraging private finance and venture capital for research and innovation	**2,842**
Innovation in SMEs Fostering all forms of innovation in all types of SMEs	**616** + complemented by a 20% minimum of the budget for societal challenges + LEITs and ***'Access to risk finance'*** with strong SME focus

Societal challenges funding
(€29,679 million, 2014-2020)

Health, demographic change and wellbeing	**7,472**
Food security, sustainable agriculture and forestry, marine and maritime and inland water research, and the bioeconomy	**3,851**
Secure, clean and efficient energy*	**5,931**
Smart, green and integrated transport	**6,339**
Climate action, environment, resource efficiency and raw materials	**3,081**
Inclusive, innovative and reflective societies	**1,310**
Secure societies	**1,695**
Science with and for society	*462*
Spreading excellence and widening participation	*817*

* Additional funding for nuclear safety and security from the Euratom Treaty activities (2014-2018)

S&T cooperation with India is a priority for the European Union

We have been working together since long!

Building upon or experience:

- Commitment to extend CFM
- To increase number of areas and topics (ICT; green transport; polar sciences).
- Joint call on Water (2018) and Smart Grids (2019)
- Extend/strengthen Innovation
- Facilitating mobility (ERC/SERB arrangement)

Indian participation in Framework Programmes

- Collaboration under Horizon (2014-2017):
  - 79 eligible proposals involving 93 applications from India
  - 9 proposals were retained for funding involving 12 Indian entities received ~ 3 M€ funding.
- Collaboration under the previous FP7 (2007-13):
  - 253 research teams from India were included in 173 projects, and 1800 Indian researchers received a MCA grant (enabling them to move to Europe to do research)
  - Most active Indian participants: IITs ,IISC, CSIR Labs, Central Universities, Pharma Industries etc.

→ Room for Improvement

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Opportunities for Indian Researhers

HORIZON 2020

Make best use of the benefits !

Connect the best teams and individual researchers from India with Europe's excellence in research and innovation

Access to Europe's knowledge, data, infrastructures, and world-leading scientific networks.

Boost your individual researcher career through mobility and researcher staff exchange

Work together with European partners on tackling most pertinent societal challenges affecting India

Possibilities for Indian participation in H2020:

There are four main ways an India can participate in *Horizon 2020* (with EU funding):

1. as a partner in a **collaborative research and innovation project or coordination action**;
2. as a participant in a **Marie Skłodowska-Curie Action** (MSCA):

- individual Marie Skłodowska-Curie **fellowships** – receiving or sending post-docs;
- as a partner in a Research and Innovation Staff Exchanges (**RISE**); and
- as a partner in a joint PhD action under the Innovative Training Networks (**ITN**);

3. as a **European Research Council** (ERC) grantee;
4. by becoming a **registered Expert** .

Possibilities for Indian participation in H2020:

1. Collaborative project participants

- **Opportunities in the 'Societal Challenges' and 'Industrial Leadership' pillars**
- **Generally Indian researchers are eligible for funding from DST or DBT, successful in H2020 for Collaborative Projects**
- **Usually significant investment in time and resources**
- **Greater rewards when participation is part of a strategic engagement with Europe**

EU-DST/DBT co-funding mechanism

India-EU S&T Agreement framework

Research and Innovation

Time

How to participate in Horizon 2020?

= OPEN COMPETITION + PEER REVIEW

Example of a Annual Work Programme (SC)

List of Calls for proposals open

Understanding the call topics: example

https://ec.europa.eu/research/participants/portal/desktop/en/opportunities/h2020/topics/bbi.2017.d2.html

BBI 2017.D2 – INTEGRATED MULTI-VALOR
ADVANCED MATERIALS AND HIGH ADDED-VA

Specific challenge:
In a context of growing demand for resources, sustainably cap
and inland waters is critical for Europe. Micro- and macro-al
biomass that can be used for various applications. They als
requirement. The production of farmed aquatic plants, inclu
estimated at 23.8 million tonnes (wet weight 2012) and growing

Scope:
Demonstrate the efficient operation of a full value chain based
valuable products (such as ingredients or additives, advanced m
Proposals should include:

- demonstration of efficient production systems, couple
  achieve a stable intermediate product ready for the con
- multi-valorisation of micro- or macro-algae into advanc
  or high-value bulk products for different application sec

Proposals should include fully efficient logistics solutions to
costs associated with harvesting, first pre-treatment steps, st
biomass to the processing sites. Proposals should therefore
production and harvesting in a sustainable way, since these ar
and scale-up of the algal bioeconomy sector. A thorough asses
carried out if the harvest takes place in the wild. Resourc
valorising all fractions arising from biomass processing.

Indicative funding: *It is considered that proposals requesti*
million would allow this specific challenge to be addressed ap
preclude the submission and selection of proposals requesting

Expected impacts:
contribute to **KPI 1**: create at least 1 new cross-sector interconn
contribute to **KPI 2**: establish at least 1 new bio-based value ch
contribute to **KPI 6**: create at least 1 new demonstrated c
chemicals and materials;
increase the competitiveness of European biomass producers
growth and investment while ensuring environmental sustainabi

Type of action: Innovation Action – Demonstration Action.

- **BBI 2017.D2**
- **'Specific challenge'**
- **'Scope'**
- **'Expected impact'**
- **'Type of action'**

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Are legal entities from third countries ("non-EU countries") eligible to participate in Horizon 2020?

