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NEWSLETTER

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The world changes: TWAS adapts

Science diplomacy and technology prove to be key amid pandemic





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▲ Top: United Nations Members' flags, UN Headquarters, New York. Above: A scene of TWAS documentary on refugee and displaced scientists, titled "Science in Exile".

Cover picture: Participants in the 2020 AAAS-TWAS Science Diplomacy Course showing the flags of their countries on the course final day.

▼ Piazza Unità d'Italia in Trieste, where Trieste Next takes place, during the latest occurrence of the event.



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EDITORIAL

IN THE SPIRIT OF ADAPTATION



With the COVID-19 pandemic raging worldwide, individuals, organizations and businesses had to adapt. The scientific community found itself in the doubly challenging position of having to adapt its *modus operandi*, like everybody else, while strategizing responses.

The events, workshops and courses organized by TWAS, or in which the Academy participated in the second half of the year, thus reflected the double response to the double challenge: abiding to the new anti-COVID-19 measures while seeking solutions and possibly forging the way ahead.

Many factors play a role in evaluating which kind of events are better—virtual, in presence or hybrid—and, in scientific gatherings, as in life, the line may be blurred.

All-virtual events have the advantage of attracting new audiences, reducing costs, shortening the planning phase, and being more environment-friendly. Their technical requirements, however, increase the need for specialized IT support. Not to mention the lack of chance and behind-the-scenes encounters that lend in-presence gatherings their freshness and uniqueness.

Those taking part in virtual gatherings—all of us, in fact—were put through a rush course in remote participation: while some adapted better or more quickly than others, almost everyone had (and still has) to be reminded to mute or unmute on video calls.

Like many organizations and in the spirit of adaptation, TWAS went for all-virtual options or chose more hybrid solutions. For the 2020 edition of the EuroScience Open Forum (ESOF), held in Trieste from 2 to 6 September, for example, at which TWAS was one of the high-level science organizations, out of 150 scheduled events, about 70 were held virtually, 70 in a hybrid of virtual and physical, and about 10 entirely in person.

The in-person formula, in full compliance with the anti-COVID-19 measures, was chosen

instead for TWAS participation to the 2020 edition of Trieste Next, the annual festival of scientific research organized by the Academy's host city. About 20 high school students from the Istituto Tecnico Statale Alessandro Volta attended TWAS event, held at the 'Sala delle colonne' (the Column Chamber) of the beautiful Palazzo del Lloyd Triestino, in the historical Piazza Unità. After TWAS Executive Director Romain Murenzi's opening remarks, when he provocatively asked the students whether they were ready to build their future, event organizer and TWAS Programme Coordinator Max Paoli engaged them through the interactive app Mentimeter.

Finally, the science diplomacy course that TWAS organizes annually with the American Association for the Advancement of Science took place entirely online in 2020.

Irrespective of the chosen formula, the pandemic stimulated two key reflections at TWAS and in academies worldwide. The first one is that science literacy is absolutely essential to decision makers: a remarkable body of scientific findings and evidence on pandemics—on both preventing and dealing with them—was available in the literature prior to 2020, yet the world was taken "by surprise". The second is that open science is critical to efficient and fast progress: cooperation and availability of data can make a tremendous difference in the way in which the international community responds to situations of crisis and emergency.

TWAS embraced both reflections and, again, irrespective of the formula chosen for the events it organized to respond to the pandemic, it adapted. And, as per its very *raison d'être*, it continued to promote scientific capacity and excellence in the South, and serve as a hub for a global network of scientists and organizations working to advance science in the developing world.

Raffaella De Lia
Editor

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IN THE NEWS

City-loving malaria mosquitoes threaten Africa

An Asian malaria-carrying mosquito that has adapted to urban habitats could spread to dozens of cities across Africa, according to a new modeling study. It could place over 100 million people at risk, including many who were never before exposed to it and have no immunity. The mosquito species, *Anopheles stephensi*, poses a serious new threat for African cities, says Francesca Frentiu, a geneticist at the Queensland University of Technology, Brisbane, Australia, who was not involved in the research. Malaria, which kills more than 400,000 people per year—most of them African children—is caused by *Plasmodium* parasites and spread by several mosquito species.

Science Magazine:

www.bit.do/MalariaCity

China makes push for carbon neutrality

China, the world's largest emitter of carbon dioxide (CO₂), has promised to become carbon-neutral before 2060, and to begin cutting its emissions within the next ten years. It's the country's first long-term climate goal, and will require China to rein in CO₂ and probably other greenhouse gas emissions to net zero, which means offsetting gases that are released, for example by planting trees or capturing carbon and storing it underground. It's also an effort that will necessitate a massive increase in the nation's solar and wind capacity.

Nature News:

www.bit.do/ChinaPledge

After conflicts, science needs rebuilding

Science is an easily forgotten victim of war, natural disaster and public health crises. Physician Zazay Yekeh in Liberia, for example, was on the frontlines of the Ebola response in

2014. He says the crisis forced many people to move to more stable countries, where they could continue their research.

Still, there is work going on behind the scenes to rebuild research in sub-Saharan Africa. Africa Science Focus reflected on the impact that conflict has had on research and development across the continent.

SciDev.Net:

www.bit.do/RebuildingScience

Sunflower stars are now critically endangered

A decade ago, seeing sunflower stars on a dive off the Pacific coast of North America was nothing to write home about. The stars, which grow up to a metre in diameter, were omnipresent. Then came the sea star epidemic. In 2013, sea stars, impacted by a wasting syndrome, began dissolving into gelatinous goop, thus proving to be an especially vulnerable species.

Hakai Magazine:

www.bit.do/EndangeredStars



Indian States step up organic farming

Organic farming is in a nascent stage in India. About 2.78 million hectare of farmland was under organic cultivation as of March 2020, according to the Union Ministry of Agriculture and Farmers' Welfare. This is two per cent of the 140.1 million hectare net sown area in the country.

A few States have taken the lead in improving organic farming coverage, as a major part of this area is concentrated only in a handful of States.

Down to Earth:

www.bit.do/IndiaFarming



SCIENCE DIPLOMACY

SCIENCE DIPLOMACY GOES VIRTUAL



To account for the changes made necessary by COVID-19, the 2020 AAAS-TWAS course was held entirely online and included about 75 participants

 by Sean Treacy

As the nations of the world push to find new vaccines and mitigation strategies to respond to COVID-19, they must also work together, scientifically and politically, to be effective. And the questions surrounding how to accomplish these collaborations illustrate the need for a field of growing importance: science diplomacy.

The same questions that continued to come up during the 2020 Science Diplomacy Course, organized by TWAS jointly with the American Association for the Advancement of Science [AAAS]. The course—the seventh edition of the annual event—was held from 21 to 24 September and was all-virtual for the first time.

And because of its format, it was also the largest. A record of about 75 students were able to attend through a Zoom video conference, instead of the roughly 25 participants that would usually attend when the event is held in person. It was also held in September, instead of its usual timing in August, to account for extra preparations.

The AAAS-TWAS programme is a globally respected initiative in the field of science diplomacy. Starting with the first course in 2014, the annual courses have hosted nearly 350 scientists, diplomats and policy experts—including speakers—from more than 70 nations. As usual, the four-day course included talks from science diplomacy experts and breakout sessions in which participants from countries as far ranging as Chile, Ghana, Mexico, Mongolia, Nepal and Turkey worked together to examine the challenges of science diplomacy.

◀ United Nations Members' flags, UN Headquarters, New York. [Source: I. Aotearoa/Wikimedia Commons]

At a time when science is becoming increasingly international, scientists are more often working across borders, sometimes even regardless of tensions between their states. And while governments play a major role in science diplomacy, science diplomacy also involves academic institutions, foundations, funding agencies, and non-governmental organizations.

