



## **BRICS SCIENCE, TECHNOLOGY AND INNOVATION**

### **WORK PLAN 2019-2022**

The Ministers and their representatives for Science, Technology and Innovation of the Federative Republic of Brazil, the Russian Federation, the Republic of India, the People's Republic of China and the Republic of South Africa, met in Campinas, on 20 September 2019 for the 7th BRICS Science, Technology and Innovation Ministerial Meeting and endorsed the BRICS Science, Technology and Innovation Work Plan 2019-2022 as a part of Campinas Declaration. This Work Plan enumerates the cooperation activities to be developed in the next four years, in accordance to the BRICS Memorandum of Understanding on Cooperation in Science, Technology and Innovation, signed in Brasília, in 2015.

Considering the high number of actions and projects created in the last years, the Work Plan 2019-2022 does not intend to multiply new efforts. Rather, it will focus on the implementation and, whenever possible, conclusion of the activities already existing or the ones agreed by the BRICS STI Ministries and still not yet started.

This Work Plan is organized in four main tracks of cooperation: (i) Research Collaboration, (ii) Research Infrastructure, (iii) Innovation Collaboration and (iv) Sustainability (long-term cooperation).

#### **Research Collaboration**

The BRICS STI research collaboration is comprised of two main initiatives: the STI thematic working groups and the joint calls for research projects.

In the thematic working groups, officials and researchers define lines of action; develop joint projects; exchange knowledge and experience in their areas of study; and decide the scope of the joint calls. The nine working groups in this category are: (i) Prevention and Monitoring of Natural disasters; (ii) New and renewable energy, and energy efficiency (with a sub-group on Solid State Lightning – SSL); (iii) Material Sciences and Nanotechnology; (iv) Information and Communication Technologies and High Performance Computing; (v) Astronomy; (vi) Biotechnology and Biomedicine, including human health and neuroscience; (vii) Ocean and polar science and technology; (viii) Geospatial technologies and its applications; (ix) Photonics.

The STI Framework Program and the BRICS STI Funding Working Group, which gather nine national funding agencies, launched three joint calls for research projects from 2016 to 2019. The joint calls selected 91 research projects, mobilizing more than 1,100 projects and more than 3400 researchers in the proposals submissions phase. The pilot cycle will end in 2020.

Research Collaboration involves also the BRICS Conferences in Water resources and pollution treatment.

#### **Initiatives:**

- Organization of the annual meetings of the thematic Working Groups
- Establishment of the BRICS Virtual Institute of Photonics
- Establishment of the "BRICS Network Centre for Materials Science and Nanotechnology" (BRICS-RCMN) and update of the Charter of the BRICS-RCMN
- Establishment of an integrated Hub for BRICS Innovation Collaboration on ICT and HPC
- Planning and organization of joint research cruises and expeditions in areas of common interest, in line with the technical parameters defined by the BRICS WG on Ocean and Polar S&T
- Elaboration of an evaluation report of the first cycle of joint calls (2016-2020), including the positive aspects, lessons learned, possible action for improvement and the way forward.
- Negotiation and renewal of the second cycle (2021-2025) and launching of new joint calls

#### **Research Infrastructure**

The BRICS Research Infrastructure (RI) collaboration is developed through the WG on RI Mega Science Projects and the BRICS Global Research Advanced Infrastructure Network (GRAIN). The first step towards its implementation was the creation of the BRICS GRAIN Platform, of which the experimental version was successfully launched in 2018.

The platform provides information and the list of available research opportunities for scientists. Furthermore, its key objectives include:

- i. Single entry point for potential Research Infrastructure Users and Partners: RI objects info, access/partnership policy, contacts;
- ii. Integrated source of BRICS RI people contacts, events as well as working proceedings regarding integrating, policy developing, communication initiatives, RI projects;
- iii. Up to date info for BRICS STI Senior Officials regarding BRICS RI WG progress.

The five countries already announced some of their large research infrastructures that are available for collaboration, but more detailed information as well as more research infrastructures are needed to conclude the final version.

