Indo-European Collaboration in Science, Technology and Innovation: examining framework conditions and outcomes

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Indigo Policy Project

- is a European Union funded FP7 project
- working towards the goal of : supporting EU-India science, technology and innovation (STI) policy dialogue and related cooperation in thematic areas of joint interest
- bringing together 8 institutions: 5 from Europe: APRE, CNRS, DLR, RVO, ZSI (coordinator), 3 from India: CSIR, DBT, IndoGenius

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Indigo Policy Project

WP3 focused on the following tasks:

- Monitoring and assessing cooperation and its impact
- Support for evidence-based policy-making
- Working towards a innovation framework

Presentation objective

Two main research questions will be addressed in this presentation:

1) how the frameworks conditions applied to India affected the participation of India within FP7 and H2020;

2) how the project coordinators benefitted from the international research collaboration.

how the frameworks conditions applied to India affected the participation of India within FP7 and H2020

Preliminary Considerations

- This study is part of a deliverable titled „ Policy Paper on Horizon 2020 Opportunities for India within the framework of Indigo Policy Project
- Period of implementation of the study: Oct 2015 – March 2016
- Methodological considerations: analysis of secondary sources (European Union Open Data Portal, the Cordis database and several key reports published by EC from 2013 to 2015)
- Full report soon available to general public.

Institutional perspective

Preliminary considerations:

- First of all, the institutional perspective is based in the "assumption that that science and technology policy strategies manifest themselves on specific goal-oriented and purposely planned activities" (Schuch, 2009). = RESEARCH (NATIONAL / INTERNATIONAL PROGRAMEMES, IN DIFERENT SCOPES AND SIZES.
- FORMALIZED RESEARCH NATIONAL/INTERNATIONAL RESEARCH PROGRAMMES = CAN BE SEEN AS ONE OF THE MAIN INSTITUTIONS OF A SYSTEM OF INNOVATION
- According to Parsons (1990), institutions are systems of regulative norms which steer social behavior. Or Hubner and Nill (2001), understand under the term "institution" broadly defined norms, habits, practices, rules and regulations that "direct" interactions of groups.
- Then, INSTITUTIONAL RULES & PROCEDURES (CONDITIONS) = can facilitate certain activities & prevent other potentially meaningful activities.
- For this presentation = EUROPEAN FRAMEWORK PROGRAMS FOR RTD PROGRAMEMES = ARE CONSIDERED AS MAIN INSTITUTIONS OF SYSTEMS OF INNOVATION.

The Context of EU-India STI Collaboration

The case of EU-India STI collaboration surely is one of the most interesting for the field

Scale and potential are three key reasons:

- First, Europe is undoubtedly a world leader in research and innovation, boasting 24% of the world's expenditure on research, 32% of high-impact publications, and 32% of patent applications;
- India ranks third among the most attractive investment destinations for technology transactions in the world
- India is among the world's top 10 nations in the number of scientific publications
- India's research and innovation system warrants respect in its India's contributions to the global research and innovation ecosystem will grow at a similarly fast pace

