



TWAS

17th General Conference

B R A Z I L 2 0 2 5

September 29th - October 2nd

**Building a Sustainable Future:
The role of science, technology
and innovation for global
development**

Windsor Barra Convention & Expo Center

Programme as of 23 September

Monday, 29 September 2025

Venue	Imperial
08:30-10:15	45th TWAS Council Meeting (closed session for TWAS Council Members)

Venue	Louvre
10:30-12.25	Musical Performance Opening Ceremony

Master of Ceremony, Marcos Cortesão Barnsley Scheuenstuhl, Executive Director of International Affairs, Brazilian Academy of Sciences

Chair: Quarraisha Abdool Karim, President, TWAS

Keynote address

Csaba Kőrösi, 77th President of the United Nations General Assembly (*video message*)

Remarks:

Mohammad Nafees Zakaria, Executive Director, Commission on Science and Technology for Sustainable Development in the South (COMSATS) (*video-message*)

Edmondo Cirielli, Deputy Minister of Foreign Affairs and International Cooperation, Italy (*video-message*)

Sukit Limpijumnong, President, Alliance of National and International Organizations for the Belt and Road Regions (ANSO)

Ricardo Magnus Osorio Galvão, President of National Council for Scientific and Technological Development (CNPq), Brazil

João Paulo Pieroni, Superintendent of the Productive Development and Innovation Area, BNDES, Brazilian Development Bank, Brazil

Monday, 29 September 2025

Francilene Garcia, President, Brazilian Society for the Advancement of Science (SBPC), Brazil

Denise Pires de Carvalho, Coordination for the Improvement of Higher Education Personnel (Capes), Brazil

Luiz Antonio Elias, President of FINEP, Funding Authority for Studies and Projects (Financiadora de Estudos e Projetos)

Ylann Schemm, Executive Director, Elsevier Foundation, The Netherlands

Lidia Brito, Assistant Director-General for Natural Sciences, Natural Sciences Sector, UNESCO

Helena B. Nader, President, Brazilian Academy of Sciences, TWAS Vice President for Latin America and Caribbean

Eduardo Paes, Mayor of the City of Rio de Janeiro, Brazil *TBC*

Luciana Barbosa de Oliveira Santos, Minister of Science, Technology and Innovation, Brazil, *TBC*

H.E. Luiz Inácio Lula da Silva, President of Brazil, *TBC*

12.25-12.30 Expression of appreciation to host country by the TWAS community

Quarraisha Abdool Karim, President, TWAS

Helena B. Nader, President of Brazilian Academy of Sciences, TWAS Vice President for Latin America and Caribbean

Representative of Brazilian Government

12.30-14.00 Lunch (venue: Queluz)

14:00-16:00 Trends and perspectives on science in the global South

Low- and Middle- Income Countries and the U.N. SDGs in a Changing Geography of Research

Brief introduction by Marcelo Knobel, Executive Director, UNESCO-TWAS

Co-Chairs:

Helena B. Nader, President of Brazilian Academy of Sciences, TWAS Vice President for Latin America and Caribbean

M. Iqbal Choudhary, Coordinator General OIC-COMSTECH, TWAS Vice President for Central and South Asia

Panellists:

Lidia Brito, Assistant Director-General for Natural Sciences, UNESCO

Luis Manuel Rebelo Fernandes, Deputy Minister of Science, Technology and InnovationI, Brazil TBC

Akissa Bahri, recipient, 2025 TWAS Medal Lecture; Former Minister of Agriculture, Water Resources and Fisheries, Tunisia

Mario Fresta, Director General, Foundation for Scientific and Technological Development (FUNDECIT), Angola

16.00-16.30 Coffee break (*Louvre IV*)

16.30-17.15 Keynote Lecture

Co-Chairs:

Quarraisha Abdool Karim, President, TWAS

Jaqueline Godoy Mesquita, Full Professor, University of Campinas, Brazil; member, TWAS Young Affiliate Network (TYAN)

H.E. Karin Herrera, Vice-President, Guatemala

"Karin Herrera is a Guatemalan biological chemist and academic who became Vice President of Guatemala in January 2024. She built her scientific career at the University of San Carlos, focusing on fungi and environmental studies, and later earned a Ph.D. in political science and sociology"

