



Organización
de las Naciones Unidas
para la Educación,
la Ciencia y la Cultura

Oficina Regional de Ciencia
para América Latina y el Caribe

Declaration of Latin America and the Caribbean on the tenth anniversary of the *World Conference on Science*

The representatives of national science, technology and innovation (STI) bodies, National Academies of Science, and the STI civil society sector in Latin America and the Caribbean, met for two Regional Forums on *Science, Technology and Innovation Policies in Latin America and the Caribbean - Towards a new social contract to science*¹, to review the progress and results achieved during the last decade, and to propose further actions leading to the implementation of the agreements contained in the documents of the *World Conference on Science*² held in June 1999 in Budapest, Hungary, and endorsed by Member States of the United Nations Educational, Scientific and Cultural Organization

¹ The First Forum was held in Mexico City (March 11-13, 2009) and was organized by the UNESCO Regional Bureau for Science in Latin America and the Caribbean and the Scientific and Technological Consultative Forum of Mexico. Furthermore, the Second Forum was also held in the city of Buenos Aires (September, 23-25, 2009) organized by the UNESCO Regional Bureau for Science in LAC and the Ministry of Science, Technology and Productive Innovation of Argentina. It should be noted that the Ministry of Science and Technology of Brazil, jointly with the National Science and Technology Council (CNPq) and the UNESCO Office in Brasilia, in cooperation with the UNESCO Regional Bureau for Science in LAC, organized on June 17-18, 2009, a meeting of the Drafting Committee -appointed during the first Forum- for the preparation of the Regional Declaration Draft.

² The World Conference on Science was organized by UNESCO in collaboration with the International Council for Science (ICSU) from June 26 to July 1, 1999, in Budapest, Hungary, to help strengthen the commitment of UNESCO Member States and other major stakeholders concerning science education, research and development, and to define a strategy that would ensure that science responds better to the needs and aspirations of society in the twenty-first century. The documents were adopted in 1999 by UNESCO Member States during the 30th Session of the General Conference held in Paris on August 18, 1999 (Doc. 30/C15) and by ICSU during the 26th Session of the General Assembly held in Cairo on September 28-30, 1999.

(UNESCO) at its General Conference in Paris and by the International Council for Science (ICSU) at its General Assembly in Cairo, namely:

- i. The *Declaration on Science and the Use of Scientific Knowledge*, which underscores the need for political commitment to scientific endeavour and to the solution of problems at the interface between science, technology and society; and
- ii. The *Science Agenda - Framework for Action*, which provides a guide for fostering activities aimed at the use of science and technology for sustainable human development, and the environment.

The representatives acknowledged that the global arena shows very heterogeneous degrees of progress, such as the unequal growth of the number of professionals involved in research and development (R&D) activities and in the way that science and technology respond to socio-economic demands in different regions of the planet. It was also observed that many of the goals set forth in the documents of the *World Conference on Science* in Budapest, are still far from being reached. It was emphasized that the generation and absorption of knowledge is still concentrated mainly in developed countries. This has helped increase the technological gap between these countries and those still under development. It was also acknowledged that the intensification of global relations and the internationalisation of scientific and technological production remain limited by restrictions in the circulation and dissemination of the knowledge produced.

iii. Whereas:

(1) In Latin American and the Caribbean (LAC), over the last decade, progress has been made in the fields of science, technology and innovation (STI) and other economic and social aspects. However, the region faces a set of challenges and presents particular characteristics that considerably distinguish it from other regions of the world, namely:

- a) The largest concentration of freshwater of the planet;
- b) One of the greatest biodiversities in the world but with one of the highest loss rates due to the conversion of natural ecosystems;
- c) A region where many countries have energy matrices with a high potential for the use and development of clean and renewable energy sources;
- d) The region within the global land area that constitutes the largest sink of CO₂;
- e) One of the highest rates of increase of the agricultural frontier along with secular problems of land tenure and accreditation of rural properties, which hinder conservation efforts and sustainable management of natural ecosystems;
- f) A high level of vulnerability to natural disasters, particularly tropical cyclones;
- g) An accelerated degradation of coastal and watershed ecosystems that are increasingly threatened, among other causes, by increasing pollution;