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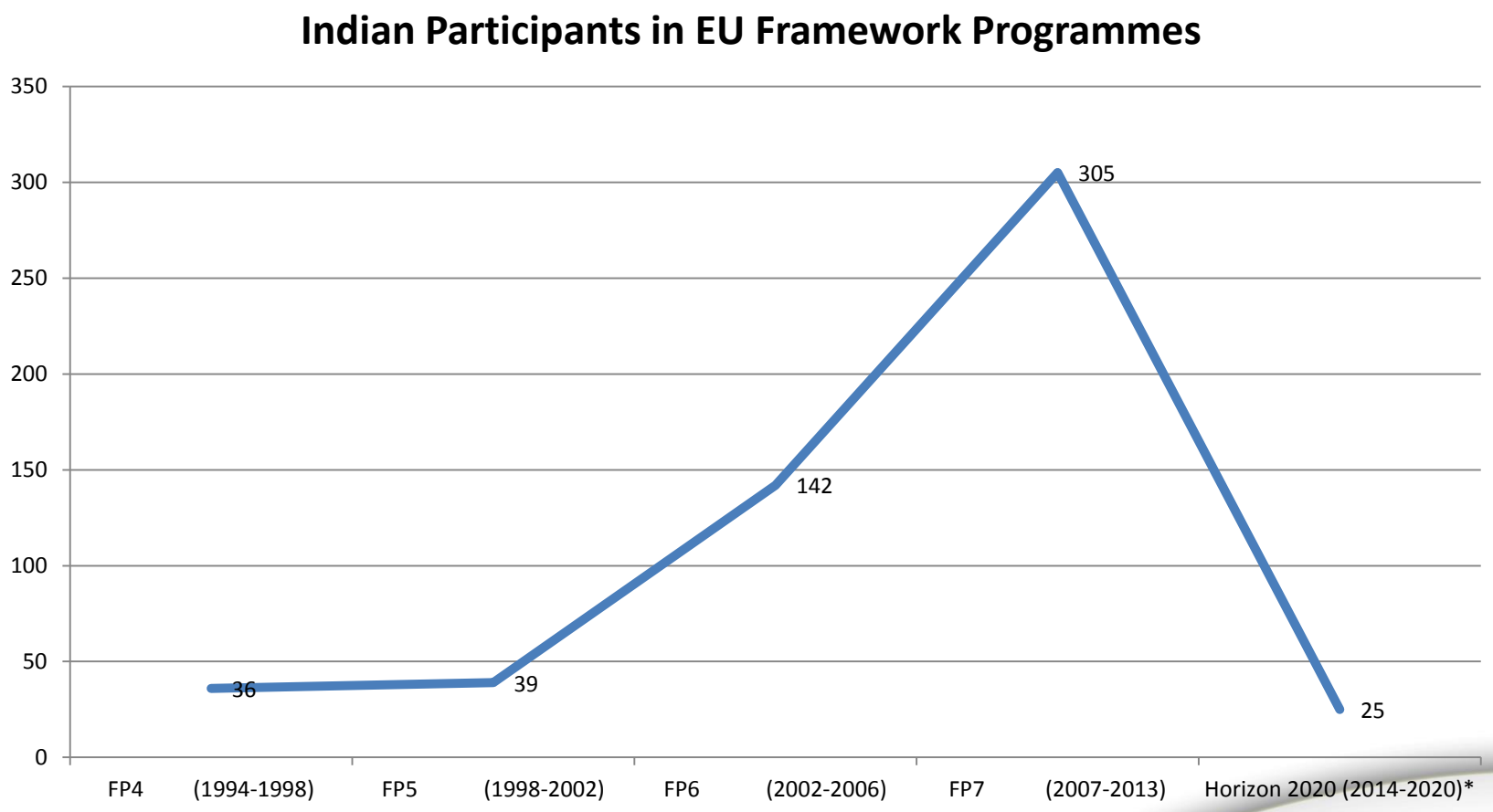
The Context of EU-India STI Collaboration

