

**EXECUTIVE PROGRAMME
FOR SCIENTIFIC AND TECHNOLOGICAL COOPERATION
BETWEEN THE ITALIAN REPUBLIC AND THE REPUBLIC OF INDIA
FOR THE YEARS 2025-2027**

In pursuant to the Agreement on Scientific and Technological Cooperation between the Republic of India and the Italian Republic, signed in New Delhi, on 28th November 2003 and entered into force on 3rd November 2009, the Ministry of Science & Technology, Department of Science and Technology, of the Republic of India and the Ministry of Foreign Affairs, Directorate General for Cultural and Economic Promotion and Innovation – Office IX of the Republic of Italy, hereinafter referred to as the “Parties”, have agreed on the following Executive Programme (E.P.) for Scientific & Technological Cooperation for the years 2025-2027.

The signatory on behalf of the Ministry of Science and Technology, India: Prof. Abhay Karandikar, Secretary, Department of Science and Technology.

The signatory on behalf of the Ministry of Foreign Affairs, Italy: Ambassador in New Delhi H.E. Mr. Antonio Bartoli.

The institutions in charge of the coordination of the present Executive Program, hereinafter referred to as the “Parties”, are:

For the Italian Party: Ministry of Foreign Affairs and International Cooperation, Directorate General for Cultural and Economic Promotion and Innovation – Office IX.

For the Indian Party: Department of Science & Technology, Ministry of Science and Technology, Government of India

The meeting was opened by welcome addresses delivered by the two Heads of Delegation.

Following the opening remarks, the Heads of delegation introduced the components of their respective delegations.

The Participants adopted the following Agenda for the Joint Committee:

1. Status and perspectives of the Scientific and Technological Cooperation between the two countries
2. EP for the years 2025-2027
3. Final Provisions

1. Status and Perspective of the Scientific and Technological Cooperation between the two Countries

The Parties recognized the growing importance of science and technology for the economic, social and cultural relations between the two Countries.

Both Parties expressed their satisfaction with the current state of the bilateral cooperation and, considering the good relationships between the two Countries, stressed the need to implement further bilateral cooperation programmes in science and technology, and look forward to a very successful collaboration between scientists of the two countries fostered by this EP.

2. Executive Programme for the years 2025-2027

In the period between March 19 and July 31, 2024, a joint call for proposals was opened in both countries to collect project proposals according to two different funding schemes: *Exchange of Researchers (ER)* and *Joint Research Projects (JRP)*. The priority areas were the following:

Exchange of Researchers:

- a. Information and communication technologies and Artificial Intelligence
- b. Biotechnology & Sustainable Agri-food
- c. Astrophysics and Space Science
- d. Chemical sciences
- e. Climate change and Geo-hazards
- f. Advanced Manufacturing

Joint Research Projects:

- a. Infectious Diseases
- b. Physics of matter and new materials
- c. Quantum technologies
- d. Renewable Energies and Green Hydrogen
- e. Technologies applied to preserve cultural and heritage sites
- f. Sustainable Blue Economy: Ecological and environmental modeling of terrestrial and marine ecosystems

The criteria adopted in selecting the projects were:

- Scientific relevance of the proposed research
- Methodology and documentation
- Qualification and expertise of the research teams
- Added value of the bilateral cooperation *or (for Research Exchange projects only):* Added value of the proposed researchers exchange for project activities
- Involvement of early career scientists
- Exploitation and dissemination of the results

2.1 Projects selected for funding

Based on the results of the evaluation process independently performed in the two countries, and on the common acknowledgment of the excellence of the submitted proposals, the Parties have reached consensus on:

- 10 projects for the Exchange of Researchers, listed in **Annex I**
- 10 Joint Research Projects, listed in **Annex II**

Funding for the selected projects listed in Annex I and Annex II will be granted yearly, based on the financial resources available to both Parties.

Annex III contains the general administrative and financial provisions.

3. Final provisions

Both Parties acknowledged the importance of bilateral workshops for building strategic bilateral science, technology and innovation initiatives under the frame of the present Executive Programme. The Parties agreed to organise each year, alternatively in India and in Italy, one joint workshop whose detailed topics and coordinators will be agreed upon through mutual consultation.