- h) The environmental and economic vulnerability of Small Island Developing States (SIDS) within the Caribbean;
- i) Strong contrasts of inequality, despite the decline in poverty and exclusion rates achieved in the last five years;
- j) An increase in the concentration of population in cities boosts the demand for resources and energy, exacerbating the loss of cultural identity, marginalization and social inequality;
- k) The paradox of being one of the most dynamic food productive regions in the world, while presenting harmful levels of hunger and malnutrition;
- l) Shortage of skilled workforce, which limits the ability address scientific, technological, social and economic development problems; and a disturbing weakness of STI local capacities to meet LAC needs;
- m) Five decades of continuous drain of talents (brain drain) to the developed world.

These unique characteristics and the search for a solution to the above-mentioned challenges that characterize Latin America and the Caribbean require investment and regional cooperation in all knowledge-related areas. By successfully applying and developing science, technology and innovation in addressing and managing these challenges and characteristics, LAC could make a significant contribution to the solution of global problems.

(2) During the last 10 years institutional changes in the field of STI in LAC have taken place through the implementation of national medium-term programmes, the formulation of legal regulatory frameworks for the STI systems, as well as the creation of a variety of instruments for the promotion of research, development as well as innovation activities, and human resources capacity-building.

(3) National investment in R&D tasks, as well as other output indicators of STI activities, have increased in comparison with the precedent decade, indicating moderate progress in the way LAC countries are trying to consolidate a knowledge-based society articulated by science and technology.

Based on the foregoing, the representatives of the above-mentioned bodies recognise the need to: significantly increase STI capacity in LAC; reduce, on the one hand, disparities within the LAC region, and, on the other, STI differences with other more advanced regions; contribute to the design and implementation of development strategies based on the capacity to produce, appropriate and use knowledge; enhance the contribution of STI in the strengthening of competitiveness; promote citizen participation; improve the quality of life; preserve the environment; increase employment opportunities; reduce social exclusion; foster regional cooperation; promote peaceful conflict resolution and develop a culture of peace in all areas and at all levels . Therefore, it is necessary and urgent to articulate

policies, design coordinated strategies and specific lines of action for the countries of the region within the following terms:

STRATEGIC REGIONAL PROGRAMME - REGIONAL COOPERATION INSTRUMENTS

1. In each of the countries in our region, the development of STI should be adopted as a State policy that transcends each government and other political-economic situations, and should be explicitly incorporated into development strategies. STI national systems in LAC countries should focus on addressing the fundamental needs of its population.
2. Climate change, environmental deterioration and global instability require a redefinition of the concept and practice of development, as well as the role of STI in LAC, taking into account the need to change models and patterns of production and consumption that are incompatible with sustainability, which generate poverty, exclusion, and inequality. They also affect climate, environmental degradation, and global instability. It is required to devise a common STI Strategic Regional Programme, which should be co-ordinately joined by the national, sub-regional, regional, bilateral and multilateral agencies that exist today.
3. To promote coordination and articulation among multilateral institutions responsible for STI activities, with each other and with their Member States, to support common and complementary strategies, avoid duplication, overlapping and institutional gaps.
4. The components that should be considered in the Strategic Regional Programme include, on the one hand, the design and implementation of a new regional financial instrument for strategic areas in science, technology and innovation; and mechanisms and institutions aimed at articulating and harmonizing regional policies for STI (with private sector participation); and on the other hand, the training of specialized human resources in STI policies and management. The articulation of these initiatives should take into account networking; the existence of temporary programmes (sunset clauses); the preference for countries with less capacity; light governance and management; assessment, transparency and accountability.
5. Countries should cooperate with intergovernmental institutions such as the Inter-American Development Bank (IADB), the Economic Commission for Latin America and the Caribbean (ECLAC), the Organization of American States (OAS), the Organization of Ibero American States (OEI), the United Nations Educational, Scientific and Cultural Organization (UNESCO), among others, in the design and implementation of a set of innovative and sustainable instruments for financing of the scientific, technological and innovation activities that enable LAC countries to pool their resources and combine their efforts.