EU-INDIA Strategic Partnership

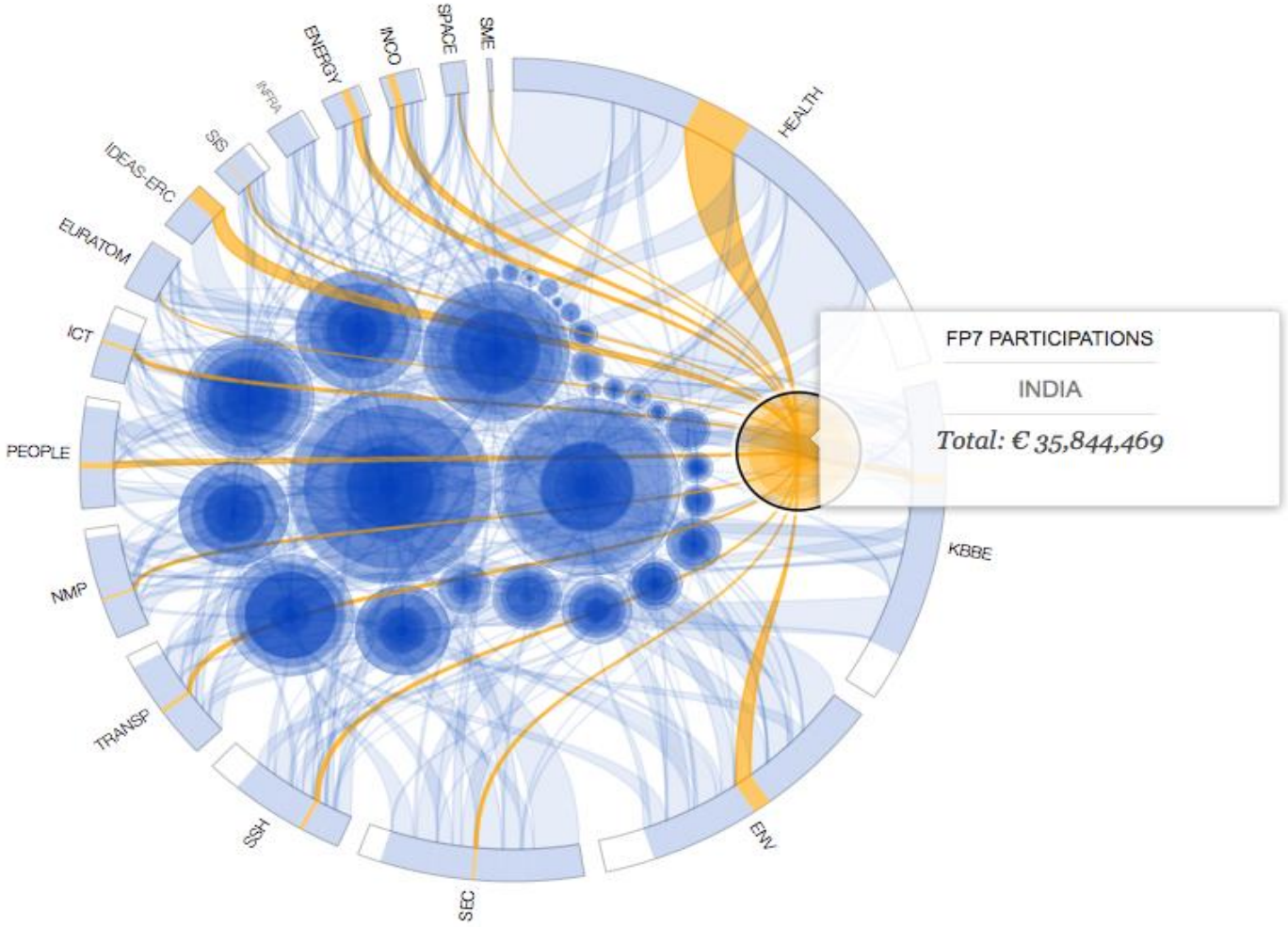
- A strong case for why EU collaboration with India is a high priority is well summarized in a **2014 European Commission document titled "Report on the implementation of the strategy for international cooperation in research and innovation**:
  - "**India's developments**, such as those in space technology with capabilities to launch commercial satellites and un-manned missions to the moon and to Mars, nuclear technology, (….)
  - **have contributed to the country's recognition as an important knowledge power in the global economy.** India is also attracting attention as a vibrant and versatile source of frugal innovation, a cost-effective and inclusive innovation, leading to affordable products and services without compromising on quality and environment protection standards".

