POLICY BRIEF

SCIENCE DIPLOMACY CAPACITY BUILDING

CURRENT STATE AND FUTURE DIRECTIONS AS SEEN BY THE EU SCIENCE DIPLOMACY ALLIANCE

Authors: Katharina Höne, Maria Josten, Simone Arnaldi, Paul Berkman, Theodota Lagouri, Alessandro Lombardo, Jean-Christophe Mauduit, Peter F. McGrath, Ralf Mitschke, Christine Nardini

Executive Summary

The EU Science Diplomacy Alliance (EU SD Alliance) is a collaborative initiative launched by the Horizon 2020 science diplomacy projects S4D4C, InsSciDE and EL-CSID. The Alliance aims at sustaining the dialogue on EU science diplomacy and cultivating new opportunities to progress theory and practice of science diplomacy in Europe.

This position paper summarises the current practice and thinking of Alliance members on science diplomacy capacity building. It is based on a qualitative and quantitative data collection via an online survey among the EU SD Alliance members which was conducted between 7th and 26th of February 2024. The invitation was sent to all members and global networking partners of the Alliance by email (in total 44 recipients). The overall response rate was 55%.

This document is therefore not a comprehensive overview of science diplomacy capacity building in general, but specifically sheds light on the current perspectives of EU SD Alliance members and partners. The following text is composed of answers received through the survey. Due to the nature of this process, it is important to note that not all points necessarily reflect the opinion of all EU SD Alliance members and partners.

The main findings can be summarised along the following three key questions:

1. Why do we need a discussion on "Capacity Building in Science Diplomacy"?
- to further develop tools for a variety of actors to engage in science diplomacy (RESEARCH)
- to ensure a better understanding among the worlds of science and diplomacy (EXCHANGE)
- to raise awareness of the importance of science diplomacy (VISIBILITY)
- to improve existing capacity building efforts and develop new ones where needed (INNOVATION)

2. How did capacity building actions develop in recent years?
- Increased demand of science diplomacy actions at EU and national levels
- Increased number of science diplomacy publications
- Increased number of training activities at local, national and EU levels

3. What are current trends with strong influences in Science Diplomacy which have been observed recently?
- Technology developments: digital and green transition, emerging technologies, gene editing and mRNA vaccines
- An increased relevance of values and principle in international R&D partnerships, a growth in directing science activities towards the achievement of explicit policy/normative goals and/or to meet social standards and requirements, a focus on technological sovereignty, research security, competition etc.
- Inclusion: calls for the increased role of civil society in Science Diplomacy

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1.1 Introduction

In an era of rapid scientific advancements and global challenges, building robust capacity in science diplomacy has become crucial. Science diplomacy serves as a bridge between the scientific community and diplomatic entities, promoting a deeper understanding and encouraging collaboration and mutual respect. Enhanced dialogue and exchange can lead to better informed policy decisions and a greater appreciation of the role science plays in addressing global issues.

This position paper highlights the importance of fostering a comprehensive dialogue on "Capacity Building in Science Diplomacy" in building such a dialogue and exchange, while providing an overview of recent developments and emerging trends in this essential field.

The primary goal of capacity building in science diplomacy is to develop and enhance the tools necessary for effective practice. This requires continuous research to refine existing tools and create new methodologies that better support diplomatic efforts.

Raising awareness about the significance of science diplomacy is another key aspect of capacity building. By showcasing successful examples and the impact of science diplomacy, its visibility can be elevated on the global stage, attracting more stakeholders to invest in and support these initiatives. Effective capacity building efforts must also innovate and develop new approaches where needed, identifying gaps in current frameworks and addressing emerging challenges to keep science diplomacy relevant and capable of tackling future issues.

Recent years have seen significant developments in capacity building for science diplomacy at both the European Union (EU) and national levels, reflecting increased demand and strategic interest. Numerous initiatives aim to strengthen the infrastructure and support for science diplomacy. The surge in publications and training activities highlights the growing recognition of the need for dedicated education and professional development in this area, equipping scientists, diplomats, and other stakeholders with the skills and knowledge to engage effectively.

