



High-level roundtable on India and the EU innovating together (in health, water and energy)

Feedback from the India Platform

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Introduction

The India Platform is a consortium of European and Indian partners, which has its main office at Ghent University, Belgium. Its vision is based on decennia of research into the cultural differences between India and Europe and into the dynamics of these cultures. This vision allows the India Platform partners in Europe and India to collaborate with each other in a fruitful way, because it takes into account the specific opportunities and challenges that both regions are facing today. For the complete vision note, see www.india-platform.org > *policy and vision*.

In order to successfully develop Indo-European relations and collaboration, it is essential to take into consideration the cultural differences, dynamics and contexts of the two regions. This is certainly the case for collaborative research and innovation in any domain of study. Hence, it is advisable that the proposed roundtable formulates its questions and recommendations in relation to these cultural contexts.

Issues of research and innovation cannot be tackled without taking into account the different ways in which science and technology have historically developed in India and Europe. Specific questions need to be answered, before it can even make sense to give any recommendations. For instance: What do Europeans and Indians refer to when they talk about 'research' and 'innovation'? Are they referring to the same type of activity or phenomenon? Or do they have completely different things in mind?

To show how important such questions are, the India Platform would like to point out some of the most relevant differences between the research and innovation landscapes of Europe and India. These need to be taken very seriously from the start.

Different cultural contexts

Historically, India and Europe have had very different traditions of systematic knowledge development and entrepreneurship. Europe has a centuries-old tradition of (1) building research teams and research culture and (2) transferring results from academic research to the world of business and industry. This is what is called the 'valorisation' of research or 'technology transfer'.

Research in Europe is most often done at the universities. As a consequence, it is embedded in the context of higher education. On the one hand, the European link between scientific research and higher education allows students to benefit directly from new research results and insights. On the other hand, it stimulates researchers to remain involved in educational activities. The result is the strong and extremely important European tradition of research-based education that lives on today. This is very different from the US, where research is often done at research institutes, which are separated from higher education institutions. Research and teaching are connected to each other only in the so-called 'research universities' in the US (a bizarre term in Europe where any university is a 'research university').

A major consequence of this connection between research and education in Europe is the emergence of a stable *research culture*. Typical for this research culture are its research groups or teams, where PhD postdoctoral researchers and professors work closely together on related questions. Master's students are taught by PhD students, postdoctoral researchers and professors. They are often introduced into research questions at this early stage. In this way, research groups are formed where these different researchers and students work together to monitor the ongoing research.

Another typical aspect of a scientific research culture is the evidence-based approach to the valorisation of research results. Valorisation and innovation are embedded in the standards and processes of scientific research. Before results are transformed into products and thus reach the market and customers, they are tested and re-tested by different research teams. They have to live up to certain standards of evidence. This is the case in fields from bio-medical technology through the pharmaceutical sciences to civil engineering. This is one of the dimensions that make Europe's research culture unique. In other words, *in Europe, technology transfer is an intrinsic part of a general research culture that feeds and shapes scientific research in all domains of study.*

In India, however, this type of scientific research culture is largely absent. There is hardly any link between research and higher education. The teaching faculty at the elite engineering colleges does not do research. Research groups of the kind described above are extremely rare. This is one of the reasons why fundamental scientific breakthroughs generally still come from the West and not from India. As a consequence of the absence of research culture, India also lacks a tradition of relating fundamental scientific research to industry and innovation. Valorisation of research results is not embedded in evidence-based approaches. This is not to deny that India has developed indigenous research traditions. However, currently, our knowledge and understanding of these research traditions is extremely limited.

To summarise: Thinking productively about the question of the relation between research results, on the one hand, and industry and innovation, on the other hand, we have to take into account both the nature of the European research culture and the absence of a similar research culture in India.

Current realities

Europe today is facing a huge problem: its population is greying and the number of students in engineering and natural sciences is diminishing significantly. The consequences are already visible on the job market: in Belgium for example, there is a structural shortage of at least 3.000 engineers. In Germany alone, there are 95.000 unfilled positions for engineers. This lack of qualified engineers annually costs an estimated 7 billion Euros to Europe's largest economy. Some of the European university laboratories cannot find the required researchers, irrespective of how good their facilities are, how willing their professors are to teach and guide researchers, and how strong the research tradition and results are.

In *India*, we see a vast number of bright students in applied sciences, medicine, bioscience engineering, etc. India is also taking considerable policy measures to expand its higher education system. However, given its lack of research culture, it cannot provide the intellectual environment researchers are looking for. This is one of the main reasons why it loses many of its bright minds to foreign countries.