India's Participation in the EU Framework Programme Collaborative Projects



FP7 Participations of India

€ 490,539,912



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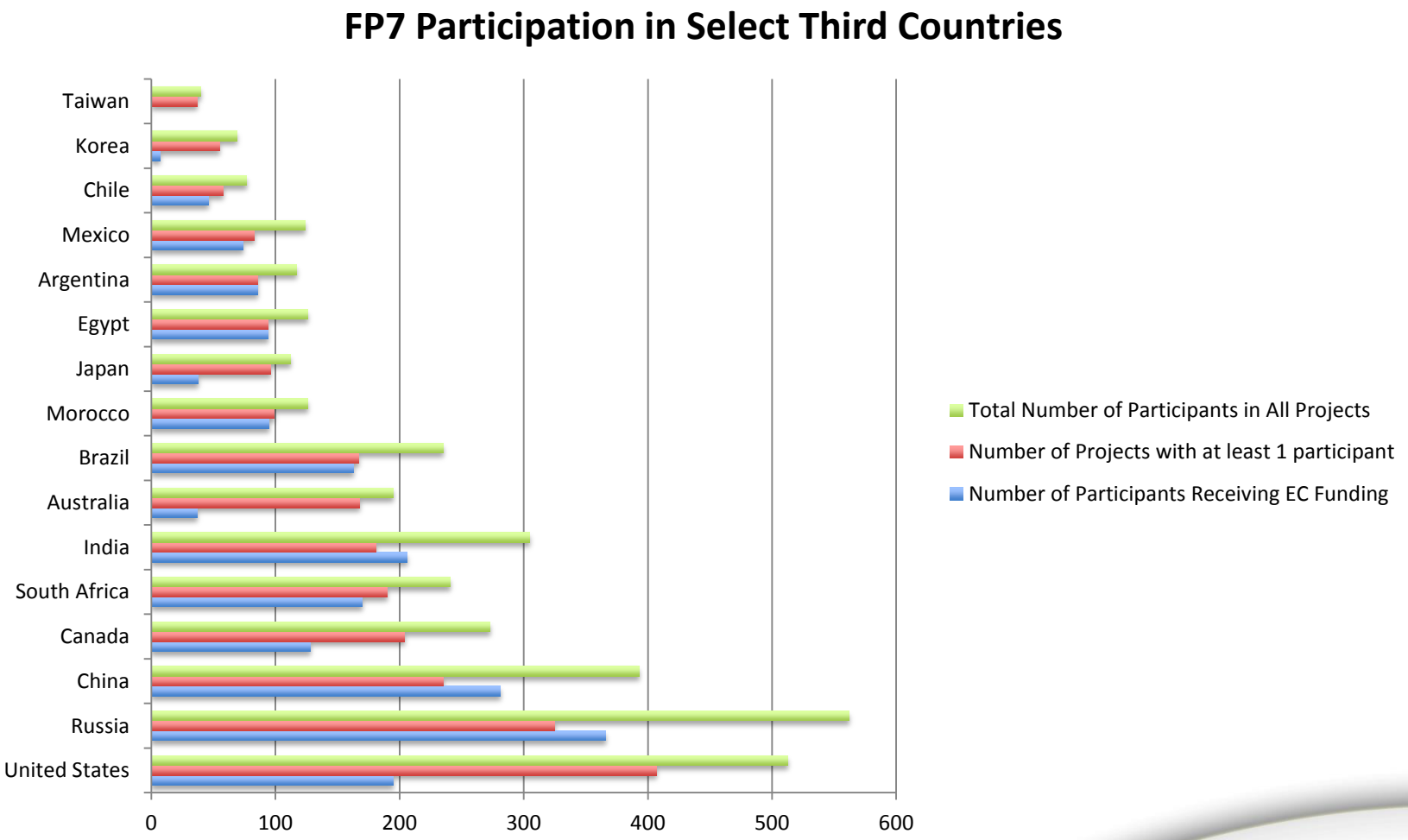
Comparing India's FP7 Participation to Third Countries



FP7 Participation in Select Third Countries

Country	Total Number of Participants in All FP7 Projects	Total EC Contribution Received in FP7 Projects (€)	Number of Participants Receiving EC Funding in FP7	Percentage of Participants Receiving EC Funding	Number of FP7 Projects with at least 1 participant	Total Cost of FP7 Projects with at least 1 Participant (€)
Russia	562	53,157,123.04	366	65%	325	2,401,740,887.91
United States	513	67,912,593.84	195	38%	407	2,715,872,530.20
China	393	26,601,473.81	281	72%	235	1,266,087,877.12
India	305	35,844,468.58	206	68%	181	779,771,351.42
Canada	273	57,451,233.56	128	47%	204	1,362,267,203.09
South Africa	241	28,771,178.75	170	71%	190	861,945,356.57
Brazil	235	26,185,646.02	163	69%	167	704,498,393.89
Australia	195	7,746,841.98	37	19%	168	1,412,842,335.63
Morocco	126	10,702,581.45	95	75%	99	460,774,537.41
Egypt	126	11,721,722.99	94	75%	94	346,693,750.86
Mexico	124	10,582,291.47	74	60%	83	296,228,393.50
Argentina	117	12,193,577.08	86	74%	86	297,586,418.51
Japan	112	7,047,916.39	38	34%	96	798,740,873.72
Chile	77	7,776,925.25	46	60%	58	283,314,590.81
Korea	69	1,137,414.50	7	10%	55	533,872,447.70
Taiwan	40	-	0	0%	37	344,094,319.85