17:15-18:15 40th TWAS Anniversary: Looking Ahead

Chair: Marcelo Knobel, Executive Director, UNESCO-TWAS

Mohamed Hassan, TWAS Immediate Past President

Ronald Léger, Former Programme Director, Canadian International Development Agency (CIDA), Canada

Marco Marica, Director, Italian Cultural Institute in Rio de Janeiro

Moazzum Bajwa and Aziza Rahman (nee Salam) (*video recorded message*), in memory of Abdus Salam, TWAS Founder and President 1985-1995

Maria Vargas, Universidade Federal Fluminense, Brazil, in memory of José I. Vargas, Brazil (TWAS President 1996-2000)

C.N.R. Rao, India (TWAS President 2000-2006) (*video recorded message*)

Marcelo Viana, IMPA, Brazil, in memory of Jacob Palis, Brazil (TWAS President 2007-2012)

Chunli Bai, China (TWAS President 2013-2018) (*video recorded message*)

Romain Murenzi, TWAS Executive Director 2011-2023

Looking ahead: Quarraisha Abdool Karim, TWAS President

Venue **Segovia**

19:00–22:00 **Welcome cocktail | 40th TWAS Anniversary toast and cultural event**

Tuesday, 30 September 2025

Venue **Louvre**

08.30–10.30 **32nd TWAS General Meeting**

(closed session for TWAS Members and Young Affiliates)

10.30–10.45 **Break**

10.45–12.30 **Symposium 1 - Responsible Artificial Intelligence for and from the Global South: How to Mitigate Further Inequalities and Ethical Issues in Science**

Co-chairs:

Bolanle Ojokoh, Department of Information Systems, Federal University of Technology, Nigeria and TWAS Young Affiliates Network (TYAN)

Maohong Fan, Department of Chemical and Biomedical Engineering, University of Wyoming, USA (TWAS Fellow)

Panellists:

Virgílio Augusto Fernandes Almeida, (TWAS Fellow), Universidade Federal de Minas Gerais, Coordinator TWAS LACREP, Brazil

Tshilidzi Marwala, Rector of the United Nations University and Under-Secretary-General of the United Nations, South Africa (TWAS Fellow)

Rahinah Ibrahim, Professor, Faculty of Design and Architecture, Universiti Putra Malaysia (TWAS Fellow)

Sunil Mukhi, Raja Ramanna Chair Professor of Physics, Indian Institute of Science Education and Research, Pune, India (TWAS Fellow)

12.30–14.00 **Lunch (venue: Queluz)**

14:00–15.55 **Symposium 2 - Climate Change and Food Security**

Co-chairs:

Mercedes Bustamante, Institute of Biological Sciences

University of Brasilia, Brazil

Huadong-Guo, International Research Center of Big Data for Sustainable Development Goals, China (TWAS Fellow)

Panellists:

Carlos Nobre, Co-Chair, Science Panel for the Amazon, Sustainable Development Solutions Network, Brazil (TWAS Fellow) IPCC and SPA

Tuesday, 30 September 2025

Kaveh Zahedi, Director, Office of Climate Change, Biodiversity and Environment, Food and Agriculture Organization of the United Nations (FAO)

Nana Ama Browne Klutse, Head of the Department of Physics, University of Ghana, the Vice Chair of Working Group 1 of the Intergovernmental Panel on Climate Change (IPCC), and a member of the Scientific Board of UNESCO's International Basic Sciences Programme

15:55 -16:10 Launch of the Publication 'Food and Nutrition Security: The Role of Brazilian Science in Fighting Hunger' published by the Brazilian Academy of Sciences and coordinated by Mariangela Hungria.

Chair:

Helena B. Nader, President of Brazilian Academy of Sciences

16:10 - 16:30 Coffee break (*Louvre IV*)

16:30 – 18:30 Induction Ceremony

TWAS Fellows elected in 2023, 2024 and 2025

Venue	Segovia
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19:00 – 22:00	Gala dinner and cultural event
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Venue	Imperial
08.00-08.50	TWAS Regional Partners Joint Meeting (closed session for the Coordinators of TWAS Regional Partners and TWAS Council)

Venue	Louvre
9:00 – 10:15	TWAS Medal Lectures Co – Chairs: Olubukola Oluranti Babalola, North-West University, Faculty of Natural and Agricultural Sciences, South Africa and TWAS Vice President (Africa) Carolina Naveira Cotta, Mechanical Engineering Department, Federal University of Rio de Janeiro, Brazil and TYAN

Medal Lecture by TWAS Member from the South

Bridging Science, Policy & Practice - A Tunisian Woman Scientist's Journey in Water & Agricultural Management in Ifriqya

Akiça Bahri, TWAS Fellow, Former Minister of Agriculture, Water Resources and Fisheries, Tunisia

Water scarcity is one of the defining challenges of our era. In North Africa and the wider Ifriqya region, per capita availability is among the lowest worldwide. My career has been devoted to tackling this reality by connecting science, policy, and practice. From research on non-conventional water resources, salt-affected soils, and biosolids, to integrated water resources and urban water management, I have worked to make the “unusable usable” and turn constraints into opportunities.