A GROWING AND ESSENTIAL FIELD

As a practice, science diplomacy has been ongoing for decades, if not longer. For example, AAAS sent scientific delegations to China in 1979, at a time when the nation was only beginning to open to the outside world. AAAS also sent a team to Cuba in 1997, and, in 2014, was a partner to an historic agreement to support scientific cooperation between Cuban and US scientists in key areas of mutual interest.

The International Centre for Theoretical Physics [ICTP] and TWAS, both founded in Trieste by the late Pakistani Nobel laureate Abdus Salam, were created to promote science in the developing world, and both have had science diplomacy at the core of their work.

In parts of both the global North and South, however, science diplomacy is not understood well even among diplomats and scientists. Sometimes the scientific and diplomacy communities regard each other's concerns as low-priority or misguided. But this lack of understanding dissolves when diplomats and scientists collaborate, and experts in both fields gain an appreciation for scientists' dedication to evidence and facts, as well as diplomats' skill at brokering productive agreements and representing the interests of their citizens.



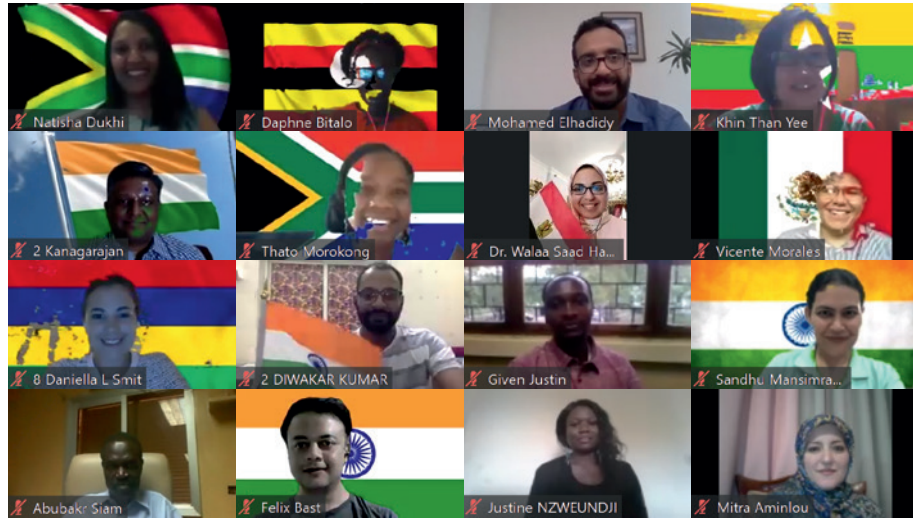
AN IMPORTANT TIME TO BRIDGE THE GAP

“The 2020 course was built on six years of collaborative work between AAAS and TWAS”, said AAAS CEO Sudip Parikh. “It was intended, when the partnership formed starting in 2011, that the complementary strengths of both organizations would provide a strong foundation for developing an international training programme at the intersection of science and diplomacy,” he said. “And I think the 160-plus graduates of the programme prove that the value of this idea is there, and that the power is there.”

TWAS Executive Director Romain Murenzi, in his opening remarks, urged attendees to consider the importance of science diplomacy for pressing issues such as COVID-19, and how it will affect education in developing nations that lack technological infrastructure for remote learning. “COVID-19 is important to acknowledge, not only because of its obvious impact on our event, but because of its impact on the world. Science and diplomacy happen to be important keys to succeed against it,” he said.

The keynote address was delivered by Zehra Sayers of Sabanci University in Tuzla, Turkey. Sayers is the former Chair of the Scientific Advisory Committee for Synchrotron-Light for Experimental Science and Applications in the Middle East (SESAME) laboratory, and one of the recipients of the 2019 AAAS Award for Science Diplomacy.

Sayers said that some of SESAME goals were producing excellent science and developing high-level technology infrastructure in the



▼ United Nations Members' flag, United Nations Office at Vienna [Source: I. Aoteroa/Wikimedia Commons]

region, establishing cooperation across cultural and political divides, and reversing brain drain. She said that while they consider science the most important priority at SESAME, it's impossible not to see the diplomatic element of its functions.

“So the first thing is to ensure good science,” Sayers said. “The diplomacy part comes a bit naturally, in the sense that when you're communicating with people from very different backgrounds, nations and cultures, first you learn to listen and second you learn to respond according to their understanding of events. So, more or less, you respond according to their needs, and this is where diplomacy comes in.”

CASE STUDIES IN SCIENCE DIPLOMACY

Other experts in science diplomacy who spoke at the course included Eliane Ubalijoro, Deputy Executive Director of Global Open Data in Agriculture and Nutrition; Sergio Jorge Pastrana, Former Foreign Secretary of the Academy of Sciences of Cuba and currently Ambassador of Cuba in Barbados; and B. Chagun Basha, Senior Technical Specialist at Office of Principal Scientific Adviser to the Government of India. Each provided a case study in science diplomacy.

Ubalijoro explained the role of the Next Einstein Forum, a platform that brings African science and policy together under the belief that Africa's contributions to global science are indispensable, with a focus on the continent's young people. She noted that her career in



■ Left and below: Participants in the 2020 AAAS-TWAS Science Diplomacy Course showing the flags of their countries on the course's final day.

science diplomacy accelerated when, in 2007, she organized a workshop in Rwanda on how to build African bioeconomies. During that time, she met Murenzi, who was then Rwanda's Minister of Science, Technology and Scientific Research, which led to her becoming a member of the Presidential Advisory Council of Rwandan President Paul Kagame.

Ubalijoro connected the promoting of science in a pan-African way to science diplomacy, and added that it was important for Africans to think of science diplomacy "generationally".

"What really matters is how are Africans engaged in science diplomacy thinking about

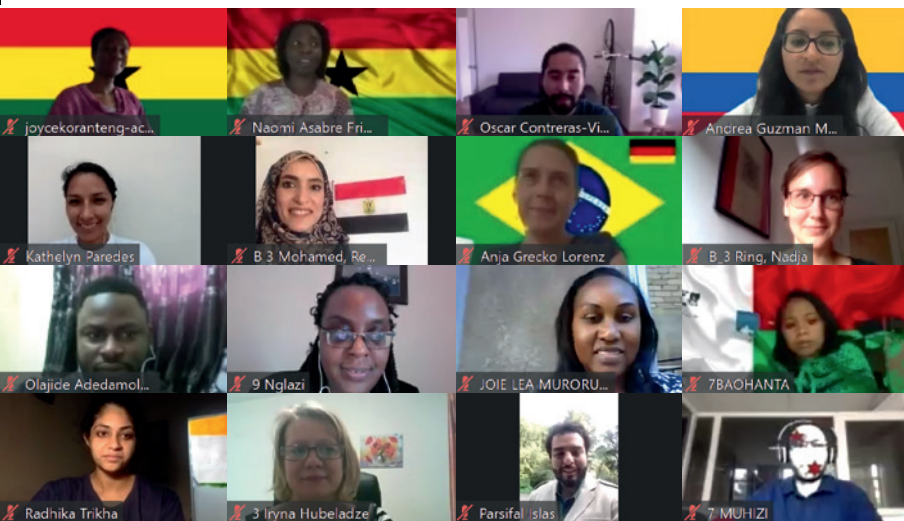
Pastrana described science diplomacy from the point of view of the Cuban Academy of Sciences. He used the current COVID-19 pandemic as an example, noting that Cuba has managed to control the disease well because of its prioritization of science. And, in joining science and diplomacy, Cuba has maintained, for 15 years, a group of scientists, physicians and nurses ready to respond, at short notice, to disasters or epidemics anywhere in the world. The group is called the "Henry Reeve Medical Brigade", and it has been activated to respond to the COVID-19 pandemic. Members of the team have been posted to countries throughout the world, including Italy, Mexico, South Africa and Venezuela.