Key trends shaping science diplomacy include global challenges such as climate change and public health, the rise of new technologies like AI and quantum computing, and a strategic emphasis on aligning scientific endeavours with policy goals such as technological sovereignty and research security. Additionally, the role of civil society is expanding, emphasising the need for inclusive practices that consider diverse perspectives. Furethermore, the organised scientific diasporas plays an important role in shaping science diplomacy on a global scale.

Inclusion is a fundamental component of effective science diplomacy. By identifying patterns and guiding decision-making, science diplomacy promotes an inclusive approach that builds common interests among partners with different perpectives, advancing sustainable development in our interconnected world. This policy paper emphasises the critical need for continuous capacity building to

ensure that science diplomacy can effectively tackle the global challenges and opportunities for sustainable development in our time.

To effectively address capacity building in science diplomacy, several key questions arise: What do we mean by 'capacity-building' activities in the field of Science Diplomacy and which formats have been used? What do different target groups need? Which are the most relevant topics? Which formats and methods are most efficient and effective?

1.2 The Term "Capacity Building": An ambiguous buzzword in the field of science diplomacy?

> *Key takeaway: The notion of capacity building refers to a broad array of activities which nonetheless share the goal of strengthening the ability to deploy science diplomacy.*

Based on findings of the survey, this section describes the broad understanding of science diplomacy capacity development shared by members of the EU SD Alliance. It also gives an overview of various capacity building formats used by EU SD Alliance members.

1.2.1 What do we mean by 'capacity-building' activities in the field of science diplomacy?

Capacity building in the field of science diplomacy refers to the development of knowledge and skills that enables countries, organisations, and individuals to engage effectively at the intersection of science and international relations. These activities aim to strengthen the role of science in informing and supporting foreign policy and international collaboration, addressing global challenges, fostering peace and sustainable development and to adequately use diplomacy to support the scientific endeavour.

Focusing on individuals, the development of skills for the next-generation of science diplomats aims to support informed decision-making across the spectrum of subnational, national, and international jurisdictions. It includes individual training on how to co-create tailor-made solutions with stakeholders from specific fields at the intersection of science and diplomacy.

In broader terms, capacity building includes actions that create or reinforce the ability of organisations to deploy science diplomacy collaboratively. Such capacity building supports the management, working methods, and culture of an organisation in order to enable the organisation to address a certain challenge or reach a specific goal. It can also be extended to a larger set of actors at, for example, the regional level.

In 2010, the Royal Society and the American Association for the Advancement of Science (AAAS) have coined a widely used theoretical framework that describes three main types of activities, also relevant for capacity building in this field:

- "Science in diplomacy": Capacity building in the field of science diplomacy aims to harness scientific research for diplomatic purposes.
- "Diplomacy for science": Diplomats can be trained how to facilitate international scientific cooperation.
- "Science for diplomacy": The use of science as a tool ("soft power") to advance diplomatic objectives, e.g. for building bridges between nations and creating good will on which diplomatic relations can be built, is one main topic in capacity building actions.

Generally, the EU SD Alliance sees the need for a comprehensive conceptual framework for science diplomacy capacity building, considering the three pillars above.

1.2.2 Which formats have been used in science diplomacy capacity building?

Capacity building in science diplomacy has broadened substantially over recent years, both in terms of scope and depth. There has also been a tendency towards professionalisation and continuity over time. This section gives an overview of the various formats that science diplomacy capacity building has taken on.

Community building & networking

Conferences and symposia facilitate the exchange of ideas and best practices among science diplomats, researchers, and practitioners from different countries and disciplines. Professional associations and societies dedicated to science diplomacy, international scientific collaboration, epistemic communities etc., contribute strongly to building communities and networks. Science festivals and public talks are relevant formats which aim to raise public awareness about the role of science in addressing global challenges and the importance of Science Diplomacy. Enhancing the capacity of journalists to cover science-related topics in international affairs contributes to promoting a better understanding among the general public. Some developing platforms for continuous dialogue and cooperation between scientific communities and diplomatic communities, also referred to as Cross-Sectoral Collaboration Mechanisms (e.g. the "Science Diplomacy Network" for the mutual exchange of scientific information between countries with diplomatic representation in Spain) have been established as a part of the awareness raising in this field.