Over four decades, I have operated across scales—plot, farm, watershed, national, and continental—combining research with solutions that boost water efficiency, productivity, and environmental health. This path led me from academia in Tunisia, to international leadership at IWMI and the African Water Facility, and into policy as Minister of Agriculture, Water Resources, and Fisheries. Citizen science, farmer-centered approaches, and resource recovery have been central to advancing resilience and equity.

Today, the landscape is shifting. Artificial intelligence, renewable energy, and financial innovations intersect with the Water-Energy-Food-Ecosystems (WEFE) Nexus and climate change, transforming how we do science, how we design policies, and how societies pursue justice and well-being.

This lecture will reflect on lessons from bridging science, policy, and practice; the need for integration across disciplines and sectors; and the human dimension of water management—where water security underpins food, health, dignity, and peace. It will also underscore the role of women scientists in shaping sustainable futures.

Resilience in water and agriculture is not only about surviving scarcity. It is about reimagining prosperity. When science connects with policy and practice, it becomes a transformative force for sustainable development in Africa and beyond.

TWAS Medal for contributions to issues of inequalities in developing countries

Science: Distributing Opportunity

Shirley Malcom, Senior Advisor to the CEO and Director of the SEA Change initiative, American Association for the Advancement of Science, AAAS, USA

Wednesday, 1 October 2025

It has been said that "talent is distributed evenly, but opportunity is not!" If we are to address the larger issue of building a sustainable future for the planet, we must embrace the role that science, technology and innovation (STI) have played and can play in the future in achieving that goal. And we must also work to remove inequalities and distribute opportunity in such a way as to cultivate and build the talent base for STI that will be required to do that.

To accomplish our goals of building a sustainable future, it continues to be important to collaborate on activities that can make that possible, especially around working to distribute opportunity for education and research in science.

The work of AAAS to support science globally, in general, and its connections to TWAS, in particular, have centered around five areas:

- building connections to countries, organizations and individual scientists across the globe, such as the longstanding collaboration with TWAS to connect the scientific and diplomatic communities and to support organization of international fora;*
- advocating and sharing strategies for quality education in STEM for all at all levels;*
- supporting STEM education for girls and women at all levels, assisting in development of policies and tools to enable this and advocating for a gender lens in the development and implementation of policies related to addressing the SDGs;*
- involvement with building organizational infrastructure for STI, such as through capacity building and advocacy for and cooperation with non-governmental and intergovernmental agencies, and;*
- promoting greater visibility for science and scientists in the global South, especially for women scientists.*

Medal Lecture by TWAS Member from the North

Anton Zeilinger, Nobel Laureate, University of Vienna and Institute for Quantum Optics and Quantum Information of the Austrian Academy of Sciences, Austria (video-recorded)

10.15-10.30 Break

10.30-12.30 Special Session: Science in a complex geopolitical context

Co-Chairs:

Emmanuel Kasimbazi, School of Law, Makerere University Uganda

Elisa Reis, (TWAS Fellow), Chair of the Interdisciplinary Research Network for the Study of Social Inequality (NIED, Brazil)

Panellists:

Sukit Limpijumnong, President, Alliance of National and International Organizations for the Belt and Road Regions (ANSO)

Saths Cooper, International Science Council ISC Committee for Freedom & Responsibility in Science, Extraordinary Prof Universities of Pretoria &

Stellenbosch, South Africa

Hala J. El-Khozondar, Islamic University of Gaza, State of Palestine, *TBC*

Wednesday, 1 October 2025

Girirdhar Kulkarni, President, Jawaharlal Nehru Centre for Advanced Scientific Research (JNCASR), India

Nina Sartori, Counsellor for Scientific Affairs, Embassy of Germany, Brazil

12.30-14.00 Lunch (venue: Queluz)