The Parties agreed to hold the next session of the Joint Commission in presence or using a virtual platform. Its location, date, agenda, etc. will be agreed upon through diplomatic channels.

This Executive Programme for the period January 1st, 2025 - December 31st 2027 will remain valid until the next Executive Programme comes into force, but no longer than one year after its expiration.

Any amendment to the text of this Executive Programme has to be authorised by the competent Institutions in both Countries through diplomatic channels.

All initiatives foreseen in this Executive Programme shall occur within the limits of the budgets and according to the rules prevailing in each Country.

Annexes I, II, III attached hereto are integral parts of the present document.

Signed in New Delhi on April 10, 2025, in two originals in the English language.

For the Italian Party



H.E. Antonio Bartoli
Ambassador
Embassy of Italy to India

For the Indian Party



Prof. Abhay Karandikar
Secretary
Department of Science &
Technology

ANNEX I

SELECTED PROJECTS FOR EXCHANGE OF RESEARCHERS SELECTED WITHIN THE FRAMEWORK OF THE EXECUTIVE PROGRAMME OF SCIENTIFIC AND TECHNOLOGICAL COOPERATION BETWEEN THE ITALIAN REPUBLIC AND THE REPUBLIC OF INDIA FOR THE YEARS 2025-2027
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RESEARCH AREA	TITLE	INDIAN COORDINATOR	ITALIAN COORDINATOR
Climate Change and Geohazards	Development of Time-Dependent Probabilistic Seismic Hazard Assessment TD-PSHA Models for the National Capital Region Delhi in India A Step Towards Seismic Risk Mitigation	Dr. R B S Yadav, Kurukshetra University, Kurukshetra, Haryana	Dr. Aybige Akinci, National Institute of Geophysics and Volcanology INGV, Rome, Italy
Astrophysics and Space Science	Exploring the dark universe with multi-wavelength gravitational waves	Prof. Parameswaran Ajith, International Centre for Theoretical Sciences (ICTS-TIFR), Bengaluru, Karnataka	Prof. Jan Harms, Gran Sasso Science Institute, L'Aquila
Astrophysics and Space Science	Realistic modelling of relativistic jets from supermassive blackholes	Prof. Dipanjan Mukherjee, Inter-University Centre for Astronomy and Astrophysics (IUCAA), Pune University Campus, Pune, Maharashtra	Dr. Paola Rossi, Osservatorio Astrofisica di Torino
Advanced Manufacturing	4D bioprinting of a magneto-responsive hydrogel to model cartilage in osteoarthritic conditions	Dr. Ramendra Kishor Pal, Birla Institute of Technology and Science, Pilani, Hyderabad	Dr. Alessio Bucciarelli, IRCCS Istituto Ortopedico Rizzoli, Bologna
Information and Communication Technologies and Artificial Intelligence	Modelling Affective and Social Interactions in Cross-cultural Settings	Dr. Dinesh Babu Jayagopi, IIIT Bangalore, Karnataka	Dr. Radoslaw Niewiadomski, University of Genoa, Genoa
Information and Communication Technologies and Artificial Intelligence	MERITO Monitoring of Energy in OpenRAN via Intelligent Transport and x/r Apps Optimization	Dr. Koteswararao Kondepudi, Indian Institute of Technology Dharwad, Dharwad, Karnataka	Dr. Andrea Marotta, University of L'Aquila
Biotechnology & Sustainable Agrifood	Healthy and sustainable diets through digitally-customized 3D printed foods	Dr. Jeyan Arthur Moses, Indian Institute Of Food Processing Technology, Thanjavur, Tamilnadu	Dr. Antonio Derossi, University of Foggia
Biotechnology & Sustainable Agrifood	Characterization of physio-biochemical and molecular responses of plant-fungal interactions in brinjal Solanum melongena L.	Prof. Annamalai Muthusamy, Manipal School of Life Sciences, Manipal Academy of Higher Education (MAHE), Manipal, Karnataka	Dr. Laura Toppino, Council for Agricultural Research and Economics CREA
Chemical Sciences	Borophene Nanozyme-Based Microfluidic Colorimetric Biosensors for Rapid and Sensitive Detection of Biomolecules	Dr. Manash R. Das, CSIR-North East Institute of Science and Technology, Jorhat, Assam	Dr. Pier Paolo Pompa, Italian Institute of Technology IIT, Genova
Chemical Sciences	Exciton dynamics in 2D and Quasi 2D Single-Crystal Metal Halide Perovskites Impact of Organic -Electronic Spacers with Increased Aromatic Rings and Superior Donor-Acceptor Charge Transfer Properties	Dr. Sarthak Mandal, National Institute of Technology, Tiruchirappalli, Tamilnadu	Dr. Valeria Demontis, University of Cagliari