"This Henry Reeve Brigade has been working so far in five continents, and mostly in 15 small island countries of the Caribbean, where they have been able to help deal locally with COVID-19," noted Pastrana, "And this has contributed, among other things, for the Caribbean to be one of the areas where the epidemic has been contained. This is notably the result of science-advised decision-making."

Basha posed a question for his discussion: Why do countries pursue science diplomacy as an activity?

He said the answer differs from country to country based on many factors, and each participant should take that into account. With India, he noted, a pre-existing institutional architecture for science policy already exists, and so the nation has an advantage when it comes to pursuing science diplomacy. In 2019, he noted, India's Ministry of External Affairs established the New Emerging Strategic Technologies Division, "to engage in technology diplomacy".

"I don't think, in our vicinity in the South-Asian region, there are units that directly focus on science and technology within the Ministry of Foreign Affairs, in a formal capacity," Basha noted. "So this is another way India is institutionalizing science diplomacy within the existing policy system and translating it into action." ■



Science-based decision-making is becoming more and more crucial to all policy decision-making, locally, nationally and globally.

Eliane Ubalijoro, Deputy Executive Director of Global Open Data in Agriculture and Nutrition (GODAN)

what the legacy is that we want to leave as ancestors," she said. "And science diplomacy is taking a more and more central role in international relations, as we face crises that are deeply linked to science—whether it's the COVID-19 pandemic or whether it's climate change. Science-based decision-making is becoming more and more crucial to all policy decision-making, locally, nationally and globally."



SCIENCE DIPLOMACY IN THE GLOBAL SOUTH

What are the new capacities that science diplomacy alumni gain in the AAAS-TWAS courses?

 by Cristina Serra

Negotiation skills, cooperation with policymakers, how to present advice at high-level meetings, leadership skills and the ability to attract more funds for projects of global interest are not part of the usual higher education curricula. They can be learned on the ground through trial and error or in specific courses aimed at strengthening science diplomacy skills.

From the beginning, in 2013, the science diplomacy programme, organized by TWAS in conjunction with the American Association for the Advancement of Science (AAAS), has graduated more than 300 alumni who left TWAS headquarters ready to change the world. A recent TWAS science diplomacy alumni review meeting explored how they might make an impact.

“All of these gatherings have aided the important process of mainstreaming science diplomacy in the global South,” said TWAS Executive Director Romain Murenzi. “Together, we have worked hard to make scientists and policymakers more aware of the important role of science in policymaking and diplomacy, and how important it is for both the scientific and diplomatic communities to engage one another.”

The event was held from 9 to 12 November in a virtual mode and was designed to gauge the impact that former attendees had in their communities and beyond since their participation in the TWAS science diplomacy courses.

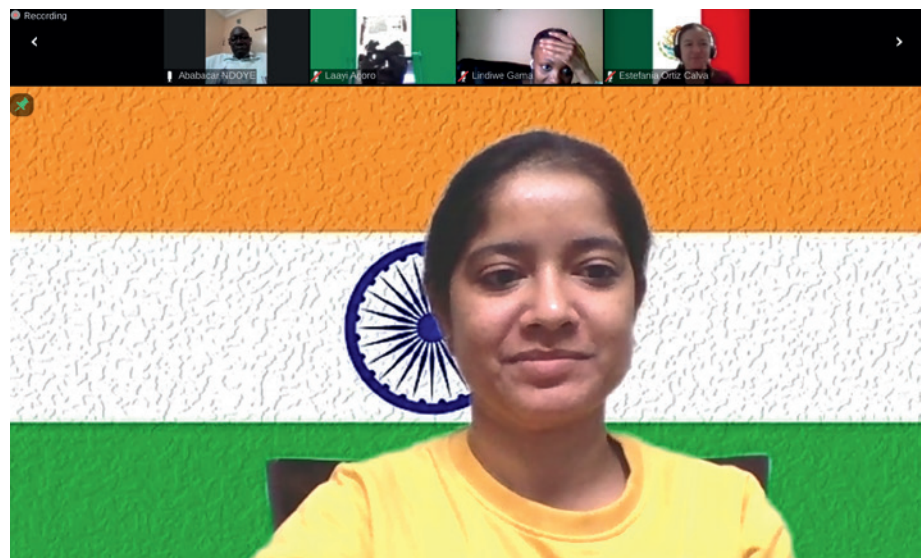
From 12 events—including summer courses, thematic meetings and regional workshops—that featured the participation of

over 300 participants from some 80 countries, 30 participants were selected to offer their contributions to the first review meeting, on the basis of the impact they reported since attending the original meeting.

Science diplomacy has an impact on governments, scientists and policymakers helping them solve many of the world’s urgent challenges. Education and training in this field are thus critical and may play a role in peacebuilding among nations.

One example is the Virunga National Park, a UNESCO world heritage site in the Democratic Republic of the Congo, famous for its incredibly rich biodiversity that includes the endangered mountain gorillas. Bordering Rwanda and Uganda also contribute to preserving the region’s beauty, supporting local communities

▼ One of the participants in the virtual TWAS science diplomacy alumni review meeting of 2020.





“Thanks to the input received during this workshop, we now have a lot of food for thought on how we might adapt our programme moving forward.”

Peter McGrath, TWAS Science Diplomacy Unit

▲ National flags peeking out in the background offered the TWAS science diplomacy alumni review meeting a sense of unity.

and creating new income opportunities respectful of the three countries and their local habits. Such cooperation requires interaction with scientific advisors, but also goodwill and expertise in diluting potential conflicts.

The same holds true with the dispute surrounding the longest river in the world, the Nile, whose long catchment brings 10 nations to constant tensions about political, geographical, ecological and economical matters. Another example of how, and where, science diplomacy could help.

The alumni’s feedback confirmed that science diplomacy courses advance awareness, capacity and action: Most participants were able to increase awareness in their communities, for example through YouTube initiatives featuring scientists, and with policymakers, thanks to effective communication and better negotiation skills.

Their impact, however, went beyond that: Many of them built new local and international networks and developed a deeper team-

oriented attitude. Some promoted initiatives aimed at bridging the gender gap, while others established first-time collaborations between diplomats and young scientists’ networks.

An interactive Zoom discussion offered an overview of their accomplishments. “Thanks to the training I received at the 2019 Train the Trainers Course on Science Diplomacy, I was able to convince my boss to support activities I intended to accomplish,” said Glenn Fernandez, an associate professor at the Institute for Disaster Management and Reconstruction, a joint institute of Sichuan University and Hong Kong Polytechnic University. “It took me only one year to launch our ‘Science Diplomacy in Disaster Risk Reduction’, an elective course for graduate students.”

“TWAS science diplomacy activities have gone from strength to strength over the past few years, and it is heartening to know that many of our alumni have been active in their own rights,” commented Peter McGrath, the coordinator of TWAS Science Diplomacy Unit.

Some vibrant comments across the chat helped catch a number of interesting thoughts and suggestions for future cooperation. Nyangi Chacha, a lecturer and the head of the School of Environmental Sciences and Technology at Ardhi University, in Tanzania, suggested drafting an alumni manual indicating how science and diplomacy can feature in different fields.

And Jauad El Kharraz, Research Director at the Middle East Desalination Research Center in Oman, proposed to provide the international science diplomacy community with translations of educational materials in French, Arabic, Spanish and possibly other languages. His suggestion underlined one of the skills expected from science diplomats: the ability to communicate across borders and engage in international cooperation.

