Power of Science Diplomacy: Key Insights from 2024 AAAS-TWAS Course on Science Diplomacy

Nassiba Baimatova[a,*], Elisabeth Deus[b]

[a]Center of Physical Chemical Methods of Research and Analysis, Faculty of Chemistry and Chemical Technology, Al-Farabi Kazakh National University, Almaty, Kazakhstan

[b]Deputy Head of the Unit for Departmental Research, Research Coordination and Science Policy Analyses Federal Ministry of Health (BMG), Berlin, Germany

**Corresponding author: baimatova@cfhma.kz*

Introduction

Science diplomacy integrates scientific research with international relations to tackle global challenges. It leverages international scientific collaborations to foster positive diplomatic partnerships, address transboundary issues, and promote peace and sustainable development. Science diplomacy encompasses three primary dimensions: science in diplomacy (using scientific evidence to guide diplomatic negotiations), diplomacy for science (enhancing international scientific cooperation), and science for diplomacy (strengthening diplomatic relationships through scientific collaboration).

In an interconnected world, climate change, pandemics, and resource scarcity require collaborative approaches that transcend national boundaries. Science diplomacy offers a strategic avenue for securing such cooperation, tapping into the collective expertise and resources of the global scientific community. This field enables countries to work together towards common goals by leveraging scientific expertise, accelerating innovation, enhancing research capacity, and developing evidence-based policies contributing to global security and stability.

Science diplomacy fosters dialogue and trust, enabling the resolution of global challenges. It involves scientists working closely with policymakers and diplomats to translate scientific findings into actionable policies and enhance international research cooperation. This collaborative approach serves as a bridge between nations in addressing critical issues such as climate change, public health and technological advances. By integrating scientific insights into policymaking, science diplomacy empowers nations to make informed decisions that benefit the global community and individual countries.

Prioritising science diplomacy is crucial for promoting peace, prosperity, and sustainable development across borders. This collaboration enables countries to pool their knowledge, technology and resources, leading to more effective solutions to transboundary problems. Science diplomacy is vital in fostering collaborative problem-solving and advancing sustainable development.

Promoting the importance of science diplomacy, the 11th annual AAAS-TWAS Course on Science Diplomacy took place in Trieste, Italy, from June 18-20, 2024. Co-organised by The World Academy of Sciences (TWAS) and the American Association for the Advancement of Science (AAAS), the course gathered 20 early-career scientists and policymakers from 11 countries to enhance their skills in science diplomacy.



Participants of the 11th AAAS-TWAS Course on Science Diplomacy (Photo credit: G. Ortolani/TWAS)

These aspiring science diplomats engaged in role-playing simulations designed to develop their active listening, respect and negotiation abilities. Working in pairs – an early-career scientist and a policymaker usually from the same country – participants tackled complex problems through diplomacy, gaining firsthand experience in how science can guide political decisions. Established in 2011, this collaboration between AAAS and TWAS has trained 388 alums from 89 countries since its first program in 2014, with many graduates now advising policymakers on international issues. The course is supported financially by the Swedish International Development Cooperation Agency (Sida) and AAAS, with additional funding from the Organization for Women in Science for the Developing World (OWSD) this year.

Key Takeaways from the Course

During the course, participants engaged in interactive role-playing simulations designed to develop critical diplomatic skills. They honed their abilities of actively listening and immersing themselves in realistic negotiation scenarios, all aimed at fostering transparency and collaboration in international science policy.

Dr Gihan Kamel's experience with the SESAME (Synchrotron Light for Experimental Science and Applications in the Middle East) project, where she works as an Infrared Beamline Principal Scientist, reveals the profound impact of emotions on the art of science diplomacy. This experience serves as a timely reminder that, in pursuing scientific progress, the emotional undercurrents that drive individuals are often overlooked. Hope is a potent force that can mobilise individuals to strive toward a common goal. It ignites passion, fosters collaboration and builds bridges between nations. When infused with a sense of vision, hope inspires people to work together toward a shared objective, transcending boundaries and cultivating a sense of community. In diplomacy and science, there is often a tendency to focus primarily on the technical aspects of work, thereby neglecting the emotional intelligence essential for building trust and forging meaningful relationships. Emotions are integral to the human experience; they form the fabric that weaves collective pursuits together and inspires individuals to strive for greatness. Gihan's discussion of the SESAME project within the current geopolitical environment exemplifies the importance of emotional intelligence in science diplomacy. Acknowledging and harnessing the power of emotions makes it possible to create positive

change. This approach can inspire individuals, build trust, enhance and expand scientific endeavours, and forge lasting bonds that transcend borders and disciplines.