ANNEX II

JOINT RESEARCH PROJECTS SELECTED WITHIN THE FRAMEWORK OF THE EXECUTIVE PROGRAMME OF SCIENTIFIC AND TECHNOLOGICAL COOPERATION BETWEEN THE ITALIAN REPUBLIC AND THE INDIAN REPUBLIC FOR THE YEARS 2025-2027

RESEARCH AREA	TITLE	INDIAN COORDINATOR	ITALIAN COORDINATOR
Sustainable Blue Economy: Ecological and environmental modelling of terrestrial and marine ecosystems	Understanding biogeochemical fate of contaminants in marine ecosystems Prospects of restoration by genome-scale models and bioremediation strategies	Dr. Balaram Mohapatra, Gujarat Biotechnology University, Gandhinagar, Gujara	Dr. Simona Rossetti, CNR, Istituto di Ricerca Sulle Acque IRSA, Montelibretti, Rome
Renewable Energies and Green Hydrogen	Imperfect Solid Solutions for Catalyzing Water Oxidation in Acidic Media for Cost-effective Proton Exchange Membrane Water Electrolyzer	Prof. Sayan Bhattacharyya, Indian Institute of Science Education and Research Kolkata, Mohanpur, Nadia, West Bengal	Prof. Christian Durante, University of Padova
Renewable Energies and Green Hydrogen	Modeling, and Control of IEEE 2800-2200 Grid Code Compliant Grid Forming Green Hydrogen Electrolyser Load for Bulk Power System Integration.	Dr. Animesh Kumar Sahoo, Indian Institute of Technology Dharwad, Karnataka	Dr. Susanna Mocci, University of Cagliari
Quantum technologies	Deterministic Creation and Characterizations of Negatively Charged Single Boron Vacancy in Hexagonal Boron Nitride for Quantum Technologies	Dr. Shantanu Saha, GITAM University, Hyderabad, Nalgonda, Telangana	Dr. Antonio Polimeni, Sapienza University of Rome
Physics of matter and new materials	Access to the beamlines of the Elettra Synchrotron and of the FERMI free electron laser by the Indian Institutions	Prof. Jaydeep Kumar Basu, Indian Institute of Science Bangalore, Bangalore Karnataka	Dr. Giorgio Paolucci, Elettra-Sincrotrone Trieste
Physics of matter and new materials	Engineering perovskite chiral ferromagnets for magneto-optical and spintronic applications CHIRALMAG	Dr. Bholanath Pahari, Goa University, Talegao, Goa	Prof. Lorenzo Malavasi, University of Pavia
Physics of matter and new materials	Effect of Interfacial Intermixing on Spin-Orbit Torque in Quantum Interfaces	Dr. Shrawan Kumar Mishra, Indian Institute of Technology, (BHU) Varanasi, Uttar Pradesh	Dr. Michaela Kuepferling, National Metrology Institute of Italy INRiM
Physics of matter and new materials	Defects Engineering in High Entropy Electrolytes for Solid-State Batteries	Prof. Abhishek Sarkar, Indian Institute of Technology Delhi	Prof. Gian Domenico Soraru, University of Trento
Infectious diseases	Peptide hydrogel/Ag-nanoparticle composites as sustainable approach for treatment of fungal ocular infections	Dr. Sanhita Roy, LV Prasad Eye Institute, Hyderabad, Telangana	Dr. Cleofe Palocci, Sapienza University of Rome
Infectious diseases	Identification of Crosstalk Between Mechanical Stimuli and Small GTPases to Enhance Aged Alveolar Macrophage Immuno Efficiency	Dr. Bibhas Roy, BITS Pilani, Hyderabad, Telangana	Prof. Giorgio Scita, IFOM ETS - The AIRC Institute of Molecular Oncology and University of Milan

