

INTER-ACADEMY COOPERATION

BASED IN TRIESTE, ITALY, IAP – THE GLOBAL NETWORK OF SCIENCE ACADEMIES – UNITES ACADEMIES OF SCIENCE IN BOTH THE NORTH AND SOUTH, FOSTERING COLLABORATIVE PROGRAMMES AND DIALOGUE BETWEEN ACADEMIES, THE WIDER SCIENTIFIC COMMUNITY, POLICYMAKERS AND THE PUBLIC. HERE WE REVIEW SOME CURRENT IAP ACTIVITIES DESIGNED TO HAVE AN IMPACT ON THE WORLD'S 'GRAND CHALLENGES' FOR SUSTAINABLE DEVELOPMENT.

Rio+20, the recent United Nations Conference on Sustainable Development (20-22 June 2012), concluded with a statement entitled 'The Future We Want'.



The road to 'the future we want', however, is paved with so-called 'grand challenges': challenges relating to population, poverty, food, water, energy, disease, education and the environment.

Such challenges can be resolved through appropriately designed research, collaboration between scientists, and an integrated approach for transforming research into products and services – activities that are at the heart of the mission of IAP, the global network of science academies.

Indeed, the next IAP conference, to be hosted by the Brazilian Academy of Sciences (BAS) and sched-

uled for February 2013, will be held under the theme 'Grand Challenges and Integrated Innovations'. As well as marking IAP's 20th anniversary, the conference will build on the many activities conducted by IAP and its affiliated networks which

address these challenges.

The term 'grand challenge' was first used by the German mathematician, David Hilbert (1862-1943). At the International Congress of Mathematicians in Paris in 1900, Hilbert produced a list of 23 unsolved mathematical problems. Although some of the challenges on Hilbert's list were solved in the ensuing years, others have still yet to be overcome.

Building on this concept, in 2003, the Bill & Melinda Gates Foundation identified 14 'Grand Challenges in Global Health' and, five years later, followed this



with a USD100 million initiative, ‘Grand Challenges Explorations’.

The trend was now set, and some ten years later the international development community has developed a list of more than 50 ‘grand challenges’, including those relating to chronic non-communicable diseases, development and engineering.

To suit this trend, a new definition was required. That devised by Grand Challenges Canada seems appropriate:

“A grand challenge is one or more specific critical barriers that, if removed, would help solve an important health problem in the developing world with a high likelihood of global impact through widespread implementation.”

POPULATION AND CONSUMPTION

Two of the most critical challenges affecting human society today and increasingly so in the years ahead

are population growth and unsustainable consumption.

To highlight this issue and emphasize its importance to decision-makers, on 14 June 2012 IAP released a statement on ‘Population and Consumption’. The timing of the release of the statement was designed to coincide with the UN Rio+20 conference, as well as to mark the 18 years since the 1994 IAP Statement on ‘Population Growth’ and the 1994 UN International Conference on Population and Development.

Issued under the leadership of the Royal Society (UK), the new IAP Statement lists ten recommendations on which it urges international policy and decision-makers to act, including to:

- Ensure that population and consumption are considered

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in all policies, including those related to poverty reduction and economic development, global governance, education, health, gender equality, biodiversity and the environment;

- Encourage modes of development that do not repeat mistakes made in the past by today’s developed countries but which allow low-income countries to ‘leap frog’ to sustainable patterns of consumption; and
- Use existing knowledge more effectively and prioritize research in the natural and social sciences that will provide innovative solutions to the challenges of sustainability.

Speaking at the launch of the statement, IAP co-chairs Howard Alper and Mohamed Hassan said: “We are delighted that the world’s science academies have chosen to come together to highlight two of the most

profound challenges to humanity – population and consumption – and to call for urgent and coordinated international action to address them. For too long the dual issues of population and consumption have been left off the table due to political and ethical sensitivities. These are issues that affect us all, developed and developing nations alike, and we must take responsibility for them together.” Alper and Hassan also encouraged policymakers meeting at the Rio+20 conference “to seize the initiative and choose to take the sound, evidence-based advice of their own academies of science as they make decisions that will affect the future of the planet.”

Through IAP, academies from around the world, including countries as diverse as Bolivia, India, Japan, Latvia, New Zealand, Nicaragua, South Africa and the UK, have come together to call for action on population and consumption.

In the document, ‘The Future We Want’, adopted in



Rio, the heads of state and government, along with other high-level representatives and civil society organizations, renewed their commitment to and promotion of an environmentally sustainable future for our planet for present and future generations. IAP member academies are encouraged to disseminate the statement in the spirit of these commitments.