6. To encourage civil society organizations representing the scientific community. To create and strengthen science academies, which may form a national advisory institution, independent in nature, in the field of science and science policy. To support the integration of National Academies of Science to the international organizations of scientists, especially to the Inter American Network of Academies of Science (IANAS), the Inter Academy Panel (IAP), and the ICSU. Furthermore, to promote societies for the advancement of science and scientific associations by fields.
7. To strengthen regional and international cooperation in order to promote scientific and technological capacity building; to share high investment facilities and laboratories; to encourage the dissemination of information on STI; to promote the social appropriation of science and technology; to exchange knowledge and scientific data; and to work jointly in the development of potentialities and the solution of problems of regional and global interest. Specifically, the articulation and implementation of new South-South cooperation instruments and mechanisms for the identification of common LAC STI projects aimed at solving specific problems in the Region should be promoted, as well as the establishment of common educative and research programmes to favour the exchange of graduate students and researchers and the development of regional centres of excellence and scientific-technological parks.
8. To establish and promote science and technology policy mechanisms and instruments that prevent talent drain towards other regions of the planet. To promote and strengthen the articulation of joint work with Diasporas and networks of scientists and technologists in Latin America and the Caribbean, who work outside the region. To encourage the circulation of graduate students and researchers between the different countries of LAC.
9. To promote the creation of a Scientific and Technological South-South Cooperation Regional category 2 Centre under the auspices of UNESCO, to facilitate the coordination and application of the regional strategic programme.

PUBLIC POLICIES ON INNOVATION

10. A new path towards development for LAC requires public policies that expand the number of innovative enterprises; promote endogenous R&D and establish partnerships or collaborations with research institutions; promote the recruitment of qualified personnel; increase productive efficiency and broaden the international insertion of those segments of higher technological content oriented by prospective studies of strategic sectors. The human resources capacity-building needed to establish national systems of innovation requires a greater diversification of the higher education

institutions, which should include not only universities but also technological institutes. In particular, the priority is to create professional profiles able to manage technology-based projects or enterprises. Institutions should be encouraged to establish specific evaluation systems for human resources devoted to applied research, experimental development and technological innovation. Innovation should necessarily take into consideration social dimensions such as health, education, sanitation, food, housing, security, among others. Our societies should aim at building a culture of innovation that include all these dimensions.

11. To promote the protection of potentially appropriable science, technology and innovation research results.

PUBLIC POLICIES ON EDUCATION

12. To implement a long-term State policy of quality universal education at all levels, from initial to higher education. It should be sustained by significant investments that remain stable over time. This also implies a special effort to make teaching careers attractive at all levels, with emphasis on elementary education. The main instrument for mitigating the effects of gender disparity and discrimination against less favoured groups should be lifelong and continuing education, including scientific, technical and vocational education.
13. To prioritise the improvement of science and technology education at all formal and non-formal education levels and modalities, as a complementary means of citizens education by developing personal skills and abilities such as the capacity for observation, analysis, critical thinking and formulation of proposals. These tools will facilitate the active participation of society in the discussions and decisions about the ethical use of scientific and technological knowledge, thus favouring the quality of life of the population.
14. To support regional and international higher education programmes and networking of educational institutions for undergraduate and graduates students, with special attention to small and least developed countries, with the purpose of strengthening their scientific and technological potential.
15. To enhance the teaching of science, technology and innovative processes that focus on social inclusion as an ethical and strategic imperative for the region. Those responsible for tertiary and university education should establish mechanisms for students, graduates and researchers to learn how to solve specific problems and to meet the needs of society by using their skills and their scientific and technological knowledge.

16. To foster university programmes in all fields of science focused on education as much as on research, and on the synergy between the two. In particular, the main regional problems require an interdisciplinary and transdisciplinary approach (Mode 2 of Knowledge Production), demanding a new profile of university graduates with an integrated vision of knowledge and able to incorporate an analysis of the societal and ethical implications of their professional work.

POLICIES ON VULGARIZATION, POPULARIZATION AND APPROPRIATION OF SCIENCE, TECHNOLOGY AND INNOVATION

17. To promote the widest access possible to knowledge possible in all communities and regions of Latin America and the Caribbean, giving priority to the most excluded sectors.

