

Declaration of the Budapest World Science Forum 2011 on a New Era of Global Science

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(definitive version)

Preamble

With the encouragement and support of our partner organisations, the United Nations Educational, Scientific and Cultural Organization (UNESCO), the International Council for Science (ICSU) and all invited organisations and fellow scientists, we, the participants of the Budapest World Science Forum held from 17 to 19 November in Budapest, recognizing the relevance of the outcomes of 1999 World Conference on Science (WCS) and taking into account the reports of the biannual World Science Forum (WSF), as well as the debates and the outcomes of this World Science Forum on the “Changing Landscape of Science: Challenges and Opportunities”, adopt the present declaration.

1. The treasure of scientific knowledge and its underlying research approaches are a common heritage of humankind. More than ever before, the world will be shaped by science.
2. The first decade of the third millennium has witnessed steady and fundamental changes in the global landscape of science. The scale and scope of these transformations are so robust that a new milestone in the history of science has been reached, and a new era of global science has commenced. This new era presents challenges and opportunities bringing political, social and policy implications on a previously unseen scale.
3. The growing complexity of grand challenges including population growth, climate change, food supply, energy shortages, natural and technological catastrophes, epidemics, and sustainability require that the world’s scientific establishments assume new roles.
4. New scientific fields have appeared and continue to carve out their niches in the general field of science.
5. The unforeseen spread of information and communication technologies, the inexpensive and instant access to information resources and databanks, and the fall of communication barriers between countries and communities have accelerated the accumulation and dissemination of knowledge.

6. The former triadic dominance of North America, Europe and Japan in global knowledge production has been seriously challenged, and a new multipolar world of science has emerged accompanied by the rise of new scientific powerhouses, which are now not only prominent actors in world economy but have become key players in cutting edge research and development activities.
7. In this new context of global science, science diplomacy is now an acknowledged tool to promote partnership among nations by fostering scientific co-operation.
8. Educational systems have received strong support from their respective governments to the extent that emerging countries currently produce more university graduates and PhDs than the developed world thus rearranging the entire global “knowledge map”. In spite of these new developments the US, EU and Japan are still leaders in scientific performance and continue to invest heavily in research and innovation. The competition is more intense and more open than ever before in the world arena of science.
9. The expansion of scientific networks has also changed the circle of actors participating in research activities. A field once dominated by states and their research networks of national academies, learned societies, and universities is now complemented by a complex network of global companies, international organisations, and individual researchers who are attracted to the best available research infrastructure.
10. The accelerating “knowledge economies” have generated new migration patterns for scientists and increasing mobility. Both the winners and losers of brain drain are facing the need for more intensive co-operation between universities, public research organisations, and industry in both graduate and post-graduate education and the elite training of scientists.
11. The advancements in science have also shed light on new and previously unforeseen concerns. Climate change, the large-scale and irreversible impact of human civilization on the world’s fauna and flora, an overconsumption of natural resources, and their respective consequences require stronger involvement from both scientists and society. Developments in many research fields (e.g. genetics, biotechnology, neuroscience, nuclear physics, etc.) have considerable moral and ethical implications that require an urgent and global dialogue between scientists and the broader public.

Recommendations

In light of this declaration, we make the following recommendations:

1. Responsible and ethical conduct of research and innovation

In this era of global science, the scientific establishment needs to implement continuous self-reflection to appropriately evaluate its responsibilities, duties and rules of conduct in research and innovation. A universal code of conduct addressing the rights, freedoms and responsibilities of scientific researchers, and the universal rules of scientific research should be shared by the world's scientific community. Furthermore, these rules and policies should be respected by the states and adopted by their national legislations.

Scientists should strengthen their individual and institutional responsibilities to avoid possible harm to society due to ignorance or misjudgement of the consequences of new discoveries and applications of scientific knowledge.

It is the responsibility of those who promote science and scientists to maintain the primacy of moral and social concerns over short-term economic interest in the selection and implementation of industrialised research projects.

2. Improved dialogue with society on scientific issues

In times of rapid and fundamental changes in the social environment, the sciences should be supported in their co-operative efforts to describe and evaluate with the best available methods the consequences of policy actions and explorations of both natural and social sciences.

Participation of societies should be promoted in order to make science more democratic and to build further trust in science. To this end societies must be prepared to knowledgably discuss the moral and ethical consequences of science and technology by strengthening policies to enhance awareness and public understanding of science and improving and broadening the scope of education.

3. International collaboration in science should be promoted

Better international co-ordination is needed for science research projects focusing on global challenges. International co-operation is essential for decreasing the knowledge divide and regional disparities.

The free co-operation and movement of scientists should be promoted by the elimination of harmful bureaucracy and false regulation and by providing the funds to further international co-operation.

To avoid repetition, redundancy, and excessive expense in scientific research, the international scientific community should be involved in the development of an improved method to monitor past and present research activities and their results.

4. Collaborative policies to overcome knowledge-divides in the World

The rapid development and increasing cost of science combined with the expansion of patent policies and regulations have further widened the knowledge and economic divide between the developed and developing world. In a world where the best science and the best researchers are attracted only by excellent research infrastructures, developing countries should be supported in their efforts to build their research capacities. However, co-funded actions for building capacities can only be successful if support is provided in a socially responsible way and if it creates a win-win situation for both the promoter and the recipient. Brain-drain and brain-gain policies should be co-ordinated for the joint benefit of all affected countries.

5. Capacity building for science needs to be strengthened

Scientific discoveries are foundations for innovation and social and economic development. Investment in science provides a capacity for future development at a national level and an opportunity to face global challenges internationally.

It is primarily the responsibility of governments to increase support for science and develop effective policies for technology and innovation.

Comprehensive actions should be taken to strengthen the role of women in science and innovation and to expand the participation of women in science and science policy making.

The socio-economic impacts of science and scientific capacity are well-documented. National parliaments and governments are urged to declare their commitment to seek scientific advice during the decision making process. An institutionalisation of such an advisory process is necessary; informed decisions result in great savings.

There is an urgent need to elaborate new, effective science policies at national, regional and global levels to better co-ordinate and monitor scientific research worldwide, to harmonise university education systems, and to facilitate global and regional scientific co-operation based on equity and participation.