



UN SCIENTIFIC ADVISORY BOARD

PEOPLE-CENTERED, PLANET-FRIENDLY

Board member Tanya Abrahamse, a South African biodiversity expert, speaks during the public session of the UN Scientific Advisory Board in Trieste, Italy. [Photo: ICTP photo archives]

At a meeting in Italy co-hosted by TWAS and IAP, the United Nations Scientific Advisory Board advanced proposals for sustainable development in climate, food and health.

 by Sean Treacy

Humanity is at a pivotal juncture. Medical and agricultural sciences have saved countless lives while also supporting stunning population growth. Energy technology has provided power and transportation to people on an unprecedented scale while also driving the climate change that endangers habitats worldwide. How do we preserve these advances while at the same time managing their unintended consequences?

This tension is a core challenge of sustainable development, and it's a test that cannot be passed without the help of science. That challenge took centre stage in Trieste, Italy, as some of the world's sharpest minds on science, policy and development issues gathered for the fifth meeting of the United Nations Scientific Advisory Board appointed by Secretary-General Ban Ki-moon.

The board, which has included five TWAS Fellows, convened to form recommendations on how to maximize science's contribution to achieving the Sustainable Development Goals, an historic effort to eliminate human poverty and protect the planet's environmental health by meeting 17 goals and 169 targets, all by 2030.

"The 2030 Agenda is a people-centred, planet-friendly framework to build a life of dignity for all and leave no one behind," Ban said in a video message that opened the meeting. "Science is essential to moving this ambitious agenda forward. We need to help ensure that decisions are informed by the best available knowledge. That means integrating cutting-edge science into policy."

"The world is calling out for science," added Irina Bokova, UNESCO's director-general, in a message read by UNESCO Assistant Director-

General for Natural Sciences Flavia Schlegel.

"We need a new focus on the sciences, to promote equitable and inclusive growth, to eradicate poverty, to bolster energy, water and food security, to control disease, to mitigate disasters, and to build sustainable cities."

The meeting convened on 24–25 May in Trieste, and it provided the last discussion forum on the Board's recommendations before presenting its final summary report to Ban in September. [For more on the final report, see page 14.] The board plans to release more detailed policy briefs on the issues of climate change and food security before the end of 2016.

The event put Trieste on an international stage, highlighting the presence of numerous world-class science institutions in the city while attracting local journalists and others from Rome, London, Turin and Slovenia. It was hosted by UNESCO, in cooperation with four Trieste-based international scientific institutions: the Abdus Salam International Centre for Theoretical Physics (ICTP); the InterAcademy Partnership (IAP); the International Centre for Genetic Engineering and Biotechnology (ICGEB); and TWAS. Three other partners provided key support: the Italian Ministry of Foreign Affairs and International Cooperation; the Autonomous Region of Friuli Venezia Giulia; and Italy's National Research Council.

SHAPING THE FUTURE

The Scientific Advisory Board was formed in 2014 to provide the UN Secretary-General with a direct link to scientific advice. Through it, researchers can present key advice on a range of issues that dominate the global agenda.

The board brought together eminent



scientists from all regions of the world to devise a plan for how science can help resolve global challenges, taking into consideration natural and social sciences as well as local and indigenous knowledge systems. Twenty-six scientists from 25 nations sat on the board, including leading experts in nature conservation, public health, engineering, energy, agronomy and other fields. Together, the board members develop strategies to shape international policies and provide scientific data on global issues. UNESCO hosts the Board's secretariat.

In Trieste, board members intensively discussed the issues in business meetings. Ultimately, they decided to keep working to improve policy briefs on science for sustainable development; on how to recognize local and indigenous knowledge as a crucial component for sustainability and resilience; on climate change as an issue of resilience and risk management; and on how to accomplish worldwide food security. The first two of

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Fernando Quevedo

those briefs – on sustainable development and indigenous knowledge – have since been released.