ANNEX III

General administrative and financial provisions

1. EXCHANGE OF RESEARCHERS

For each **Exchange of Researchers (ER)** project agreed under the E.P. 2025-27, 1 short-term stay (up to 10 days) and 1 long-term stay (30 days) in Italy and 1 short-term stay (up to 10 days) and 1 long-term stay (30 days) in India may be financed yearly within the limits of the available annual resources of each Party.

The researchers visiting under joint research project will be entitled to the exchange only if they hold the Italian nationality (or another EU nationality and be resident in Italy) for those who travel to India, and the Indian nationality for those who travel to Italy.

The costs of accommodation and living shall be covered by the receiving Party, while the costs of international travel up to the host institution shall be covered by the sending Party.

At the end of each year the Italian and the Indian PIs shall jointly report on the progress of their project. Funding for the next year will not be granted if the PIs do not submit their progress reports.

For the Italian Party, the progress report, subscribed by both coordinators, shall be submitted each year by 31st January, in pdf format, to the following address: ricercatori.italiani@esteri.it.

For the Indian Party, the progress report, subscribed by both coordinators, shall be submitted to ramkrishna.sahoo@gov.in immediately after completion of the financial year i.e. 31st March of every year

VISIT OF INDIAN RESEARCHERS TRAVELLING TO ITALY

The Indian Party will pay the international travel expenses and visa fee to Indian researchers visiting Italy under the jointly funded projects.

The supplied tickets will be the most economical ones available for the trip, economy class flight/train/ride. Any additional cost shall be borne by the researchers.

STAY OF INDIAN RESEARCHERS IN ITALY

The date of the visit (both for long and short terms) should be agreed between the visiting researchers and the host Italian coordinator. Indian researchers may obtain the authorization for the visit from the Italian Ministry of Foreign Affairs and International Cooperation (MAECI) only by submitting application form online at this address: <https://ricercatori.esteri.it/>

An invitation letter from the host Italian Institution, signed by the Italian Coordinator, must be uploaded to the online application. The Italian Ministry for Foreign Affairs and International Cooperation, after checking the application for accuracy, if covering funds are available, will authorize the visit and pay for the visit allowance; the Italian Ministry for Foreign Affairs and International Cooperation will inform the Italian Embassy in India, the Indian researcher and the Italian project coordinator. The application must be submitted at least 35 days before the scheduled date of the visit. The letter of grant from the Italian Ministry for Foreign Affairs and International Cooperation can be used for obtaining the Italian visa.

Details of the above mentioned rules and the online application are available on the website of the Ministry of Foreign Affairs and International Cooperation: <https://www.esteri.it/en/diplomazia-culturale-e-diplomazia-scientifica/cooperscientificatecnologica/programmiesecutivi/mobilitaricercatori/>

Any cancellation of the visit by the researcher, unless due to serious and valid reasons, might prevent the hosting Party from accepting further applications for subsequent missions.

The Italian Party will finance, yearly, for each project listed in Annex I and provide a contribution for allowances expenses in Italy to visiting Indian researchers under the jointly selected projects as follows:

- 99 Euro/day, from day 1 to day 10, up to a maximum of 990 Euro (short-term stay) and
- 38 Euro/day, from day 11 to day 30, up to a maximum amount of 1.750 Euro (long term stay).

The above-mentioned amounts shall be paid to the Indian researchers entirely in one instalment at their arrival in Italy and be withdrawn at any Italian post office.