“Thanks to the input received during this workshop, we now have a lot of food for thought on how we might adapt our programme moving forward and help TWAS maintain its position among the vanguard of organizations active in this field,” said McGrath. ■

Read more:
www.twas.org/node/15082/



THE INITIATIVE FOR REFUGEE AND DISPLACED SCIENTISTS GROWS

By reconfirming their commitment, TWAS, the International Science Council and the InterAcademy Partnership lay the groundwork for new initiatives for refugee scientists

 by Cristina Serra

At the end of 2018, there were about 70.8 million refugees worldwide. Conflicts, persecutions, human rights violations and climate change are responsible for displacing people from their own countries. Many of them are scientists, who seek asylum abroad.

Two thirds of the overall displaced migrant population come from just five countries—Syria, Afghanistan, South Sudan, Myanmar and Somalia—in which some of the world’s least funded science institutes and systems are located. Painting a detailed portrait of the status of refugee and displaced scientists, however, and of the programmes working to support them is no small task.

Many institutions, academies, non-governmental organizations and government agencies are already offering scholarships to these scientists in exile for postgraduate studies, research, mentoring programmes, and even livelihood and employment support. Still, there is little or no coordination at the international level.

To buffer this situation the International Science Council (ISC), the InterAcademy Partnership (IAP) and TWAS established a project on refugee and displaced scientists under the umbrella of Science International. The project was launched early in 2020 and was further implemented at the end of the year through the organization of the first workshop, in October, with experts and members from

Science International’s organizations. [For more background, see page 13]

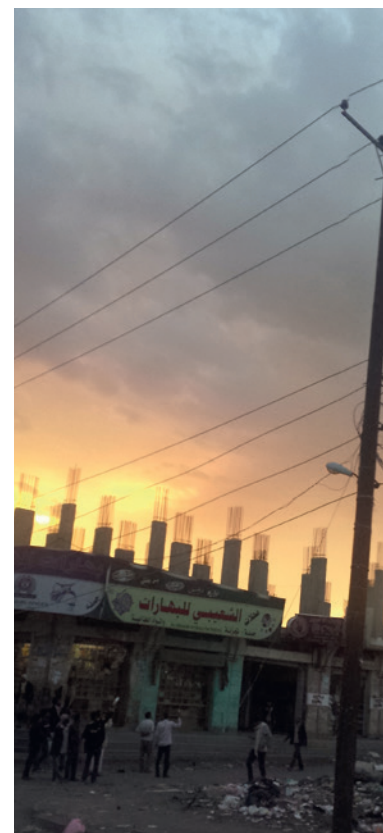
Titled “Refugee and Displaced Scientists Network and Advocacy Planning Workshop”, the course was guided by Erin Buisse Consulting, a firm that specializes in refugee-related initiatives, and served as the launch pad for an 11-month new initiative.

“Over the past several months, I have worked to gather information, ideas and perspectives on what exactly stakeholders want to achieve, what is currently being done, and how to work together to meet such goals,” said Erin Buisse, the project’s lead consultant.

Currently, the major aim of the initiative is to form an international network, building an advocacy campaign to bring together scientists, policymakers and organizations to address the needs of refugee and displaced scientists, and to develop a coordinated response to assist them.

The involvement of refugee and displaced scientists is central to the project. An early desk review helped identify their needs and challenges, and understand the international legal framework.

“The topic of refugee scientists is close to me, as I too was a refugee scientist in the past,” said TWAS Executive Director Romain Murenzi in his opening remarks. “Many years after the refugees settle down in a country, they and their children may still be seen as refugees. They



▼ Yemen, where conflict shattered normalcy of daily life, and of scientific life. [Source: Ibrahem Qasim/ Flickr, Creative Commons]

carry this status for generations. Therefore, we hope that this workshop will offer a chance for discussions, and help find ways to support fleeing scientists as much as we can.”

WHERE DO WE STAND?

Experts involved in the workshop included displaced scholars and several refugees, as well as senior representatives from bodies already active in the field: ISC Science Director Mathew Denis; Deputy Head of Unit from the European Commission’s Joint Research Centre (JRC) in Brussels Liliana Pasecinic; Director of the Institute of International Education’s Scholar Rescue Fund (IIE-SRF) James King; and Education Officer at the United Nations Office of the High Commission for Refugees (UNHCR) Manal Stulgaitis.

Those experts agreed that a way to improve the lives of refugee scientists in their host countries would be to invest more in their education and professional skills. According to data presented by Manal Stulgaitis, as few as 3 per cent of refugees are known to be enrolled in higher education, with higher percentages in

“Many years after the refugees settle down in a country, they and their children may still be seen as refugees. They carry this status for generations.”

Romain Murenzi, TWAS Executive Director

secondary (24 per cent) and in primary schools (63 per cent). The dropout risk, however, remains high.

Organizations like the Office of the High Commissioner for Refugees and others are stepping up to help. Since 2002, IIE-SRF has provided support through academic fellowships to nearly 900 scholars from 60 countries in partnership with 425 host institutions in 47 countries around the world. And requests for assistance applications continue to flow in, despite the COVID-19 pandemic, with





Yemen and Turkey featuring high on the list of countries of origin, both in 2019 and 2020. That's why it is urgent to provide academic opportunities for these scientists and to offer programmes for their professional development, seeking collaboration from universities and research institutions, United Nations agencies, governments and scientific networks.

"It is incumbent upon us to support our colleagues to reach safety and be able to pursue their scholarly work in security," said IIE-SRF Director King. "We must never lose sight of these scientists' skills, expertise and unique experiences, which they bring to their home academies, host countries and the global scientific community. This is why IIE-SRF is ready to join with TWAS, UNESCO and other partners to find solutions to this global crisis for science."

As difficult as it is to trace the migration routes and the fate of people leaving their homes, some tools already exist that provide insight into this globally relevant issue. The JRC interactive on-line reference tools, in particular the Atlas of Migration and the Dynamic Data Hub, enable policymakers to custom access, select and visualise global data on migration and demography, according to their specific

needs, explained Liliana Pasecinic, JRC Deputy Head of Unit.

As the European Commission's science and knowledge service, the Joint Research Centre (JRC) established a Knowledge Centre on Migration and Demography, which brings together interdisciplinary expertise and broad research skills. The JRC has also launched its refugee scientist programme.

TWAS and IAP are not new to initiatives on scientists fleeing from their countries. In 2017, the Academy organized a workshop on "Refugee Scientists: Transnational Resources"; it also assembled a list of prominent bodies providing support and information, and produced a documentary film called Science in Exile, all available on TWAS website.

Meanwhile, IAP has built the platform "Support for Refugee and Displaced Scientists" to help lay the groundwork for coordinated national, regional and international support for displaced scientists.

Displaced scientists are a resource for host countries, but they should also be a resource for this initiative, participants agreed. They are key to understanding first-hand what the specific needs of such scientists are, identifying best practices, and providing a direct link with other colleagues in need of help.

▼ Zaid Alhajaj, right, is working toward his PhD in pharmaceutical biotechnology at Martin Luther University in Halle-Wittenberg, Germany. [Image by Nicole Leghissa]



► Saja Al Zoubi, a Syrian social scientist and former TWAS Postdoctoral Research Fellow, who left her country and conducted research in the refugee camps of Lebanon. She is featured in the 2017 TWAS documentary film, "Science in Exile". [Image by Nicole Leghissa]



“We must never lose sight of these scientists’ skills, expertise and unique experiences, which they bring to their home academies, host countries and the global scientific community.”

James King, Director of the Institute of International Education’s Scholar Rescue Fund

Supporting displaced scientists is not just helping a person or their family. It’s a valuable step to support their home country in the future, observed Feras Kharrat, a scientist who was a professor at the University of Aleppo, Syria, and who is now a scholar in molecular biomedicine at the University of Trieste, Italy, but still willing to go back home.