HEALTH CHALLENGES

Grand challenges in global health are addressed by the InterAcademy Medical Panel (IAMP).

Established in 2000, IAMP currently has 70 members, including medical academies and the medical sections of academies of science and engineering worldwide.

As well as its long involvement in issues relating to maternal and perinatal mortality, IAMP has been increasingly focusing on furthering our understanding of non-communicable diseases – a burden that is increasingly affecting people worldwide, as highlighted by the World Health Organization (WHO) and re-stressed in the Rio+20 ‘The Future We Want’ report, which stated that better health is a “pre-condition for, an outcome of, and an indicator of sustainable development”.

In this light, the IAMP Regional Workshop on Non-Communicable Diseases, hosted by the Brazilian Academy of Sciences and the Brazilian National Academy of Medicine and held in Rio de Janeiro, Brazil, on 3-5 May 2012, was an opportunity to share experiences concerning the prevention and control of cardiovascular diseases and cancer from an inter-American per-

spective. Expert participants were drawn exclusively from IAMP member academies in the Americas, including Argentina, Bolivia, Brazil, the Caribbean, Chile, Colombia, Cuba, Guatemala, Mexico, the USA and Venezuela.

Non-communicable diseases (NCDs) are a new frontier to be overcome in the fight to improve global health. Worldwide, such diseases are now responsible for more deaths than all other causes combined. Moreover, the distribution of NCDs has no correlation to the economic status of any country – North or South, rich or poor.

After two days of presentations and discussion, participants recommended that all countries should tackle NCDs as a top priority, and that a firm commitment to their prevention and control must be made by governments, the private sector, civil society, the United Nations and other international organizations.

IAMP is currently exploring opportunities to organize similar workshops in other regions to provide a global outlook, as also discussed in the IAMP meetings with representatives of the Chinese Academy of Medical Sciences (CAMS), Chinese Academy of Sciences (CAS) and the Chinese Academy of Engineering (CAE), and with Chen Zhu, China’s Minister of Health and former IAP co-chair.

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WATER CHALLENGES

The role of science academies in tackling water-related challenges in the developing world has also been addressed through the IAP Water Programme, including

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the International Symposium on ‘Enhancing Water Management Capacity in a Changing World’, co-organized by the InterAmerican Network of Academies of Sciences (IANAS) and the Brazilian Academy of Sciences, held in São Paulo, Brazil, on 25-28 June 2012. The workshop brought together experts from 34 different countries (seven from Africa, 14 from the Americas, eight from Asia, and five from Europe) and representatives from various international water programmes, including the International Lake Environment Committee (ILEC), the International Hydrological Programme (IHP-UNESCO), the United Nations University Institute for Water, Environment & Health (UNU-INWEH), and the United Nations Environment Programme (UNEP).

The Association of Academies of Sciences in Asia (AASA) and the National Academy of Sciences of the Kyrgyz Republic (NAS KR) also held an IAP sponsored regional workshop on ‘The Roles of Academies of Sciences in Water and Energy Problems in Central Asia and Ways for Their Solution’, held on 30 June to 2 July 2011 in Bishkek, Kyrgyzstan.

The purpose of this regional workshop was to discuss and offer solutions to issues involving water resources and electrical power systems in Central Asia and to promote the social and economic development of the region. Responding to the question “Why doesn’t science have an effective impact on hydropower relations between Kyrgyzstan and neighbouring countries?” were speakers from Armenia, Bangladesh, China, Georgia, Israel, Kazakhstan, Kyrgyzstan, Pakistan, Russia, South

Korea, Tajikistan, Turkey and the USA. It was agreed that science should not be partisan but must impartially identify problems, understand the essence of these problems and propose solutions. Not only that, but science was seen as having a key role in providing solutions to the water and energy problems of the Central Asian region.

These IAP and IAMP activities, and many others – supported financially by the Government of Italy and by in-kind contributions from academies of science worldwide – are always undertaken by adhering to the principles of research integrity. With this in mind, IAP is partnering with the InterAcademy Council (IAC) to develop the joint IAP/IAC ‘Responsible Conduct in the Global Research Enterprise: A Policy Report’. IAP is also proud to foster a new generation of scientists addressing grand challenges and innovation, as highlighted by the ‘Sandton Declaration on Sustainability’ presented at the 2012 General Assembly of the Global Young Academy (GYA) held in Johannesburg, South Africa, on 20-24 May and submitted for inclusion in the Rio+20 deliberations. ■

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❖ For further information on IAP and IAMP activities, please see www.interacademies.net and www.iamp-online.org.
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