**Initiatives:**

- Development of the Strategic Plan on RI coordination
- Drafting of content and decisions regarding access protocols, cost-related issues and sample transfer procedures, as well as the elaboration of a Strategic Plan on RI Coordination.
- Continuous updating of the information on national large research infrastructure in the BRICS GRAIN Platform
- Organization of the annual meetings of the BRICS WG on Research Infrastructure and Mega Science Projects

**Innovation Collaboration**

Given the positive results of the BRICS research collaboration under the BRICS Working Plan 2015-2018, and wishing to have the same level of achievements to the innovation collaboration, the activities for the next four years shall emphasize the proposal on STI-led innovation cooperation among BRICS countries announced at the 4<sup>th</sup> BRICS STI Ministerial Meeting in India (2016), and the implementation of the BRICS Action Plan on Innovation Cooperation 2017-2020, adopted by the 9<sup>th</sup> BRICS Summit (China, 2017).

The activities will be implemented by the BRICS Working Group on Science, Technology, Innovation and Entrepreneurship Partnership (STIEP WG), with the full support of the STI Senior Officials.

BRICS shall also intensify the participation of their respective productive sector into the BRICS STI cooperation, linking knowledge to manufacturing, services and digital economy.

**Initiatives:**

- Implementation of the “Enabling Framework for the Innovation BRICS Network (iBRICS Network)”
- Implementation of the BRICS Centre of Technology Transfer, comprised of national centres organized in network
- Establishment of a BRICS cross-cultural talent pools for converting ideas into solutions
- Organization of the annual meetings of the BRICS STIEP WG

## **Sustainability (long-term cooperation)**

Despite of the political incentives for the establishment and deepening of the BRICS STI cooperation, Governments should seek ways to make it sustainable. That means they must create opportunities for scientific communities and enterprises strengthening their interactions and achieving joint concrete results, regardless of the direct involvement of the governments officials. It also means they should foster initiatives whose results can be felt during a long period of time.

Some efforts can be found in the organization of the BRICS Conference on Technology Foresight and STI Policy, the BRICS Science Academies Meetings, the iBRICS Network, among others.

The establishment of the BRICS Young Scientist Forum (YSF) is also directly related to the need to encourage BRICS STI cooperation in the next generations of researchers and entrepreneurs. In the first years of training, scientists should consider a BRICS counterpart as a feasible choice for collaboration. Three editions were already organized, gathering 100 participants per event, promoting new networks and competitions for young innovators.

### **Initiatives:**

- Organization of the annual editions of the Conference on Technology Foresight and STI Policy and the BRICS Science Academies Meetings
- Organization of the annual editions of the YSF
- Establishment of the BRICS YSF steering committee
- Establishment of the fixed format and program of the YSF, including the rules and procedures of the BRICS Young Innovator Prize.

### **BRICS STI Steering Committee**

To manage BRICS Work Plan, we propose the creation of the BRICS STI Steering Committee, which will be responsible to support the coordination, monitoring, evaluation and information about BRICS STI activities.

The BRICS STI Steering Committee will comprise of ten members appointed by the STI Ministry in each BRICS country (2 members from each country). The period of nomination will last from 3 to 5 years. Members could be replaced at any time according to the decision of the respective country.

The representatives of the country that holds the BRICS rotating presidency will act as Chairperson of the BRICS STI Steering Committee. The representatives of the country that held the BRICS presidency before will act as Deputy Chairperson. This would ensure continuity in coordination and facilitate the work of Chairperson.

The responsibilities of the Steering Committee include: circulation of the BRICS STI activities calendar, monitoring of the implementation of all activities and initiatives

in BRICS STI Work Plan 2019-2022 and Action Plans, working closely with the host country of some STI meetings planned in other BRICS countries, provision of support for coordination of joint calls of the BRICS STI Framework Program, provision of information, analytical, organizational and technical support for the STI activities, as well as a vision for future activities etc.

The meetings of the Steering Committee will take place on regular basis, under previous defined calendar proposed by the rotating Presidency.

BRICS STI Steering Committee will report to the BRICS STI Senior Officials Meeting (SOM) on its work once a year.

Other initiatives not previously planned can be added to this Work Plan by the unanimous decision of the STI Ministries.

At the end of 2022, an evaluation report must be prepared for consideration of the BRICS STI Ministers in the 2023 Ministerial Meeting.

An annual calendar of activities to be added to this Work Plan.