This training tackled complex transboundary issues like water management conflicts and biodiversity preservation challenges, emphasising the need for scientific input in policymaking and cooperative conflict resolution. Participants sharpened their active listening and negotiation skills through exercises addressing real-world issues, such as disputes over transboundary water resources. A fictional scenario involving a river demonstrated the diplomatic complexities of managing shared resources among multiple countries, highlighting the necessity for neutrality and appreciating different negotiation perspectives.

Negotiating water rights among nations sharing transboundary resources poses scientific and diplomatic challenges. Different legal frameworks can cause conflicts over resource allocation and competing interests, complicating the balance of needs, mainly when one nation's requirements affect another's water security. Enhanced data collection on water availability, usage, and quality is essential for informed decision-making and equitable agreements.



Minister Plenipotentiary Giuseppe Pastorelli (on video), Deputy Director General for the Promotion of Italy at the Italian Ministry of Foreign Affairs and International Cooperation, sharing insights with the participants (Photo credit: G. Ortolani/TWAS)

Historical and political tensions can hinder negotiations because long-standing distrust prevents open and productive conversations. Environmental degradation and climate change further complicate discussions by exacerbating water scarcity. Differing national priorities regarding environmental protection versus economic development can lead to disagreements on resource-sharing strategies. Moreover, some countries may need more institutional capacity or resources for effective negotiation, causing imbalances.

Ensuring the long-term sustainability of agreements is a significant challenge, as water resources are finite, and future demands must be anticipated. Establishing robust dispute resolution mechanisms and engaging local communities are crucial for achieving equitable outcomes, although this may require including diverse perspectives and interests in negotiations.

Addressing the challenges of transboundary water resource management necessitates a collaborative approach that integrates diplomacy, scientific expertise, and stakeholder engagement to formulate equitable and sustainable agreements. The simulated scenario provided a unique opportunity to balance technical knowledge with diplomatic insight.



Participants involved in simulated negotiations building on discussions about active listening and transparent negotiation techniques (Photo credit: G. Ortolani/TWAS)

As participants aimed for definitive solutions, they learned that diplomacy often requires compromise and consideration of diverse national interests. Their scientific expertise was instrumental in navigating multifaceted challenges, highlighting the importance of clear communication and adaptability in international discussions.

This experience highlighted that scientists can be valuable assets in diplomacy if they effectively translate scientific knowledge into actionable insights for policymakers. Ultimately, it demonstrated the intricate interplay between science and diplomacy, emphasising the need for interdisciplinary collaboration in addressing global issues.

Conclusions

The AAAS-TWAS course offered practical applications rather than just theoretical knowledge. The diverse group of participants, interactive sessions, and expert-led discussions provided valuable insights and experiences.

This course opened our eyes to a new dimension of impact: the world of science diplomacy. Imagine a scientist sitting at the negotiation table, using their expertise to tackle global challenges alongside diplomats. This is the essence of science diplomacy.

The course presented simulated negotiations around topics such as the transboundary dam project and the conservation of endangered species in a transboundary forest, challenging participants to balance data reliance with the need for compromise and political navigation.

Initially, scientists' instinct was to seek definitive solutions, a natural reflex. However, diplomacy requires understanding, compromise, and navigating political landscapes. This is where authentic learning begins. The scientific background proved valuable in analysing impacts, translating technical data and suggesting mitigation strategies. The key takeaway was the importance of effective communication, bridging the gap between scientific research and policy by translating complex knowledge into actionable insights for policymakers.

This enlightening course highlighted the challenges and opportunities at the intersection of science and diplomacy. It showed how scientists could be powerful assets on the international stage when they effectively communicate their expertise. This skill is essential for addressing today's complex global challenges, from climate change to resource management. Science diplomacy offers a powerful tool for tackling these issues and building a sustainable future for all.