18. To promote the development and establishment of science popularisation programmes and actions, interactive museums and centres for social appropriation of research and development tasks, with the aim of disseminating scientific knowledge and progress, and stimulating interest and critical-scientific thinking among the population, reducing scientific and technological illiteracy and addressing prejudices of anti-scientific nature.

19. To stimulate capacity-building in professional science journalism, to encourage the creation of magazines, journals and newspapers of scientific quality, and to promote the dissemination of scientific research results in the region by all means available, including regional and sub-regional activities such as science fairs and Olympiads, research scholarships for the young, among others.

20. Stimulate cooperation in the production and exchange of vulgarisation products between Latin America and the Caribbean countries, as well as with other countries of the world.

POLICIES ON THE ACCESS AND DISSEMINATION OF SCIENTIFIC AND TECHNOLOGICAL INFORMATION

21. To promote open access to the results of scientific, technological and innovation research carried out with public funding. To encourage and support initiatives aimed at facilitating the access of scientists and institutions in LAC countries to scientific information sources. To strengthen regional information systems in STI and to stimulate, through academic promotion mechanisms, the publication of results of R&D tasks in specialized publications in the region.

22. To create mechanisms for closer linkage between modern scientific knowledge and ancestral knowledge of indigenous cultures in LAC, generating interdisciplinary projects related to biodiversity, natural resources and energy management, understanding environmental disasters risks and mitigation of their effects, and other fields such as health, food production and sanitation.

POLICIES ON DISASTER RISKS REDUCTION

23. To develop LAC regional skills in risks assessment and vulnerability, as well as in the implementation of early warning mechanisms for potential disasters or long-term environmental changes that may endanger its sustainability. Emphasis should be placed on the effective preparation for all types of disasters, as well as on the development of means for adaptation and mitigation of their effects. Furthermore, mainstreaming of disasters management to national and regional development planning.

24. To encourage decision-makers to take into account the environmental component, including the complexity of global phenomena such as –among others- climate change, biodiversity loss and desertification, so as to develop new strategies for anticipation and observation, using the *Precautionary Principle*³.

25. Governments and the private sectors in the region should increase investment in those science and technology sectors in charge of avoiding potential conflicts, for example in the use of energy, management and use of freshwater reserves, and other natural resources, pollution of air, soil and water, as well as to prevent the spread of endemic and emerging diseases such as yellow fever, dengue, Chagas disease, HIV, influenza and others.

POLICIES ON ETHICS, SCIENCE, TECHNOLOGY AND SOCIETY

26. To favour the creation of instances at non-governmental organizations and scientific institutions for studying ethical issues on the use of scientific knowledge and its

³ The *Precautionary Principle* conception used here is based on UNESCO (2005): *Riesgos y seguridad humana en las sociedades del conocimiento* at *Towards knowledge societies: UNESCO world report*, UNESCO Publishing: Paris, p. 147-162.

applications. These should promote also the establishment of ethics committees in their field of competence. In addition, the private sector should be called to mainstream the ethical dimension as a structural component of their social responsibility. In all cases, the ethical principles related to the activities of science, technology and innovation should be promoted, both at the institutional and individual levels. Regional and international cooperation and inter consultation mechanisms on these subjects should also be fostered.

27. To promote provisions in items 50 and 54 of the *Science Agenda: Framework for Action* adopted by UNESCO Member States at the 30th General Conference held in Paris on 18 August 1999 (Doc. 30/C15) on the development of mechanisms to guarantee that scientific-technological careers students and graduates be made aware of their specific responsibility not to apply scientific knowledge and skills to activities which threaten peace and security. Furthermore, a dialogue should be promoted between representatives of governments, civil society and scientists, engineers and other technologists in order to reduce military spending in the region and the orientation of science towards military applications.
28. To promote item 73 of the *Science Agenda: Framework for Action* adopted by UNESCO Member States at the 30th General Conference held in Paris on 18 August 1999 (Doc. 30/C15), by which the bodies represented in this Declaration, jointly with the regional scientific community, in collaboration with other social stakeholders, should foster a debate, which could be a public debate, to promote environmental ethics and environmental codes of conduct.
29. LAC representatives consider that it is an ethical and strategic imperative for science, technology and innovation to integrate social inclusion as a common thread of their activities **(STI & I)**.