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India and Horizon 2020

The EU Approach to International STI Collaboration

official European Commission communication document « Enhancing and focusing EU international cooperation in research and innovation: A strategic approach":

- Its first chapter titled "A Changing World", **recognises the following change in the global STI landscape:**
- "Over the past decade, however, the landscape has evolved rapidly. Global research and innovation were, until recently, dominated by the European Union, the USA and Japan. As **the emerging economies continue to strengthen their research** and innovation systems, a multipolar system is developing in which countries such as Brazil, China, India and South Korea exert increasing influence"
- The changes in the global research and innovation landscape explain the following organisation of countries, **where India is therefore seen to be more appropriately grouped with "Industrialised countries and emerging economies**" rather than developing countries

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Participation Impact among BRIC+Mexico Countries

most if not all of the countries **included in this policy change have seen negative consequences** in terms of **their overall participation** in H2020

More than 80% decrease in the number of Indian participants

Emerging Economies (BRIC+Mexico)						
Country	**Metric**	**FP7 (2007-2013)**	**Early FP7 (2007-2008)**	**Horizon 2020 (2014-Nov15)**	**% Change (Early FP7 to H2020)**	
India	Number of Projects with at least 1 Participant	181	42	6	-86%	
	Total Cost of Projects with at least 1 Participant (€)	779,771,351.42	175,375,516.96	19,016,592.50	-89%	
	Number of Participants	305	58	7	-88%	
	Total EC Contribution Received by Participants (€)	35,844,468.58	2,209,586.00	1,095,857.50	-50%	
	Number of Participants Receiving EC Funds	206	11	6	-45%	
	Percentage of Participants Receiving EC Funding	68%	19%	86%	67%	

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Analyzing India´s participation in a wider context

- The paradigm shift applied to international cooperation since 2014 impacted negatively the participation of India in H2020;
- When comparing India's participation in Horizon 2020 thus far to other periods, it is clear that participation has been greatly reduced;
- This is not entirely dissimilar to other emerging and even industrialised countries;
- The framework conditions (accessing the funding opportunities) had played a central role on India's participation;
- The removal of automatic funding is a likely explanatory variable (but certainly not the only one);
- It is plausible that the transition from FP7 to Horizon 2020 has played a role in negatively impacting India's participation in Horizon 2020;
- Horizon 2020 is in some ways a new concept compared to its predecessor, perhaps more so than FP6 was to FP7.
- The data suggests that the transition from FP6 to FP7 did not have an impact on India's participation in FP7.

how the project coordinators benefitted from the international research collaboration within the framework of FP7

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Preliminar considerations:

Qualitative study:

interwieving 25 projects coordinators from both sides, EU & INDIA

Method applid: semi-structured interviews

Objectives: assessing STI Cooperation within FP7 projects and its impacts and draw some conclusions that may inform policymakers

Covering five key impacts:

1) advancement of knowlegde

2) Inter-regional knowlegde and tecnhology transfer

3) Community benefits (including the development of EU-India Partnership)

4) Policy impacts

5) Ecomic impacts

Preliminary considerations

- Priority thematic fields covered: Energy, Health, Water, and Social Sciences;
- Study conducted between September 2015 – March 2016;
- Interviews conducted separately: the coordinator conducted interviews with the EU coordinators and the Indian counterpart conducted interviews with the Indian participants.
- This is an ex post evaluation: evaluation of an intervention/action/programme which has been completed.
- *Full report available soon*

Key findings:

- **From the Indian side,** there was in general a positive response from the project coordinators / members of the consortium being associated with EU related projects as this gave them a good exposure to EU based science institutions and researchers;
- A cross scientific and cultural experience seems to be one of the most significant features of EU – India cooperation projects under the framework of FP7 projects;
- **From the European side**, there was in general a positive experience for the European research teams and possibility to interact with significant research challenges in the field of Water, Energy and Health.