Examples of various workshops and conferences delivered by members of the EU SD Alliance include (see also EU SD Alliance´s website):

- 2023: Global Indigenous Youth Summit on Climate Change (GIYSCC)
- 2023: Side Event at the High North Dialogue on "Future of the Arctic Cooperation in the Context of New Geopolitical Situation in the Region"
- 2023: Norway-EU Science Diplomacy Network field trip to Svalbard and Tromsø
- 2023: The Past, Present & Future of the EU Science Diplomacy Alliance
- 2024: Ocean Science Diplomacy Event "Ocean Futures 2030: marine genetic resources and global benefit sharing" at the Ocean Decade Conference

Networking activities of EU SD Alliance members also include:

- Networking with political stakeholders by more closely engaging with embassy contacts and proactively reaching out to them at scientific conferences bringing together researchers and political stakeholders.
- Engaging in university alliances and consortia to foster knowledge exchange, scientific collaboration, and transdisciplinary work, and to help them gain visibility at different levels (especially local, national, and European).
- Mentor-Mentee Meetings organised by the Society of Spanish Researchers in the UK (SRUK/CERU)
- EU SD Alliance task forces and thematic entry points

Research about science diplomacy developments

Think tanks, research institutes, and universities conduct research on science diplomacy. They offer policy recommendations and strategic advice to governments and international organisations.

Members of the EU SD Alliance are involved in a number of research activities concerning Science Diplomacy as a topic and, on a meta-level, science diplomacy capacity building. A case in point is Science Diplomacy. Foundations and Practice by Simone Arnaldi of the University of Trieste and the book series Informed Decisionmaking for Sustainability edited by Paul Berkman. A report by the University of Trieste looked at Science Diplomacy in CEI Member States, in order to identify potential targets for Science Diplomacy awareness raising and training activities and to map stakeholders for policy actions in the countries of the Central European Initiative (CEI). Furthermore, the Marie Curie Alumni Association (MCAA) published a dedicated newsletter on Science Diplomacy (Newsletter 2022), where invited speakers focused on specific topics.

Education

Universities and academic institutions offer specialised graduate programmes in science diplomacy, which combine studies in international relations, science policy, and diplomacy. Short courses are offered by a number of institutions. These can be aimed at students or early-career researchers.

Science diplomacy has become part of a number of BA and MA programmes. For example, a science diplomacy course has been running since 2022 at the Department of Science, Technology, Engineering and Public Policy of University College London, an EU SD Alliance member. At the doctoral level, another EU SD Alliance member, the Politecnico di Milano, offers an introductory course to PhD students from STEM disciplines. This highlights the trend and importance of including Science Diplomacy topics in the formal education paths of relevant disciplines.

In contrast, CatalySD is an ERASMUS+ project carried out by Hungarian partners and involving Romanian and Slovenian universities alongside EU SD Alliance member Symlog that aims to build the capacity to teach science diplomacy.

Training

Workshops and courses in the field are designed to educate diplomats, scientists, and policy-makers on the importance of science in international affairs, providing them with the necessary tools to incorporate scientific knowledge into policy-making processes. For example, EU SD Alliance members deliver bespoke trainings in science diplomacy to several diplomatic academies, targeted to mid-

career diplomats or young diplomats in training. Online learning platforms, e-learning courses, and webinars make science diplomacy more accessible to a global audience, covering topics like climate change, health diplomacy, and cyber security (e.g. S4D4C interactive webinar series). International exchange programmes offer scientists and diplomats the opportunity to gain experience in foreign policy environments or research institutions abroad, fostering cross-cultural understanding and cooperation. Young leaders' programmes and initiatives aim to cultivate the next generation of science diplomats at an early stage in their professional development. Nowadays, training e.g. in the field of vocational education, institutional and strategy development, communication and negotiation skills are strongly required by organisations in different thematic fields dealing with international R&D collaboration.

