India S&T Cooperation with EU and Other Select Countries

Indigo Policy report by Prof. Venni V. Krishna
Briefing note

Briefing note authors: Teresa de Oliveira, Centre for Social Innovation (ZSI)

Goals of the report: The report focuses on the comparative perspective of Science and Technology Cooperation between India & European Union; and also on the cooperation with some other select countries (United States, Japan, Canada and China).

Methodology:

- JNU (Jawaharlal Nehru University)-based STI science policy expert (Prof Venni V Krishna, was contracted to draft the report);
- Data collection through desk research and interviews (by Prof Krishna with the assistance of Rajiv Mishra);
- Quality review conducted at first hand by ZSI and external quality assessment by Prof. Dr. Shyama Ramani, Professorial Fellow at UNU-MERIT (United Nations University), as required within the quality management plan within the project;

Core messages and findings:

- Some notable areas of cooperation are: with the USA in agriculture, climate change and energy; with France in energy, telemedicine and nuclear technology; with EU countries in climate change, energy, advanced materials, ICT, with Germany in renewable energy, power and instrumentation, and with the UK in biomedical, climate change and health fields;
- The EU-India cooperation began at formal level to progress mainly in the 1990s and this cooperation can be seen in different relevant fields;
- India's cooperation with USA and Canada can be traced back to immediately after the post-war period in the 1950s when India attained its independence; Indian organisations are participating in research projects in the EU framework in various technological areas, notably, health, environment, food agriculture biotechnologies and ICT, being the most prominent areas;
- In comparison to EU, India's S&T cooperation with the USA and Canada is not only older and deeper but is marked by some 'iconic milestones' or 'flagship projects'.

- India's S&T cooperation in 'big science' and 'high technology' projects with the EU and related institutions in Europe as a whole began with FP6 and FP7 projects such as in ITER, FAIR, Galileo Project (European version of USA's Global Positioning System).
- From the perspective of EU-India S&T cooperation, the impact of S&T Agreement has been quite significant in increasing and strengthening the cooperation. In many aspects, the S&T agreement has brought India and EU much closer.
- EU-India FP7 based projects were mostly between a group of R&D institutions. Whereas the S&T cooperation with USA and Canada can be seen in a 'triple helix' framework involving government R&D labs and science agencies – industry – university relations;
- The USA approach on Science and Technology with India, is rather focused on supporting and fostering joint applied R&D to generate public goods through the commercialization of technology developed through sustained partnerships between the U.S. and Indian researchers and entrepreneurs;
- Compared to EU-India, India's S&T and higher educational cooperation and exchange activities more robust and larger in size. Hence, the mobility of students and researchers, the numbers involved are much larger compared to EU;
- The USA maintains a large establishment such as the US India Educational Foundation in New Delhi. USA-India also established a large Indo-US Science and Technology Forum (IUSSTF) in 2000 to specifically look into S&T collaboration and partnership projects;
- India-EU S&T cooperation and higher educational exchanges become comparable and even more significant (from the perspective of number of researchers, students and research establishments in India) when we include some leading EU Member States such as France, Germany, UK, Netherlands, Sweden, Norway, Denmark, etc;
- Outside the EU-India framework, France, Germany and the UK have created large joint research establishments such CEFIPRA (France) and Indo-German Science and Technology Centre on equal partnership basis;
- With regard to mobility between India and EU, there has been moderate pace of mobility of scientists for shorter durations stretching between one week and 3 months. Indian Scientists tend to be more motivated to visit European based institutions rather than EU scientists to visit India.
- The cooperation between India & Japan, and India & China tend to be more focused on commercial and trade related fields rather than S&T cooperation. Nevertheless, the new policy developments are paving a way for a formal commitment to increasing S&T cooperation with Japan and China closely linked to India's flagship national programs such as Digital India; Make in India;

Clean India & Clean Ganga; Renewable Energy Technologies; High Speed Transportation and Industrial Corridors.