FROM EXISTING DATA TO NEW IDEAS

Through the October workshop, different experts and organizations outlined a draft of the thematic focus areas of the network, with priority given to defence and preservation of science; further engagement of refugee and displaced scientists; and preserving the

professional skills and easing the integration of refugee scientists into their host countries.

Participants also agreed on essential key points to set up future initiatives. Suggestions included mapping the existing initiatives to avoid duplicating efforts; establishing clear roles for stakeholders; building a structured coalition with more governmental links; developing a centralized portal, with information and opportunities for refugee and displaced scientists; and advocacy initiatives to highlight the magnitude of refugees’ needs.

According to Buisse, the next steps involve preparatory work leading up to the launch in the first half of 2021. The upcoming work includes finalizing the current strategy, launching a dedicated website and the mapping survey, outlining an advocacy plan, and drafting a declaration.

A podcast focused on refugee and displaced scientists is also under production, featuring interviews and conversations that look at the overarching theme of the preservation of science. It will be a platform to hear individual stories, focusing on the scientists’ migrations and attempts to continue their scientific works.

Protecting scientists is protecting science and, ultimately, humanity’s future. What would be the consequences if we do nothing? ■



WHAT IS THE DISPLACED SCIENTISTS INITIATIVE?

New joint TWAS, IAP and ISC project will help displaced researchers stay on their feet and continue their careers.

 by Sean Treacy and Cristina Serra

Three international science organizations—TWAS, the InterAcademy Partnership (IAP) and the International Science Council (ISC), under the umbrella of Science International—launched a new awareness campaign to assist scientists who have been rendered refugees or are displaced by crises in their home countries.

The displaced and refugee scientists initiative is multifaceted: it aims at gathering knowledge and laying the groundwork for a new and cohesive response to the issue; contributes to bringing together scientists for exchanges of ideas and best practices; identifies gaps in current responses; and helps build a network of organizations interested in raising awareness of the issue among governments, international agencies and the broader scientific community.

Science International is a series of regular meetings that convene TWAS, IAP and ISC. Together, they represent more than 250 national and regional science academies, scientific unions and other organizations, with individual members at the highest levels of research, policy and education. Through these meetings, Science International aims to achieve a significant impact on key science policy challenges. Each of the Science International

partners nominate experts to help produce its reports and policy proposals. The partners then work with governments, funding agencies and other policy bodies.

To lead this project, the three science organizations hired a firm—Erin Buisse Consulting—whose clients have included the National Geographic Society and the University of Geneva. The firm has experience working with refugees, running awareness campaigns, and securing funds for the integration of refugees into national education systems.

“With this essential step, we can begin the critical work of making the international effort to aid scientists displaced by war and other tragedies more cohesive and synergistic,” noted TWAS Executive Director Romain Murenzi. “The mission of TWAS has always been to build capacity for science wherever it’s needed in the global South, and researchers among refugee populations are an important part of that equation.”

Displaced scientists can have important contributions to science that must be protected—indeed, Albert Einstein sought refuge in the United States after the rise of Nazism in Germany. Yet today, programmes to support displaced scientists are few and

► Cover image for a set of recommendations on the displaced and refugee scientists produced in 2017. These recommendations set this project in motion.



**Refugee Scientists:
Transnational Resources**

Recommendations from a workshop
13-17 March 2017
Trieste, Italy

Organised by:
The World Academy of Sciences (TWAS)
for the advancement of science in developing countries
Trieste, Italy
Istituto Nazionale di Oceanografia e di Geofisica Sperimentale (OGS)
Trieste, Italy
Euro-Mediterranean University (EMUNI)
Piran, Slovenia

With grateful appreciation to the
Swedish International Development Cooperation Agency (Sida)



fragmented, with great inconsistency among host countries, with no consistent effort to identify the affected scientists and to assess their skills and expertise. Besides, there are no platforms where those scientists can come together for peer support, for example, and research on the challenges they face is scant.

As it stands, the global community doesn't know for certain how many scientists are currently seeking asylum or forced into exile. ISC Science Director Mathieu Denis noted that, if the current estimates of as many as tens of thousands scientists on the move globally are accurate, that could be the equivalent of the total number of university professors and researchers of countries like Italy or Canada.

The number of refugee scientists is also expected to increase, should disruptive events such as civil conflict and climate change continue to worsen. The initiative is designed to help the science and policy communities prepare—regionally, nationally and internationally—to mitigate the troubles displaced and refugee scientists endure, and ensure that they are able to land on their feet, continue to pursue research and nurture expertise. This is also needed because that expertise, in time, will be essential to rebuilding their home countries.

"Surely, their [the affected scientists'] home countries would benefit greatly from their

▲ A panel during the 2017 workshop on displaced and refugee scientists. From left: Radwan Ziadeh of Syria, Senior Analyst at the Arab Center in Washington, D.C.; Raffaella Greco Tonegutti, Directorate General for Research and Innovation of the European Commission; and Mario Gomes, Union for the Mediterranean. [Source: Demis Albertacci/TWAS]

expertise," Denis added. "But we, as a global scientific community, must also realize the amount of knowledge and ideas that refugee and displaced scientists carry with them. That knowledge would potentially be lost for humanity if we cannot ensure its fruition and transmission. This initiative aims at clarifying the many ways in which different types of science institutions worldwide can assist refugee and displaced scientists, and at developing instruments for better and enhanced support."

Mohamed Hassan, President of TWAS and a former President of IAP, said that the project would be a source of hope for both displaced researchers and the international scientific community.

🗨️ We, as a global scientific community, must also realize the amount of knowledge and ideas that refugee and displaced scientists carry with them. That knowledge would potentially be lost for humanity if we cannot ensure its fruition and transmission. 🗨️

Mathieu Denis, ISC Science Director

"This is a worldwide phenomenon. We identified a need for a system to support refugee and displaced scientists three years ago at a workshop organized by TWAS," said Hassan. "Now, it's time to truly accelerate efforts to help them. These researchers have an important role to play in both the countries they seek safety in and the countries they know as home. And with so many global challenges, we must provide them with the opportunity to do the exemplary work they are capable of no matter where they are today." 🗨️

For queries, please contact:
displacedscientists@twas.org



SCIENCE RISING IN AFRICA

TWAS and the German Federal Ministry of Education and Research launch a new capacity-building programme to raise the level of science in Africa and the LDCs

 by Cristina Serra



A new capacity-building programme called “Seed Grants for New African Principal Investigators” (SG-NAPI) is on the launching pad, as the result of a recent accord between TWAS and the German Federal Ministry of Education and Research (BMBF). The programme is a seven-year initiative deemed to start early in 2021 and it aims at raising the scientific level of science and technology in Africa and the least developed countries [LDCs].

Many African countries experience what is best known as ‘brain drain’: the escape of talented scientists who seek jobs abroad because they cannot accomplish their projects at home. Not surprisingly, many of the scientists who remain struggle to build a career. To facilitate the return of young scientists to Africa and help local researchers to establish their laboratories, TWAS and BMBF have thus joined forces.

“This project brings together two partners with a wealth of experience and great commitment to fostering scientific development in the Global South,” said TWAS Executive Director Romain Murenzi. “Both TWAS and BMBF share the belief that, through education, high-quality training and transnational collaboration, many African countries will be able to tackle their regional challenges and contribute to addressing the global ones.”

SG-NAPI aims to create the conditions to fuel interdisciplinary collaboration between African laboratories and industrial partners,



▲ The flag of the Africa Union is used by BMBF to advertise its “Africa Strategy”.

to transform science into applied research, among other things. The African science and technology sector suffers from a chronic lack of investments, which does not exceed 0.5 per cent of the gross domestic product in many sub-Saharan countries.