Science Diplomacy training can be tailored for teams, institutions or a mixed target group. For example, recent annual summer courses provided by the American Association for the Advancement of Science and The World Academy of Sciences (AAAS and TWAS) now 'pair' early-career researchers with policymakers, who attend the course together. Furthermore, training can be organised for different scientific backgrounds, research areas, and different degree of experiences. Training can take place online, onsite, and in hybrid format. Examples from EU SD Alliance members include:

- EU SD Alliance: S4D4C European Science Diplomacy Online Course (online)
- DLR Projektträger (DLR Project Management Agency): Co-creation workshop for Institute Pasteur (onsite)
- DLR Projektträger (DLR Project Management Agency) and ZSI Centre for Social Innovation: Co-creation workshops for COST (onsite and hybrid)
- Chair of Science, Technology and Gender Studies at Friedrich-Alexander-Universität Erlangen-Nürnberg (Germany) in cooperation with Jean Monnet Chair on Technology and Science Diplomacy for European Sovereignty (TechDip) at Internacional - Universidad Politécnica de Madrid (Spain): introductory workshop (onsite and online)
- Fundación Española para la Ciencia y Tecnología (FECYT): various training workshops (onsite) and online training modules
- Society of Spanish Researchers in the UK (SRUK/CERU): training on science communication (onsite)
- The World Academy of Sciences (TWAS): various training workshops, including a summer course in collaboration with AAAS (typically in-person)
- United Nations Institute for Training and Research (UNITAR): various trainings offered since 2015
- The Marie Curie Alumni Association (MCAA): Annual Flagship event in 2023 dedicated to Science Diplomacy (Youtube Video), Around the World Webinar and 10+ more events/sessions on Science Diplomacy

Institutional capacity-building

In the last years, institutional measures in the field were established through existing or newly created organisational structures or instruments. Various European countries appointed science advisers within their foreign ministries or embassies to integrate scientific expertise into diplomatic strategies and decision-making processes. Within ministries of foreign affairs or national science academies, science diplomacy units have been built with the aim to

institutionalise the practice and principles of science diplomacy. The implementation of the topic "science diplomacy" into the training of career diplomats is currently a field of high interest. Some EU SD Alliance members have already contributed to the development of concrete measures in this term, e.g. via developing science advice at the Embassy of Portugal in the United Kingdom. In October 2024, the International Institute for Applied Systems Analyses (IIASA) announced a new initiative to support international decision-making and cooperation on global policy challenges that require deep understanding of complex natural and social systems: the IIASA Raiffa Center for Science Diplomacy.

1.3 Science Diplomacy: Required knowledge and relevant skills

> *Key takeaway: Capacity building in science diplomacy needs to recognize the relevance of different perspectives. There is no one-size-fits-all approach.*

This section looks at the needs of different target groups and lists relevant topics for science diplomacy capacity building. The section also focuses on efficient and effective formats and methods of capacity building, drawing on examples of capacity building efforts by members of the EU SD Alliance. The answers to the three questions below are not the result of an empirical research, but opinions collected within the EU SD Alliance survey and from the authors listed at the beginning of this paper.

1.3.1 What do the different target groups need?

From a diplomatic perspective, there is a need to support diplomats in understanding and evaluating the achievements of science and technology (S&T) as well as to value the opportunities and risks associated with S&T in the frame of the EU overall policy, with special regard to the global challenges. Diplomats and policy-makers should be encouraged and invited to spend time within research organisations involved in major scientific activities (e.g. by 'shadowing' a scientist for a short period of time. This would create further awareness of the importance of science advice and the benefits of science diplomacy. It would also foster a better understanding of the scientific process as well as its possibilities and limitations.

From the scientific perspective, researchers must learn how to present and explain their findings in a succinct manner for decision-makers in diplomatic context, as well as how to distil scientific outcomes into policy advice and recommendations. Beyond the added value for diplomatic and policy processes, this will also improve their perception of the value of their work for policy.

Furthermore, scientists need a better understanding of current strategies and policies of international organisations and their associated processes. They also need to understand the political and legal limits of international cooperation. Finally, scientists need to be aware of (unconscious) bias and to overcome assumptions on the neutrality of science, to become credible and reliable partners of diplomats coping with geopolitical constraints.