The absence of research culture in universities and the industry has another unhappy consequence. Where researchers and scientific personnel are being trained continuously in a research tradition and research skills, they often develop a personal commitment to the institutions where this happens. This institution has shaped them and keeps feeding them with new knowledge. Because this is not the case in India, we see that highly skilled engineers and scientifically trained labor force in India tend to hop from job to job whenever this brings some financial or other benefit. If researchers are not part of a coherent team rooted in a research tradition, there is no incentive to stay at one place. This dimension is especially relevant to European institutes and companies that wish to collaborate with Indian institutes.

Without any doubt, there is tremendous hunger for knowledge among the Indian youth. To allow this to realise its full potential, developing a strong research culture is required. This goes for any field of study, including research and innovation in health, water and energy. Cooperation between Europe and India in these fields should formulate a specific main mid- and long-term goal: building a joint research culture that will provide a fertile soil for research and valorisation.

Developing a research culture in India should not just imitate European institutional structures. By doing research into the indigenous traditions of knowledge development, it should be connected to its own cultural context. In this way, it can provide an indigenous, fertile intellectual soil for scientific research. Once this soil is well cultivated, it will attract foreign researchers to invest in the country and it will also convince Indian researchers abroad to return to their country. New students will be educated and trained by these researchers. Eventually a research culture will crystallise. Once this is in place, excellent and trained Indian researchers will emerge in Indian society and its institutions without having to rely only on luck or individual genius.

The respective needs of Europe and India are often complementary in the sense that the problems of one can offer solutions for the problems of the other. This is certainly the case in the areas of health, water and energy. To give just one example based on the experience of the India Platform: the universal health care system of Europe is under pressure due to its greying population and the economic crisis, while India is in great need of developing a system of universal health care. Collaborating to help each other solve these respective problems will offer a mutually beneficial institutional framework within which collaboration in research and innovation can flourish.

To summarise: The asymmetric realities of twenty-first-century Europe and India need to be taken into account from the start, when we think about Indo-European collaborations in research and innovation.

Opportunities for Europe and India at the level of research and innovation

The above-mentioned realities harbor a huge potential for cross-border university-industry relations between Europe and India. But these must go far beyond instrumental cooperation that ends once the benefits for one of the two parties are depleted. We must look for collaborations that allow building a people-to-people relation between Europe and India as cultures and peoples. We can connect the knowledge, expertise, and experience of the long-standing European research culture to the enormous potential and multitude of bright minds of India. If Europe helps India to develop the research culture it

needs, this will also bring about the conditions that are required for technology transfer between Europe and India. Otherwise technology transfer will be limited only to bringing European technology to India where it just gets copied and re-used, without fruitful, long-term research collaborations.

For this endeavor to succeed, European universities and companies have to formulate the following as an explicit task: to invest in India and her institutions and help them develop this kind of research culture. If they see the merit of doing this, a different kind of relationship will develop between the European and Indian higher education institutions, research groups and companies. This relationship will not be an instrumental relationship that lasts so long as there is mutual gain, which is often the case now. It will be a solid relationship of investment, loyalty and trust. Indian students, researchers and employees will develop loyalty towards their European partners and vice versa.

How to achieve this?

- (1) European universities and companies should focus on *the development of research groups in India*. This will create the conditions for further, independent research development. For young Indian students and researchers, this way of being trained will be extremely attractive, exactly because they will not be treated as mere students or mere employees.
- (2) Investing in the development of research groups in India will directly influence the attraction of the young bright minds of India to Europe. This way of working is more efficient than merely visiting India in search of students and researchers - contributing to a harmful brain drain. Researchers and innovators can be trained for a number of years in European universities and companies, and then return to India to share their knowledge, research skills, and help build the research culture.
- (3) Indian universities and companies should not aim at immediate image building. They should observe the European way of developing research groups carefully, take their time to learn from it, and blend it with the Indian dynamic and agility in learning. This will result in a flourishing higher education and state-of-the-art research institutions. *It is only in such a context that a cross-border university-industry relation will be of benefit for both Europe and India in a long-lasting way.*

This is not some dream that is impossible to realize because (1) Many of the European institutions and companies have researchers with the required expertise and experience, who are willing to guide Indian faculty and students in the process of developing a research culture. (2) Many companies from Europe are willing to invest in research and innovation in India. (3) India has the economic and cultural conditions to create a flourishing research culture, both in companies and in higher education institutions. (4) The India Platform consortium is already taking significant steps in working towards this goal.

We propose to take these opportunities as the framework for the formulation of the questions and recommendations about the relation between business and academia in Indian-European collaborations.

Questions for discussion

How can the Group of Senior Officials (GSO) create structures and procedures, which

- (a) allow the growth of Indian research groups outside of the classical 'elite' universities and IIT's?

- (b) stimulate evidence-based valorisation of research results before the new products appear on the market?
- (c) invite European teachers and researchers with experience in technology transfer to help build a research and innovation culture in India?
- (d) stimulate entrepreneurship by involving SME's, both Indian and European, in the new developments?
- (e) find areas where Europe and India can help resolve each other's needs related to health, water and energy?

Sources

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