The board’s membership has included five TWAS fellows: Abdallah Daar from Tanzania, professor of public health at the University of Toronto, Canada; Reiko Kuroda, a Japanese chemist with the Tokyo University of Science who formerly served on the Japanese prime minister’s science and technology policy advisory board; Brazilian climate expert Carlos Nobre, a key member of the Nobel Peace Prize-winning Intergovernmental Panel on Climate Change; Malaysian scientist Zakri Abdul Hamid,

the science adviser to the prime minister of Malaysia and the founding chair of the UN Intergovernmental Science-Policy Platform on Biodiversity and Ecosystem Services; and Ahmed Zewail, an Egyptian Nobel laureate in chemistry [who passed away in August]. Daar, Kuroda, Nobre and Zakri were present for the May meeting.

“The scientific community had been asking to be heard by policymakers and political leaders as early as the issue of sustainable development had been brought up-front in global debates,” said Zakri, a genetics and biodiversity conservation expert, when the board was first formed. “The establishment of the UN scientific board is essentially a response to this incessant request.”



▲ Flavia Schlegel, UNESCO assistant director-general for natural sciences



Other members of the prestigious panel include Italian physicist Fabiola Gianotti, director of the European Organization for Nuclear Research [CERN], one of the discoverers of the Higgs boson; Princeton University materials scientist Wole Soboyejo, originally from Nigeria and former president of the African University of Science and Technology; and Saudi biotechnologist Hayat Sindi, founder and president of the Institute for Imagination and Ingenuity in Saudi Arabia. Gebisa Ejeta of Ethiopia, the winner of the 2009 World Food Prize, led efforts on the policy brief for food and health. Joji Cariño of the

▲ An audience member listens during the UN Scientific Advisory Board's open session. [Photo: ICTP photo archives]

Find a video recording of the UN Scientific Advisory Board press conference: www.bit.do/SciBoardPressConf

Find a video recording of the Board's high-level open session: www.bit.do/SciBoardOpenSession



▲ The UN Secretary-General's Scientific Advisory Board focused on a range of issues during its discussions. [Photo: ICTP photo archives]

Philippines, the former director of the Forest Peoples Programme, led work on the policy brief on indigenous knowledge.

In their reflections on harnessing the potential of science for sustainable development, the board stressed the need to recognize science as a universal public good that empowers people to find the solutions they need. Member Jörg Hacker, president of the German National Academy of Sciences-Leopoldina, led efforts to define core principles that underpin science's role in development, such as enhancing diversity, strengthening science education and promoting interdisciplinary cooperation.

The board also heard from high-level observers attending the meeting, including Romain Murenzi, then-executive director of TWAS; Mohamed Hassan, president of the InterAcademy Partnership [IAP]; Gordon McBean, president of the International Council

for Science [ICSU]; Alberto Martinelli, president of the International Social Science Council [ISSC], and Elena Manaenkova, assistant secretary-general of the World Meteorological Organization [WMO].

A CITY FOCUSED ON GLOBAL SCIENCE

Given the status of the scientists and the high profile of their priority issues, the meeting drew close interest from local students, the public and journalists.

The event included a press conference attended by Italian media organizations. It was immediately followed by a High-Level Open Session, in which leaders of the Trieste-based host institutions stressed the importance of the board's work. Luigi Amodio, director general of the City of Science interactive science centre in Naples, served as master of ceremonies, underscoring the breadth of the international science networks in Italy.

► From left: InterAcademy Partnership President Mohamed H.A. Hassan; Friuli Venezia Giulia President Debora Serracchiani; then-TWAS Executive Director Romain Murenzi; Abdus Salam International Centre for Theoretical Physics Director Fernando Quevedo.





Debora Serracchiani, the president of the Friuli Venezia Giulia region in northeastern Italy, said the region is distinguished by the presence of prestigious scientific institutions such as those that hosted the board. “Over time,” she said, “Friuli Venezia Giulia has become renowned for its international receptiveness and for being a pole of attraction for highly qualified human capital in the field of research.”

In an address at the open session, Murenzi stressed the extraordinary progress achieved by some developing nations that have invested in research and science education. “We also see, however, that the progress has been uneven,” Murenzi said. “Especially among the 48 Least Developed Countries, profound human challenges remain in food production, clean water, health care, energy, climate change and urbanisation.”