Venue	Louvre
14:00-14.15	Introduction and group photo of Young Affiliates selected in 2023 Introduction and group photo of Young Affiliates selected in 2024 Introduction and group photo of Young Affiliates selected in 2025
Venue	Louvre IV
14:15-15:00	Connect & Showcase: Poster Session with coffee Poster presentations open to all participants
Venue	Bandeirantes
15:00 -15:45	Connect & Showcase: Flash Talks Organized by TYAN
Venues	Imperial, Bandeirantes and Liberdade
15:45 -16:30	Connect & Showcase: Networking Session (parallel sessions) Small groups will be seating together by fields of interest to discuss possible collaborations Organized by TYAN
16:30-17:15	TYAN Feedback and Reflections Session and photo

Venue	Louvre
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08.30–10.00

Symposium 3

Health Challenges in the Global South

Co-Chairs:

Helena B. Nader, President of Brazilian Academy of Sciences

Sabah AlMomin, Kuwait Institute for Scientific Research, Kuwait, TWAS Vice President (Arab Region)

Panellists:

Nisia Trindade, Fundação Oswaldo Cruz, former Minister of Health of Brazil (TWAS Fellow)

Salim Abdool Karim, Director, Centre for the AIDS Programme of Research in South Africa, CAPRISA, South Africa (TWAS Fellow)

George Fu Gao, Chinese Center for Disease Control and Prevention, China (TWAS Fellow)

Prof. Shahlo Turdikulova, Vice-President, Academy of Sciences of the Republic of Uzbekistan (TWAS Fellow)

10.00–10.30

Coffee Break

10.30–11:15

Presentations and Announcements of Awards and Certificates

Master of Ceremony: Giovanni Ortolani, TWAS Public Information Officer

· 2024 TWAS Awards

Sunday Ekesi and Fang-Jie Zhao, Agricultural Sciences

Yi-Fang Tsay and Raghavan Varadarajan, Biology

Xing Xu, Earth, Astronomy and Space Sciences

Mohd Sapuan Salit, Engineering Sciences

Andrew Forbes, Physics

Maria Cecília de Souza Minayo, Social Sciences

· 2024 TWAS-Siwei Cheng Award: Yaohui Zhao

- TWAS-Mohammad A. Hamdan Award: Ihzen Yengui (2024)
- TWAS-Abdool Karim Award: Sanata Bamba Pakotogo (2023) and announcement of 2025 recipient
- TWAS-Atta-ur-Rahman Award: Bipeen Dahal (2024), and announcement of 2025 recipient

Thursday, 2 October 2025

- TWAS-Samira Omar Innovation for Sustainability Award: Tista Prasai Joshi (2024), and announcement of 2025 recipient
- TWAS-Fayzah M. Al-Kharafi Award (2025), to be announced
- TWAS-CAS Innovation for Sustainability Award (2025), to be announced

Group Photo

11.15-12:15 International Year of Quantum Science and Technology - Special session Lecture by TWAS Apex award winner & TWAS Medalist

Co-chairs:

- Quarraisha Abdool Karim, TWAS President
- Lê Tuân Hoa, Vietnamese Academy of Science and Technology, TWAS Council Member (East and South East Asia)

One Hundred Years of Quantum Mechanics: From Fundamental Science to Technological Breakthroughs

Luiz Davidovich, Federal University of Rio de Janeiro, Brazil

The United Nations has declared 2025 the International Year of Quantum Science and Technology. This initiative marks the hundredth anniversary of a key contribution to science: Werner Heisenberg's groundbreaking paper on the quantum reinterpretation of kinematic and mechanical relationships, published in 1925. In the same year, Austrian physicist Erwin Schrödinger proposed an alternative interpretation, known as the wave picture, which was published in 1926 and became equally fundamental to quantum theory. Together, these contributions sparked a scientific revolution that changed our understanding of the natural world and paved the way for technologies such as the laser, the transistor, magnetic resonance imaging, high-precision atomic clocks that support GPS, light-emitting diodes, and much more.

A second quantum revolution started in the late 20th century as labs around the world gained precise control over individual atoms and photons. This has paved the way for new technologies, including quantum computers, secure communication methods, and ultra-sensitive sensors.

This lecture will revisit the fundamentals of quantum mechanics, review some of its most important current applications, and emphasize the role of Brazilian science in advancing both basic research and technological innovation, as well as some of my own contributions to this evolving field. Finally,

it will consider the opportunities and challenges ahead, as quantum science continues to influence the future of technology, society, and our understanding of the physical world.