Meeting the challenges

- Scientific and cultural experience seems to be one of the most significant features of EU – India cooperation projects under the framework of FP7 projects;
- The results of this study suggest that **international research collaboration** played a **crucial role to meet challenges for science and knowledge**, by gathering scientific expertise, identifying, clarifying and tackling global challenges in both regions.

Looking at the interviews:

One project coordinator from the European side stated clearly that "***this EU project in particular***, *gave me the possibility to work* ***with Indian scientists in one area that is crucial for India***-- *that is Health, and universal and equitable access to health care and health financing (…), we have put* ***together a very good consortium to tackle and develop a community-based health insurance model***" [**European researcher and coordinator of the EU project**].

Looking at the interviews:

*"I have been learning a lot with this consortium and with this project, […] and we are **here sharing knowledge and techniques that otherwise wouldn't be possible**. Sides, European and Indian sides were **sharing their expertise on the basis of equal partnership**. There is no such thing that Europeans have more knowledge than Indians, and Indians are there to provide specific expertise. **Not at all**. We **exchange**, we share and c**reate new knowledge and new technologies**.* [**Indian researcher and coordinator of the EU project**].

- The **EU Framework Programme** was undoubtedly a unique opportunity for Indian participants to leverage all of the European Research Area's research infrastructure and expertise, while it provided European counterparts access to many of the top institutions in an exciting emerging knowledge area.
- it proved to be, an **excellent way to address important challenges for India**, where certain competencies of the European research teams were required.
- Indeed, the advancement of knowledge proved to be one of the most positive outcomes of the international research collaboration between India and the European Union

Some limitations were pointed out

- The most cited limitation was the difficulty to engage with the local stakeholders, which is perceived as crucial to maximise project impact.
- The second weak element mentioned was the lack of policy and economic uptake

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Difficulty to engage with local stakeholders

*"For me as coordinator **it was extremely difficult to meet the local communities**, I don't know if it was because of the way the project was designed, or simply because the project was not giving importance to this dimension.*

*As a coordinator I do believe that it is important to share our knowledge with the local in an open and transparent way without intermediaries. In our case, **this never happen**.*

*For the future, when the project is designed must verify **the need to proper engage with the local communities, entrepreneurs, universities, covering the all chain**. If we **want results with the EU money**, we must carefully assess the needs **and engage with the right stakeholders**". [the EU project coordinator]".*

Lack of "high-impact logic" that would allow the prioritisation of the right stakeholders and the promotion of a close dialogue with them

"The project was implemented for almost 3 years and we did the final conference at the end of project, relevant people were there, but the ***dialogue was interesting but minimal without the possibility to talk with those they can actually decide and allocate financial resources for it****"*. [European coordinator of an EC project linking EU and India].

Lack of economic uptake

- A large majority of the projects were not able to deliver concrete results to the market or even establish a network of economic stakeholders;
- Only a few projects led to the creation of products or new services. It seems that the projects were not naturally business-oriented, and it was very difficult to transfer key scientific results into the market;
- Most of the projects were not able to establish business opportunities during the implementation process

General conclusions

- **Seventh Framework Programme** proved to be one **excellent avenue** for reinforcing the collaboration between India and Europe,
- The project coordinators and the participants from India and Europe expressed very positive views about collaboration in the framework of project level; **these frameworks** allowed th**em sharing** and **advancement of knowledge**; improving and forging new skills and techniques,
- Ultimately finding **joint solutions** for challenging problems;

General conclusions

- Our empirical results suggest that policy and **economic uptake should be more closely considered** and supported by providers, this being on way to proper monitoring of implementation of STI initiatives;
- It seems, that **improving policy** coherence and **better follow-up** is considered necessary for both respective retrospective performance evaluations and forward looking impact assessments.

Thank you!

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