The programme offers a range of flexible options: Scientists can apply for research training grants, for exchange and research visits grants, and for conference and industrial grants that offer the chance to learn new skills and establish links to the private sector. Grants will also be available to cover equipment and consumables, as flexibility and modularity are key qualities of the programme.

Two central pillars of the programme are the grants devised to promote the establishment of intra-African collaboration and cooperation with Germany. As TWAS Programme Coordinator Max Paoli explained: “Intra-African cooperation is important because of its potential to establish and reinforce ties with experienced African scholars, especially in LDCs.”

These early networks should become an asset in the future, once the grantees have gained the experience to lead their groups. “The opportunity to visit laboratories in Germany stands out as a chance to develop skills and long-lasting collaborations,” Paoli added.

South-North exchanges are a relevant feature of the programme—by visiting a German partner, African group leaders can broaden their horizons and establish a mentorship before bringing new skills and contacts back home with them.



▲ BMBF funds projects and initiatives in areas particularly relevant for the African continent: climate, health, bioeconomy, the environment and renewable energy.

▼ The “Scientist after child” scheme serves to fulfil Sustainable Development Goals 5 and 10—gender equality and reduced inequalities.

The programme will allow young researchers from a broad spectrum of scientific fields to participate in high-quality training. At the same time, it aims to ensure both gender balance and equity.

Another unique feature of the programme is the “Scientist after child” scheme. Pregnant female scientists and new mothers will have the chance to apply for the extra funding needed to hire a lab assistant: these funds will be instrumental in receiving qualified support during the maternity leave, allowing the scientist to keep up with lab work without forsaking their childcare obligations.

This innovative scheme recently received praise from UNESCO Director-General Audrey Azouley. It also serves to fulfil Sustainable Development Goals 5 and 10—gender equality and reduced inequalities. Overcoming gender inequalities is also included as one of the commitments of the overall BMBF Africa Strategy.

The programme will comprise three stages over seven years: a three-year awarding stage followed by a two-year project completion stage, and then a two-year final evaluation phase.

During the awarding phase, 20 scientists per year—60 in total—will be admitted into the

programme, which is worth a total of \$6 million. Necessary steps will be taken to ensure that the funding is equally distributed across the four subregions—Western, Eastern, Central and Southern Africa—with candidates from LDCs receiving special consideration.

Both TWAS and BMBF have a strong history of supporting science in Africa through fellowships and grants. Additionally, efforts to build the African science system through SG-NAPI are in line with the Africa Strategy of BMBF.

TWAS manages the world’s largest South-South PhD and postdoctoral research fellowship programme, with over 260 fellowships available each year, in cooperation with national science agencies in leading developing countries. The Academy awarded more than 2,600 grants between 1986 and 2020. Most of these were awarded through a partnership with the Swedish International Development Cooperation Agency (SIDA) dating back to 1991.

Within the framework of its Africa Strategy, BMBF funds a broad range of projects and initiatives in areas that are particularly relevant for the African continent such as climate, health, bioeconomy, the environment and renewable energy.

Thanks to the anticipated outcomes of SG-NAPI—containing brain drain, helping scientists to establish careers in Africa, raising scientific standards across Africa and LDCs, introducing new science and technology competences at the university level, promoting cooperation among universities, and linking basic and applied research through industrial partnerships—TWAS and BMBF are thus moving a step closer to achieving the goals that will enable Africa and its people to keep pace with a fast-moving world.

The call for funding applications will be announced through the social media and communication channels of TWAS and BMBF. ■

“Intra-African cooperation is important because of its potential to establish and reinforce ties with experienced African scholars, especially in LDCs.”

Max Paoli, TWAS Programme Coordinator



Read more:
www.twas.org/node/15134/



THE INTERNATIONAL TWAS FAMILY MEETS

Through home-made videos shot during the first COVID-19 lockdown, 36 TWAS scientists acknowledge the Academy's impact on their career

by Cristina Serra

There are languages that we'll hardly ever hear in our lives, and countries so remote that we can only dream about. In a series of home-made videos recorded during the first COVID-19 lockdown, 36 scientists who have various degrees of engagement with TWAS expressed their appreciation for the support they received. Each one in his or her native language.

"This film is a heartwarming tribute to TWAS. It makes us happy because of the warmth the members of our extended family express towards the Academy, and also proud because it confirms now more than ever that TWAS is playing an important role worldwide," said TWAS Executive Director Romain Murenzi.

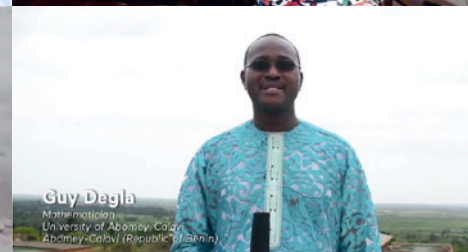
The journey towards meeting the international TWAS family offers a glimpse into different nations and cultures. The scientists who perform in the videos are those who accepted TWAS proposal with enthusiasm: Young and mid-career researchers who were selected for their high scientific profile and their scientific achievements oriented to bringing innovative solutions to global problems and a higher quality of life way beyond their communities.

Equally distributed by gender and geographical origin, they were keen on taking the challenge and participating in the self-organized filming experiment, using mobile phones and non-professional cameras, filming from locations close to them: their home, their backyard, public places and, when possible, from a lab.

From Venezuela to Kenya, from Malaysia to Turkey, Nepal, Indonesia and Vietnam, the film includes more than 30 countries, introducing three "families" of scientists: TWAS Fellows, TWAS Research Grants Awardees and TWAS Young Affiliates Network (TYAN) members.

Today TWAS Fellows number almost 1,300 from more than 100 countries; they are accomplished scholars who have made significant contributions to the advancement of science in the developing world. Fellows are elected to TWAS as life-long members. In the

▼ Screenshots of the scientists who participated in the home-made videos experiment, during the first COVID-19 lockdown.



video, they say: “Recognition as a TWAS Fellow has allowed me to encourage scientific research and respond to the needs of young scientists in the global South.”

TWAS Research Grants Awardees are the brilliant and enthusiastic recipients of TWAS Grants, recognitions provided to outstanding young researchers that the Academy has been distributing since 1986. TWAS has supported more than 2,630 early-career scientists with research grants since the inception of the award. In the video, the awardees explain: “TWAS has supported my research, and now I can support my community.”

TYAN members are scientists that make up the TWAS Young Affiliates Network, a fresh and dynamic international group established in 2016 during the TWAS twenty-seventh General Meeting in Kigali, Rwanda. Through the organization of scientific workshops, networks and public meetings with policymakers, entrepreneurs and journalists, they promote cooperation for the advancement of science in developing countries. In the video, they say: “As a young member of the international TWAS family, I can build a world connected through scientific cooperation.”

What makes this collective production so fresh and vibrant is something that bridges distances, languages and nationality: love and commitment to science and a catching smile. This journey gives a taste of the subtle but strong weave that binds together so many people through scientific excellence. Hearing their voices speaking foreign languages and dialects offers a cross section of the diverse world of TWAS.

“ This film is a heartwarming tribute to TWAS, which shows the warmth that the members of our extended family express towards the Academy. ”

Romain Murenzi, TWAS Executive Director

The quality of the videos was enhanced by a dedicated post-production work carried out at the Trieste-based Immaginario Scientifico, [https://www.immaginarioscintifico.it/] a network of interactive and experimental science museums present in Trieste, Pordenone and Tavagnacco, all municipalities in the Italian region Friuli Venezia Giulia. While each museum has its own distinctive features, all three share the same philosophy: to let visitors interact with what is displayed thus encouraging them to learn while having fun. 🎬



Watch the video here:
www.bit.do/TWASFamilyFilm



PLACING OUR FAITH IN FUTURE GENERATIONS

Exposure to sustainable development principles will shape future generations, a Trieste Next TWAS workshop suggested

 by Cristina Serra

Through an interactive workshop held at the international science festival Trieste Next (25–27 September), TWAS offered high school students from Trieste insights on the United Nations Sustainable Development Goals (SDGs), urging them to build their future in a way that is respectful of our planet’s resources.