- **In principle any legal entity, regardless of its place of establishment, can participate in Horizon 2020.**
- **India based legal entities are eligible for funding of DST/DBT**
- **Read Article 7.2 of the Horizon 2020 Rules for Participation as well as DST/DBT Call Guidelines**

How to find Partners?

Choose the Best in the area!

Consortium development (1/2)

Meeting the criteria with a 'balanced' Consortium:

1. The basic research
   - ***Science & Technology*** partners
2. Users of Technology & Implementation
   - Partners with expertise to ***develop, test & validate the scientific premise, technology or other outputs***
3. IMPACT of the R&D outcomes on the target market
   - Partners with expertise & experience to ***disseminate & exploit the knowledge/solutions generated***
4. Social Science
5. Gender balance

Consortium development (2/2)

- Consortium must have at **least 3** different organisations from **3 different EU** Member States or Associated States
- Most projects are much bigger (on average **10-20**)
- Different actors in the consortium brings different competences, facilities, networks and experience
- Diversity is an advantage (country, sector, gender, experience)
- One partner is the **coordinator** (or project manager) – should be experienced
- Selected other partners can be **scientific leaders**

Proposals development

- These are large projects … hence many technical requirements for the proposal
- However, your **European partners (especially the coordinator) will do most of the work**
- Projects are structured into **work packages** to help manage the projects via deliverables and milestones
- You need to know how much your **involvement will cost** (regardless of whether you receive EU funding or not)
- Important to sort out **your own robust funding plan** for your involvement – otherwise could jeopardise the proposal
- Be clear on **IPR issues** (Background IP / Project IP)

Hints and tips for success (1/2)

- **Plan ahead**
  - Think strategically – what would you like your **portfolio to be in 5 or 10 years' time** and work backwards on how to achieve this
  - Remember that H2020 is **challenge-based**, not topic-based as in FP7, so check all areas, not just the obvious ones, to ensure you don't miss any funding opportunities
  - Pay careful attention to the **Technology Readiness Level** for IAs
  - Ensure you are **aware of the Commission's political aims and aspirations** for H2020 in order to understand the context of a particular call topic and thus the relevance of your proposed project
  - **Study** details of projects that have already been **funded projects**

Hints and tips for success (2/2)

- **Be involved**
- **Be realistic**
- **Read carefully**
  - It is crucial you understand the call topic: read between-the-lines to assess the call aims
- **Persevere**
  - If unsuccessful, do read your Evaluation Summary Report (ESR) carefully to discover where you need to improve in future:

❖ Be honest, not defensive, in this

Evaluation of Proposals

- ✓ **ERC** frontier Research actions » only "EXCELLENCE"
- ✓ **Innovation actions** higher weighting for "IMPACT"

Success Stories (1/3)

Ready to wear electronics

Scientists at a research facility in the German city of Berlin dream of clothing that produces energy as we walk. They have combined very different nanomaterials into so-called energy harvesters.

Published: 22 May 2017

Shaking up construction with lightweight quake-resistant design

New building concepts that take into account catastrophic events such as earthquakes have the potential to save thousands of lives. EU-funded researchers have pioneered new methods and materials for constructing earthquake-fire resistant buildings that are lightweight, energy efficient and cost-effective. The project's results are currently being commercialised.

Published: 10 July 2017

Success Stories (2/3)

Could a 'smart mirror' replace your doctor for disease diagnosis?

When you look into a Wize Mirror, it looks back at you. It is a prototype of a smart mirror that detects disease symptoms.

Published: 20 June 2017

'Electric' bacteria can purify sewage water - fast

Harnessing bacteria that produce electricity and break down organic waste, a European research project is developing a new, environmentally friendly way to purify sewage water in small communities.

Published: 7 June 2017

Cargo vessels: a cleaner alternative to lorries

Cargo vessels are considered a relatively green mode of transport. Compared to lorries, they produce fewer emissions. But road transport is modernising fast and vessels have to keep up to remain competitive.

Published: 31 May 2017

Success Stories (3/3)

Replacing oil in plastics production with organic waste

Alternative energy sources are gradually replacing fossil fuels, but can oil be replaced in the production of the plastics we all use in our daily lives? Innovative technologies are replacing oil with vegetable components to make plastics with fascinating properties.

Published: 26 July 2016

Researchers deliver green plastics for food packaging

EU-funded researchers have adapted two biodegradable plastics made from crop waste for use as food packaging, laying the groundwork for Europe to become a global leader in the sector.

Published: 6 January 2016

Get Ready NOW:

The new Horizon 2020 Work Programmes and Calls for 2018-2020 will be open for application on 27 Oct. 2017!

http://ec.europa.eu/programmes/horizon2020/en

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Experts

H2020 ONLINE MANUAL

Join the database of independent experts for European research and innovation.

The European Commission appoints independent experts to assist with research and innovation assignments including the evaluation of proposals, monitoring of projects, and evaluation of programmes, and design of policy.

New experts

Who can be an expert?

You have a chance of being selected as an expert if you:

- have high-level of expertise in the relevant fields of research and innovation (see call for details on types of expertise).
- can be available for occasional, short-term assignments

REGISTER AS EXPERT

What do expert assignments involve?

Experts, as peer reviewers, assist in the:

- **evaluation** of proposals
- **monitoring** of actions

In addition, experts assist in the :

- **preparation, implementation or evaluation of programmes** and **design** of **policies**. This includes the Horizon 2020 Advisory Groups.