For both perspectives, capacity building activities deserve dedicated dialogue opportunities to better understand each other and the particular language used in these two "worlds". Scientists and diplomats should be aware of the importance and instruments in the field of science diplomacy. The existing instruments can be leveraged to ensure the continuous collaboration among two groups. The MSCA has secondment opportunities, where a researcher can spend time in another legal entity, both part of the doctoral and post-doctoral training. In addition, the COST Action: Short term Scientific Missions (STSM) could be another such opportunity for researchers and diplomats. Ensuring awareness of ethical issues in science and technology (such as role of Artificial Intelligence) and understanding the potential influence of science diplomacy in determining social and environmental impact are crucial. Overall, science diplomacy should be elaborated as a scalable skill that involves lifelong learning with personal-to-planetary relevance.

1.3.2 Which are the most relevant topics?

The following clusters of topics are of high relevance for capacity building:

- what is science diplomacy (theory, definitions, history, etc.);
- concrete examples of science diplomacy "in action" (case studies);
- how to incorporate the concepts of science diplomacy in the approaches/ working practices (as well in the mindsets) of the beneficiaries of such science diplomacy capacity building.

Moreover, these "activities" should support a European "community of practice" composed of practitioners and other stakeholders interested in the development and use of science diplomacy.

Definition: current developments

The most relevant topic in science diplomacy capacity building activities is related to current developments and changes in the understanding of science diplomacy. In the last years, due to geopolitical developments, a discussion on the limits of science diplomacy approaches has also become relevant. The various interpretations of science diplomacy are interesting to note, but less important in current capacity building actions. There is an overall sense that the community needs to move from the question "What is science diplomacy?" towards "How does it work?".

Networks and stakeholders: roles and possible participation

From the perspective of the EU SD Alliance, information on networks and stakeholders at the national and EU levels plays a crucial role in science diplomacy training. Information about further actions at the international level is also relevant. Less relevant are lessons, trainings and/or general information which describe local or regional (other than the EU) stakeholders and networks.

Approaches: objectives and instruments

In the field of capacity building the EU SD Alliance implements mostly activities for European and national stakeholders. This target group requires primarily information about European and national approaches. Examples of international science diplomacy instruments are partly included in capacity building actions as well. Local and regional science diplomacy approaches are less relevant, at least for the EU SD Alliance target group.

Skills: strategic thinking, communication and negotiation

The main target group of the EU SD Alliance are scientists. In this context, the major soft skills which have to be trained are communication skills (e.g. storytelling) of scientific results and their implications for the geopolitical realm, as well as strategic development methods. Negotiation skills might be included in training activities as well. Additionally, training on how to formulate and present science advice, including transdisciplinary approaches and public diplomacy, could contribute to building a suitable set of necessary skills.

Emerging topics: global challenges and geopolitics

A shift in societal priorities and geopolitical context has also led to certain topics becoming more and more relevant to be included in current science diplomacy capacity building. The following topics reflect the changing needs of science diplomacy capacity building:

- Focus on global challenges and the UN Sustainable Development Goals
- Cooperation with the Global South
- Specific topics: Climate change, Digitalisation and Artificial Intelligence, gender, environment, big infrastructures, global commons, and food security, Genetic Engineering
- Science Diplomacy and avoidance of conflict, conflict resolution and peacebuilding
- Innovation and entrepreneurship, innovation networks
- Research security
- Academic freedom
- Collaboration with non-like-minded countries as well as with states which have an intensive exchange with non-like-minded countries

Evaluation and Monitoring: actions to measure and improve impact

Impact assessment of science diplomacy activities, which would greatly enrich policy planning as well as empirical and theoretical debate, is almost absent today. A Theory of Change approach to planning and evaluation is increasingly being considered essential practice within social development. It can also be used to evaluate science diplomacy activities in complex organisations and programmes. Multiple partners could be perfectly involved in the evaluation actions, as they enable a shared understanding of how different approaches and possible changes happen as well as which concrete role a programme or an organisation has in enhancing science diplomacy development.