How many households have basic handwashing facilities in the Democratic Republic of the Congo? And how many in Nigeria? How many hospital beds per 10,000 inhabitants are there in Tanzania compared to UK?

These are not idle questions, considering the importance that hygienic measures have for the COVID-19 pandemic. They also reveal how problems that apparently affect only a few countries are, in fact, shared by many. They also show how urgent it is that such problems are addressed, and hopefully solved, at the global level.

These examples were used to introduce the SDGs at the TWAS interactive workshop “Are you ready to build your future?”, one of the opening events of Trieste Next. The 2020 edition—the ninth of the festival—was dedicated to “Science for the planet: 100 proposals for our future life”. About 20 high school students from the Istituto Tecnico Statale Alessandro Volta in Trieste attended the TWAS event, which was held where the administration of the Region of Friuli Venezia Giulia has its offices, at the ‘Sala delle colonne’ [the Column Chamber] of the beautiful Palazzo del Lloyd Triestino, in the historical Piazza Unità of Trieste, kindly made available by the

Region and in compliance to the anti-COVID-19 measures.

“You have certainly heard of climate change, of water scarcity and of the need to provide access to healthy food to the perhaps 11 billion people who will populate the planet in 2100,” added TWAS Executive Director in his address to the audience. “Therefore I ask you: are you ready to build your future? This is a provocative question because we are living in times where urgent actions are needed to grant our long-term survival on Earth and because you are our present and our future: future leaders and future world citizens, and the best audience for our work and our message.”

During a keen description of the 17 Sustainable Development Goals event organiser and TWAS Programme Coordinator Max Paoli engaged the students through the interactive app Mentimeter. He explained that many problems are not restricted to one or two neighbouring nations: rather, they cross borders and cultures, affecting wider areas.

“Developing countries face several hurdles that slow down their social and economic growth, and intensify challenges such as political instability, diseases, and unemployment,” Paoli observed.

He then provided some striking examples of imbalance between developed and developing countries. Handwashing facilities—given for granted in developed countries—are precious elsewhere: in the Democratic Republic of the Congo only 4 per cent of households have such a commodity. Malawi, Kenya and Zimbabwe



▼ Piazza Unità d'Italia in Trieste, where Trieste Next takes place, during the latest occurrence of the event.

experience a better situation with 9.25 and 37 per cent of households equipped with wash basins.

The situation with available hospital beds is even more alarming, according to recent data showing Ethiopia with as little as 3 beds, Ghana with 8 and Kenya with 14 per 10,000 inhabitants, compared to UK and Italy, where this number peaks to 28 and 34 respectively.

"People tend to think that urgent problems are restricted to diseases, pollution, water

And to better exemplify the interconnectedness of all the SDGs, Paoli showed a chart whereby it is clear how global warming is causing extreme climate events that jeopardize the agricultural systems in many developing countries. Climate change is forcing people to leave rural areas and move to cities, creating social instability and overcrowding.

"Our students were very happy with the event that TWAS organized because it offered interesting insights on topics that we all should be more informed about," said Fabio Crisma, who teaches electronics at the Istituto Volta. "And Mentimeter was a precious tool because it kept the students' attention alive."

"Teaching young students the difference between the impact of renewable and non-renewable energy and how important it is to respect the environment and waste fewer goods is the key to build aware citizens who may act for the benefit of their communities," observed Alessandro Strogna, one of the students.

Strogna was echoed by his friend Grisel Koci, who expressed satisfaction for the decrease in CO₂ levels during the COVID-19 lockdown. A sign that shows how anyone can contribute to improving everybody's life.

In his closing remarks, Murenzi showed the students a 3D prism with the 17 SDGs, and he emphasized the importance of science in their implementation.

Among the institutes that are part of the Trieste Science System[www.sisfvg.it], TWAS has always granted its presence at Trieste Next Festival since its first edition, in 2011. In the past, the Academy organized round tables to debate some of the hottest topics that involve society at large.

In 2019, the Academy brought to Trieste experts who debated about opportunities and potential downsides of the fourth Industrial Revolution. In 2018, the focus was on climate change, and, in 2017, on cooperation in the Mediterranean basin, with an analysis of the challenges confronting the Mediterranean nations. ■



“ Teaching young students the difference between the impact of renewable and non-renewable energy is the key to build aware citizens. ” Alessandro Strogna, student

and food, to name the most important,” Paoli explained. “This is why it’s important that we disclose new perspectives and bring our future citizens to acknowledge how issues like education, gender equality and partnerships are part of the same picture and cannot be second to others.”

Read more:
www.twas.org/node/15061/



ITALY TO HOST GLOBAL SOUTH SCIENTISTS

A new initiative by TWAS, the International School for Advanced Studies and the Accademia Nazionale dei Lincei promotes scientific growth in least developed countries

 by **Cristina Serra**

Many early-career scientists have a sound scientific project to accomplish. TWAS, the International School for Advanced Studies [SISSA] in Trieste, Italy, and the the Accademia Nazionale dei Lincei in Rome launched a new exchange programme to help scientists living in scientifically lagging countries boost their career.

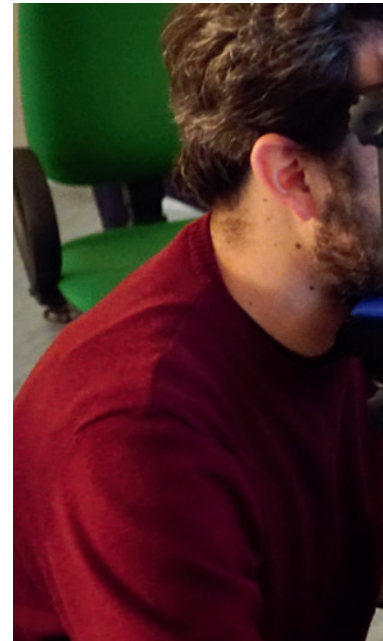
The Italian Ministry of Foreign Affairs and International Cooperation [MAECI] is playing a central role in the project, by offering support through its Directorate-General for Development Cooperation.

“Younger, early-career scientists will receive enormous benefits from the exchange visits, which offer an important chance to learn from accomplished scientists who hold specific competencies in their respective fields,” explained TWAS Executive Director Romain Murenzi. “Also, the visits foster the inception of international, long-lasting collaborations that are essential to developing interdisciplinary projects.”

The “TWAS-SISSA-Lincei Research Cooperation Visits Programme” offers 10 fellowships per year and the chance to participate in three-month exchange visits at SISSA laboratories, all located in Trieste. Once the fellowship work is completed, awardees return to their own countries where they can apply their newly acquired skills.

The programme seeks proposals based on research projects, in particular those aimed at fostering sustainable science in line with the United Nations Sustainable Development Goals [SDGs] [<https://sdgs.un.org/goals>]. Fellowships are meant for young scientists active in different fields, to help them provide innovative solutions to challenges affecting their own countries.

“Through this programme, scientists from developing countries, in particular those from the sub-Saharan Africa, will be able to accomplish research projects in some of the most advanced fields, with a specific focus



▼ Students walking on the bridge of the International School for Advanced Studies that leads to the School’s main entrance, Trieste, Italy.





▲ SISSA's students carrying out experiments at one of the laboratories headquartered in Trieste. [Courtesy photo]

“Through this programme, scientists from developing countries, in particular from the sub-Saharan Africa, will accomplish research projects in advanced fields.”