VISIT OF ITALIAN RESEARCHERS TRAVELLING TO INDIA

Italian researchers travelling to India for a research stay are required to submit the online application to the Directorate General for Cultural and Economic Promotion and Innovation – Office IX of the Italian Ministry of Foreign Affairs and International Cooperation at this address:

<https://ricercatori.esteri.it/>

Applications must be submitted to the Italian Ministry of Foreign Affairs and International Cooperation no later than 35 days prior to the foreseen date of departure. Details of the above mentioned rules and the online application are available on the website of the Ministry of Foreign Affairs: <https://www.esteri.it/it/diplomazia-culturale-e-diplomazia-scientifica/cooperscientificatecnologica/programmiesecutivi/mobilitaricercatori/mobilitaricercatoriitaliani/>.

The Italian Party will pay the international travel expenses to researchers holding Italian or any EU nationality (provided they are resident in Italy).

Tickets for the trip will be supplied only in economy class. Any additional cost shall be borne by the researcher.

STAY OF ITALIAN RESEARCHERS IN INDIA

The Indian Party will finance, yearly, for each project listed in Annex I and provide a contribution for allowances expenses in India to visiting Italian researchers under the jointly selected projects as follows:

- Institute's Guest House/Hotel with reasonable amenities and
- Per Diem as per prevailing norms of the Country at the time of visit

The above-mentioned amounts of per diem shall be paid to the Italian researchers entirely in one instalment at their arrival in India.

Italian researchers shall receive their visit allowance through host Indian scientists on their arrival to the host institute. The paid accommodation as mentioned above shall be arranged by the host Indian scientists.

PROJECT REPORTS

Yearly, within January 31st, the Italian and the Indian coordinators will jointly report on the progress of their project. The report has to be signed by both coordinators. Funding for the following year will not be granted if the coordinators fail to submit their progress report.

The Italian coordinators have to submit the report, in .pdf format, to the Italian Ministry for Foreign Affairs and International Cooperation: ricercatori.italiani@esteri.it.

The Indian coordinators have to submit the reports to ramkrishna.sahoo@gov.in immediately after completion of the financial year, i.e. 31st March of every year.

2. JOINT RESEARCH PROJECTS

For each **Joint Research Project (JRP)** agreed under the EP 2025-27, expenses by project members in their own country can be eligible for funding only in that same country, i.e., DST will consider supporting expenses incurred in India by the Indian project team while the Italian Ministry of Foreign Affairs and International Cooperation will consider meeting expenses by the Italian team in Italy.

Funding for projects selected and listed in the Executive Programme will be provided on a yearly basis. Each annual instalment for each project will be paid after receipt of financial documents and on evaluation of intermediate scientific reports, which will be submitted by the Indian and Italian PIs respectively to their Country's financing Ministry. Funding will be paid each year only if both reports are evaluated positively.

For the **Italian Party**, funding for projects selected and listed in the Executive Programme will be granted on a yearly basis. The Italian research team will be entitled to ask for annual funding by submitting their request according to the instructions published by Office IX, Directorate General for Cultural and Economic Promotion and Innovation of the Italian Ministry of Foreign Affairs and International Cooperation on the following webpage each year in January:

<https://www.esteri.it/it/diplomazia-culturale-e-diplomazia-scientifica/cooperscientificatecnologica/avvisiincaricobandi/>

That above webpage also provides detailed information on all administrative procedures concerning the programme.

For the **Indian Party**:

- Participating Indian institutions are responsible for expenses regarding equipment.
- A maximum of 40 % of the Indian side's budget may be allowed for consumables.
- Participation of Research students would be encouraged. On the Indian side Fellowship to one student (JRF/SRF/RA) can be supported.

Given the bilateral nature of joint research projects, PIs are required to maintain reciprocity and make sufficient provision for exchange visits. The sending side will pay the international travel expenses including visa fee under the jointly funded projects. The receiving side will provide local hospitality for

the visiting researchers (fully furnished accommodation including food) under the jointly selected projects.

At the end of each year, the Italian and the Indian PIs shall jointly report on the **progress of their project**. Funding for the following year will not be granted if the PIs do not submit their progress reports.

For the Indian party, the progress report, signed by both coordinators, shall be submitted to ramkrishna.sahoo@gov.in immediately after completion of the financial year, i.e., 31st March of every year.

For the Italian party, the PIs of the selected projects will be informed of the full details for reporting within the official communication of funding.