1.3.3 Which methods are very useful?

Different training methods are used depending on participants' experience levels. Beginners from both worlds, diplomats and scientists, often appreciate learning the basics and history of science diplomacy. As participants become more experienced, they tend to be more interested in advanced topics, e.g. scientists are interested in negotiation techniques, diplomats aim to learn how to better understand and effectively communicate S&T topics.

The EU SD Alliance members recommend embedding lectures carefully in a participative context. Hands on exercises (e.g. on how to write policy briefs) as well as group project work are very much welcome. Co-creation methods are very helpful to learn from all the participants, with their different backgrounds and experiences.

Using case studies helps learners to put knowledge into practice. Various topics offer excellent case studies, especially in the climate change - peace - security nexus.

Interaction

Effective methods to increase interactivity include breakout group activities, role-playing exercises, and simulated negotiations. Most trainees enter capacity building in science diplomacy with the expectation of some form of interactivity. A co-creation mindset, which allows for all participants to contribute to the learning journey and to collaboratively produce training outcomes, provides for strong interactivity. Simulation exercises allow diplomats and policy-makers to step into the shoes of scientists and vice versa.

Interdisciplinarity

A great example of fostering interdisciplinary exchanges as part of capacity building is the AAAS-TWAS methodology. For the summer programme an early-career scientist and a policy-maker are paired. One aim of this methodology is to spur longer term collaboration between the policymaking and scientific communities on science-based transnational issues.

Adaptation of methods to the type of educational activity

Training methods should be tailored to the audience/target group. For students, role-playing exercises could be very useful. Scientists and researchers are also willing to delve into science diplomacy exercises. On the contrary, these methods may be less effective with career diplomats or international civil servants.

1.4 Recommended Actions: Joint efforts for a better science diplomacy future

> *Key takeaway: Science diplomacy capacity building is best understood as a multi-stakeholder endeavour, promoting lifelong learning with personal-to-planetary relevance.*

The main recommendations for future action can be summarised into the following categories:

Research: Detailed reflections on the evolution, nature and concrete benefits of sustainable development and its implementation in different areas of innovation, technology and international scientific cooperation and exchange. In particular, the analysis of the non-European history and practices of science diplomacy is crucial in a multipolar world.

International Collaboration: Enhance international co-operation by taking part in cross border research and education project. For example, the MSCA offers opportunities to apply for Doctoral Networking among the Member States and Associated countries to Horizon Europe. Such activities can advance the current research, but also provide education to the next general science diplomats.

Education: Mapping of available programmes to lay the foundation for long-term Science Diplomacy education, its further development and popularisation. In

addition, cooperation with other organisations such as the UN, the African Union and other private and public organisations should be promoted.

Training: In order to use science diplomacy as an effective soft power tool for the benefit of the EU, national governments and embassies as well as diplomatic institutions, universities and research organisations must not only recognise the importance of the science diplomacy framework, but also the need for thorough and well-rounded science diplomacy training. This could be done through the central publication or through funding activities such as incentives, young leader programmes, training for junior staff and internships.

Networking: Building on the connective strength of EU SD Alliance, the establishment of a networking centre in Europe, corresponding platforms and the target group-related exchange of knowledge should be promoted. Use the international networks and Scientific Diaspora to exchange ideas and best practices.

Legal framework: Conclude formal agreements between countries and/or organisations to cooperate and develop sustainable processes to build capacity for sustainable development. Creation of an EU SD Advisory Mechanism which would develop a framework akin to the Model of EU SAM (Science Advisory Mechanism), comprising Science Diplomacy experts to offer guidance and synthesis of recommendations in response to complex EU Science Diplomacy requests and cases.

Civil society: Increasing public visibility by increasing the capacity of journalists to report on science diplomacy-related issues in international affairs, promoting better understanding among the general and professional public and ensuring understanding of the role of science diplomacy in solving global challenges.

Funding: Active support of science diplomacy measures and projects. A successful example of this is the EU-funded project CONNECTS-UK (involving the Society of Spanish Researchers in the UK), which brings together the EU scientific diaspora in the UK to foster and which now is an important stakeholder in the EU-UK scientific relations. Funding supports for projects, but also specific support to individual researchers and diplomats would be essential.

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www.science-diplomacy.eu

contact@science-diplomacy.eu

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