12.15-12:45 Closing ceremony

Presentation of the 2027 TWAS General Conference venue
Quarraisha Abdool Karim, TWAS President
Helena B. Nader, President of Brazilian Academy of Sciences

12:45-14.00 Lunch (venue: Queluz)

**Post conference skills building workshops on:
Academic ethics
The two sides of AI in science**

Thursday, 2 October 2025

14.00-15.30 Skills building workshop on ethics

Academic Ethics is the bedrock on which high-quality scientific research is built. It is self-evident that when ethics is compromised, scientific work loses its credibility and value. All scientific organisations, and not least Academies, have a duty to highlight the importance of academic ethics, to set down basic guidelines to be followed consistent with ethics and to act upon evidence of misconduct within their ranks. To this end, TWAS has recently approved a Code of Conduct and a document of investigation procedures for misconduct allegations.

Being ethical is not simply a matter of good intentions. There are specific contexts where our ethics is constantly challenged. For us to rise to expectations, it is essential to be aware of these contexts and subject the possible challenges to detailed exposition and discussion. This interactive workshop will explore three specific angles from which academic ethics is to be viewed, and summarise key aspects of the approved documents.

Members of the TWAS Ethics Committee will present their outlook on the key problems of misinformation, plagiarism and legal issues in academia. This will be followed by a broader perspective on the types of misconduct that are seen in academia today, and appropriate redressal mechanisms. The audience will be invited to participate with questions and comments. By the end of the session, participants will be familiar with the TWAS Code of Conduct and related procedures, and will be better equipped to navigate ethical complexities and promote a culture of responsible scientific conduct.

(10-12 minutes by the Panel of TWAS Ethics Committee members followed by an engaging discussion)

Roula Abdel-Massih, Community Educator Clinical Professor, Central Michigan University, USA, (TYAN EC): *"Fighting Misinformation to Rebuild Trust in Science."*

Claudia Bauzer-Medeiros, Professor, University of Campinas, UNICAMP, Brazil (TWAS Fellow) *"Plagiarism in the Era of AI".*

Emmanuel Kasimbazi, Professor, School of Law, Makerere University, Uganda (TWAS Fellow): *"Ethical and Legal Issues in Scientific Research".*

Sunil Mukhi, Raja Ramanna Chair Professor of Physics, Indian Institute of Science Education and Research, Pune, India (TWAS Fellow): *"Varieties of*

15.30-16.00 *Coffee Break (Louvre IV)*

16.00-17.30 **Skills building workshop: The Two Sides of AI in Science**

Artificial intelligence (AI) is experiencing an unprecedented surge in development and adoption across all fields of science and the humanities, with significant implications for research institutions, organizations, and individual careers. Its impact ranges from enhancing the efficiency, safety, and quality of research to potentially transforming how knowledge is discovered and complex problems are solved. Accelerating research productivity through AI could be one of its most valuable societal and economic applications. To unlock this potential, we need to invest in broad, multidisciplinary collaborations, dedicated public funding, and open access to high-performance computing and research data. Updated curricula, integrative AI training, and greater support for AI tools that use machine learning techniques, including generative AI and open benchmarking platforms, are also essential. Public R&D should foster bold, cross-disciplinary research, build open knowledge networks, and ensure that AI serves global challenges such as those outlined in the UN Sustainable Development Goals (SDGs).

While AI holds transformative promise, its deployment in science should be approached gradually and responsibly. To prevent setbacks like the reproducibility crisis, lack of transparency, and weak methodological standards, careful design and governance are essential. This short seminar will explore how AI can be used in research and will address key questions: Where can AI make the biggest impact? What are the current challenges? And what are the ethical and practical consequences? By examining the motivations behind AI use, the barriers it faces, and its broader implications, the seminar invites scientists, policymakers, and stakeholders to engage with this rapidly evolving frontier of research.

Clécio Roque de Bom, Applied Artificial Intelligence Lab, Brazilian Center of Physics Research (CBPF), Rio de Janeiro

Mohamed Najim (TWAS Fellow), University of Bordeaux, France

Thao Thi Phuong Nguyenn Senior Researcher, Vinmec Research Institute of Stem Cell and Gene Technology, College of Health Sciences, VinUniversity Vietnam and TYAN member

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