Stefano Ruffo, SISSA Director

on topics highlighted by the United Nations Agenda 2030 for Sustainable Development.” SISSA Director Stefano Ruffo also added that the research activities carried out at SISSA laboratories were designed to have a positive impact on the scientific training of university students from developing countries.

“The Accademia Nazionale dei Lincei is a committed partner in this initiative,” said the Lincei’s President Giorgio Parisi. “This is because we believe in the importance of comprehensive scientific development and in the strategic importance of international cooperation, which are necessary prerequisites to fair and sustainable development and democratic values.”

The project was initiated by MAECI Directorate-General for Development Cooperation, through its Director-General, Ambassador Giorgio Marrapodi, and Dr. Diego Cimino, an expert advisor with the international organizations. It aims to help curb the brain drain from the South to the North.

As Ambassador Marrapodi pointed out: “Italy supports this initiative aimed at the enhancement, exchange and acquisition of science, technology and knowledge among all countries. Such a process is even more important now, in this new global era, as we need to expedite the search for solutions to global challenges and the achievement of the United Nations Sustainable Development Goals of the Agenda for 2030.”

“We are proud of this partnership with national and international scientific institutes from the network known in English as Trieste System—of which TWAS and SISSA are part—and with the Accademia Nazionale dei Lincei, because it values the human and scientific resources provided by young researchers from developing countries within our scientific institutes of excellence,” he added. “Italy confirms its vocation in this respect, and offers its resources to strengthen the global partnership for sustainable development.”

A prominent contribution comes from Wolfango Plastino, a member of the Standing Advisory Group on Technical Assistance and Cooperation of the International Atomic Energy Agency [IAEA], and of the Centro Linceo Interdisciplinare “Beniamino Segre” dell’Accademia Nazionale dei Lincei. Plastino has followed, in particular, relevant aspects about the presentation, discussion and approval of the project with MAECI Directorate-General for Development Cooperation.

The Italian Government, always beside TWAS through MAECI, grants the Academy’s activity through its financial support and its endorsement. TWAS and other scientific institutes from Trieste serve as meaningful catalysts for the scientific and technological growth of Africa, which is one of the focuses of MAECI international cooperation activities. ■



PEOPLE, PLACES & EVENTS

ALPER NAMED TO THE ORDER OF CANADA

Howard Alper, a distinguished university professor at the University of Ottawa, Canada, and a 2003 TWAS Fellow was elected Companion of the Order of Canada for his scientific achievements. This high honour—the highest award given to a Canadian civilian—acknowledges a lifetime of outstanding achievement and merit commitment. Alper,

an outstanding chemist both in inorganic and organic chemistry, spent his scientific career investigating metal-catalyzed organic reactions applied to different industrial sectors such as polyesters, foams, fibres and pharmaceuticals. From 2007 to 2013, he was Co-Chair of the InterAcademy Partnership [IAP], and from 2007 to 2015 served as Chair of the Government of Canada's Science, Technology and Innovation Council.



IN MEMORIAM

Li Fang-hua, a Hong Kong-born Chinese Professor of Physics at the Institute of Physics [IP] at the Chinese Academy of Sciences [CAS] in Beijing passed away in January 2020. Elected to the Chinese Academy of Sciences in 1993, she was also a TWAS Fellow since 1998. Li Fang-hua graduated from Leningrad University, Russian Federation, in 1956 and worked at the Institute of Physics, in Beijing, until her passing. Her interests covered high-resolution electron microscopy and crystallography. In particular, she was well known for developing the so-called image contrast theory and image

analysis methods, useful to retrieve the crystal and defect structure details not detectable in experimental images.

In February 2003, she received the L'Oréal-UNESCO Award for Women in Science. Li Fang-hua was also the Director of the Chinese Society of Physics and of the China Union of Crystallography, and an editor of the Journal of Chinese Electron Microscopy Society.



IN MEMORIAM

Mexican astrophysicist **Guido Münch**, a former director at the Max Planck Institute for Astronomy [1977–1989] and a scientific member of the Max Planck Society passed away in April 2020. Münch earned his PhD from the University of Chicago, USA, in 1946, with a thesis on stellar atmospheres. From 1951 to 1977, he worked at the California Institute of Technology [Caltech], USA, carrying out observations from both the Mount Wilson and the Palomar observatories, both in California. A brilliant astrophysicist, he made seminal contributions to his field through his studies on solar physics and planetology, and the Martian atmosphere, working, until 1977, at several NASA programmes—Mariner, Viking, and Pioneer 10 and 11. In 1977, he left Caltech and was appointed Director of Max Planck Institute for Astronomy, where he spent the rest of his professional career until his retirement in 1989.



Elected TWAS Fellow in 1984, he was also a member of the National Academy of Sciences, USA, and the American Academy of Arts and Sciences. One of the awards he received was, in 1989, the Spanish Premio Príncipe de Asturias de Investigación Científica y Técnica 1989.

IN MEMORIAM

Ali Ali Hebeish, an emeritus professor with the National Research Centre, in Cairo, Egypt, passed away in September 2020. He was elected to TWAS in 1989 and received what used to be called “TWNSO Prize in Technology” in 1990.

He specialized in the chemistry of polymers used in textiles [textile pre-treatment, dyes, printing and finishing]. At the Academy of Scientific Research and Technology in Cairo, he served in different capacities:

as an Under-Secretary of State, a Vice-President, and a President. Other national awards included the State Prize in Chemistry; the Order of Science and Art, First Grade; the NRC Prize in Chemistry; and the Golden Medal, NRC. He was a member, among others, of the African Academy of Sciences and the New York Academy of Sciences.



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The World Academy of Sciences for the advancement of science in developing countries (TWAS) works to support sustainable prosperity through research, education, policy and diplomacy.

TWAS was founded in 1983 by a distinguished group of scientists from the developing world, under the leadership of Abdus Salam, the Pakistani physicist and Nobel laureate. Today, TWAS has almost 1,300 elected Fellows from 105 countries; 11 of them are Nobel laureates. It is based in Trieste, Italy, on the campus of the **Abdus Salam International Centre for Theoretical Physics (ICTP)**.

Through more than three decades, the Academy's mission has remained consistent:

- Recognize, support and promote excellence in scientific research in the developing world
- Respond to the needs of young scientists in countries that are lagging in science and technology
- Promote South-South and South-North cooperation in science, technology and innovation
- Encourage scientific and engineering research and sharing of experiences in solving major problems facing developing countries.

TWAS and its partners offer 260 fellowships per year to scientists in the developing world for PhD studies and postdoctoral research. TWAS prizes and awards are among the most prestigious given for scientific work in the developing world. The Academy distributes nearly USD1 million in research grants every year to individual scientists and research groups.

It supports visiting scientists and provides funding for regional and international science meetings.

TWAS hosts and works in association with two allied organizations on the ICTP campus:

At its founding in 1989, the **Organization for Women in Science for the Developing World (OWSD)** was the first international forum uniting women scientists from the developing and developed worlds. Today, OWSD has more than 6,500 members. Their objective is to strengthen the role of women in the development process and promote their representation in scientific and technological leadership.

The InterAcademy Partnership (IAP) represents more than 140 national and regional science and medical academies worldwide. IAP provides high-quality analysis and advice on science, health and development to national and international policymakers and the public; supports programmes on scientific capacity-building, education and communication; leads efforts to expand international science cooperation; and promotes the involvement of women and young scientists in all its activities.

TWAS, a programme unit of UNESCO, receives its core funding from the Italian Ministry of Foreign Affairs and International Cooperation, and key programmatic funding from the Swedish International Development Cooperation Agency (Sida).

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