It was an honour for ICTP to host the meeting, said the centre’s director Fernando Quevedo, who added that the subject of building science

“Basic and applied science are basically two sides of the same coin. They’re both important.” *Wole Soboyejo*

in the developing world is the core of work at ICTP and Trieste’s other science institutions. “ICTP has been hosting scientific visitors from 188 countries over the past 50 years and we have been working together with them to create a community of science in developing countries,” said Quevedo. “The Board’s work is giving science a voice worldwide, as well as recognition of the importance of science for the future of our world.”

Mauro Giacca, the director-general of ICGB, said in a video message from Cape Town, South Africa, that the Scientific Advisory Board is deliberating on issues of major importance to his institute, such as medicine and agriculture. “There is, probably, no other field in science that can contribute to global development so effectively as biotechnology,” Giacca said. “The

possibility to modify genetic information and take advantage of natural organisms for the benefit of humanity offers immense possibilities in medicine, agriculture and industry.”

The InterAcademy Partnership (IAP), a TWAS-associated organisation, has long been active in science policy at the highest levels, said co-chair Volker ter Meulen. Science academies provide an independent and highly credible voice for scientists in the policy realm. “For example,” he explained, when then-UN Secretary-General Kofi Annan was struggling with the governance structure of the Intergovernmental Panel on Climate Change, “we were asked to analyse the governance structure and we did it – and, ever since, nobody has complained about the governance structure of IPCC.”

SCIENTISTS AS AGENTS OF CHANGE

How does science shape world policies? And how can policymakers in turn support science?



▲ InterAcademy Partnership Co-Chair Volker ter Meulen.

▼ Members of the UN Secretary-General’s Scientific Advisory Board present in Trieste, Italy. [Photo: ICTP photo archives]



► UN Secretary-General's Scientific Advisory Board members Hayat Sindi and Wole Soboyejo.



The open session also provided an opportunity for board members to take questions directly from the Trieste scientific community.

Part of the conversation was about the nature of science itself. Does it have an obligation to focus on its applications for resolving global issues, or is the pursuit of answers to fundamental questions enough on its own?

Sindi made a case that the scientific endeavour is bigger than simple personal curiosity, and that the world is in urgent need of science that will benefit people. She said

that her institute in Saudi Arabia explores how to commercialize innovative ideas, but a major obstacle is how the culture of science inadvertently nurtures a fear of failure. That's where centres such as ICTP can come into play, she said, encouraging new students to become agents of change who aren't afraid to fail on the path to finding important new ideas.

"It's great to have another scientist like Einstein and Newton," she said. "But for me, as I'm running this institute, it's important for there to be somebody who is going to clean water for children who are really dying from polluted water."

"So," Sindi added, "we need to really encourage the change-agent type of concept – for our students to link science and society from the beginning, so the end goal is to have an impact."

Kuroda said that, while it's tempting to see researchers who do basic science as removed from society; the truth is that they aren't. Even fundamental science has impacts that can reach deep into applications that affect daily lives.

"Basic scientists also have to think, 'What I'm doing may have a consequence, may tap into some commercially important findings,'" Kuroda said. "So that sort of way of thinking in the culture of science is important. That is also true for developed countries, but also in developing countries."

Soboyejo argued that the culture of science and technology needs to be complex, integrated and inclusive. There needs to be both basic and applied science, but also cooperation with industry, governments and development agencies, so that scientific findings and new technologies can become products that will have an impact on people. Otherwise, he said, there is science but no development.

"Basic and applied science are basically two sides of the same coin," said Soboyejo, addressing the students in the audience. "They're both important. In the absence of very strong basic science, it makes the application of science difficult. So what is done here and at the institutions across the world that truly value basic science is important – and your role is pivotal." □

Read an interview with Board member Gebisa Ejeta on food security: www.twas.org/node/11760

For a full list and biographies of Board members: <http://en.unesco.org/un-sab/members>

