

# Executive summary

We are in an era of disruption. The geopolitical context is increasingly adversarial, power is more widely distributed, and relationships among leading powers have become more competitive. The global scientific and technological landscape is being transformed and has made science and technology even more critical to national governments for economic growth and international competitiveness. Intertwined with this disruption are environmental challenges including climate change and biodiversity loss that continue to pose a significant threat to life on our planet. In this time of change and uncertainty, we need a framework on the practice of science diplomacy that recognises the world for what it is, that can be used as a tool for state and non-state actors, and that enables practitioners, from diplomats to industrial leaders, to address the challenges and even seize the opportunities of a disrupted world.

In 2010, the Royal Society and the American Association for the Advancement of Science (AAAS) published *New Frontiers in Science Diplomacy*, a report which outlined a framework for science diplomacy consisting of three dimensions: ‘science in diplomacy’, ‘diplomacy for science’, and ‘science for diplomacy’. This report continues to be widely cited and discussed.

However, as the world becomes more divided and complex, and as the need for effective science diplomacy grows, it is necessary to ensure that the conceptual framework for science diplomacy facilitates its practical application. A science diplomacy framework should focus on how science and diplomacy engage. To do that, we propose a simplified framework that is constructed around the two dimensions of interaction between science and diplomacy.

## **Two dimension science diplomacy framework**

### **Science impacting diplomacy**

The different ways that science interacts with diplomatic objectives.

### **Diplomacy impacting science**

The ways that diplomacy interacts and engages with the scientific enterprise.

These two dimensions of science diplomacy do not mean that there are only two ways for science and diplomacy to engage with each other. Instead, they provide a framework that incorporates the multiple ways for science to interact with diplomacy and for diplomacy to interact with science. AAAS and the Royal Society intend that, in simplifying the framework, we are creating a more flexible one that can adapt to the pressures of the present and the future. In developing this new framework three key points also emerged in how science diplomacy is practiced.

## **Science diplomacy is an important tool for the conduct of international relations**

Scientists aim to obtain and hopefully apply new knowledge about the world, while the practice of diplomacy will always involve the pursuit of national and/or institutional interests. Many practical examples demonstrate how these worlds, when their interests are aligned, can work together to great effect, from climate assessments to the construction and operation of large infrastructure. The 2010 report was framed mostly around positive interactions such as these, which can lead to the notion that science diplomacy is always positive and/or is a tool in the interest of the global good. However, this is not always the case. Rather, science diplomacy is a tool that is used to achieve a nation or organisation’s diplomatic objectives, and those objectives can be perceived as positive or negative.

### Science diplomacy is increasingly used by non-state actors

Those using science diplomacy as a tool to achieve their national and international objectives are typically, but not exclusively, diplomats representing their national governments. In recent years, there has been an increase in non-state actors, particularly global technology companies, using science diplomacy to conduct their own equivalent of ‘statecraft’ in support of their company’s objectives, which may be distinct from those of any national government.

### Disruption demands science diplomacy

Societies are being rapidly upended by an array of extraordinary science, engineering, and technological advances. Advances in artificial intelligence (AI) are evolving faster than regulatory and governance regimes can keep pace. A small number of huge multinational companies that develop, manufacture and supply these highly advanced technologies are increasingly becoming diplomatic actors in their own right.

The open system of international scientific collaboration is being exploited to strengthen some national military capabilities, leading to heightened concerns about research security. Previously ungoverned spaces – for example, the deep oceans, the poles, the moon, and inner and outer space – which were once considered largely as the domain of scientists due to their inaccessibility, are now much more accessible and thus subject to political contestation.

Further, there has been limited progress on preventing, mitigating, and adapting to global challenges, including climate change and biodiversity loss, as well as continuing high levels of global poverty. More than eight billion people now inhabit the Earth, and the greatest threats facing present and future generations remain largely unsolved.

We are living in a pivotal moment, witnessing the convergence of a number of developments that pose opportunities and challenges alike. To face these challenges and uncertainties, the tool of science diplomacy will play a more important role for both state and non-state actors.

### Consultations: overarching themes

The development of this report was informed by a wide variety of stakeholders who provided input at roundtables, meetings and international events, and through a special issue of *Science & Diplomacy* titled *Science Diplomacy – 15 Years On*<sup>1</sup>. This consultation lasted over a year, and AAAS and the Royal Society would like to thank all those who participated in these events and provided invaluable perspectives. The key messages from those consultations which are reflected in this report, are the following.

- **Science is ever more central to foreign policy, and vice versa.** Science has been increasingly integrated into many sectors across society (including defence, trade, law, and intelligence), which makes the interaction between science and diplomacy more important than ever. National governments and multilateral organisations, such as the United Nations (UN), the G7 and the G20 are increasingly incorporating science into their advisory mechanisms.
- **Scientific and diplomatic interests may not coincide.** Scientists seek knowledge, while diplomats pursue the interest of their nation (or other entity). There are many examples of scientific and diplomatic interests conflicting. There are many examples of conflicting scientific and diplomatic interests. For instance, treaties governing the global commons that theoretically safeguard them for scientific research are increasingly coming into conflict with sovereign national interests.

- **Scientific values once thought universal are now being re-examined.** The notion that there are universal scientific values, shared by all countries, has been called into question, which has implications for the potential practices of international scientific collaboration and science diplomacy.
- **There is a need for awareness of national security risks in scientific collaborations.** Scientists must carefully scrutinise the intentions of potential research partners and their networks, while policy makers, who are increasingly concerned with research security, should be as open as possible about the threats they seek to avoid.
- **Clarity and transparency are needed regarding the roles and responsibilities of practitioners of science diplomacy.** Scientists and diplomats operating in the sphere where their two fields meet should be clear on their respective roles and responsibilities for the benefit of their working relationship, as well as for building public trust.
- **Science and science advice face increased scrutiny.** Trust in science and the use of evidence in policymaking is under renewed attack across the world. Science advisers must ensure that their advice to policymakers is driven by fair and robust assessments of the best available evidence, and accompanied by clarity about what is not known and what is uncertain. Science diplomacy is distinct from science advice but often incorporates it.
- **Non-state actors play increasingly important roles.** Major companies, 'tech titans', and philanthropic organisations have growing scientific, economic, and political influence, in some cases as much as individual nations. These non-state actors engage increasingly in science diplomacy and the use of 'soft power' to promote their own interests.
- **There is a need for inclusive international scientific collaboration.** Scientists from emerging scientific countries and/or early career researchers are advocating for more equitable partnerships in global research collaborations. They and others like them are critical in ensuring there is a wider diversity of voices in science diplomacy, as well as offering important challenges in terms of how best to recognise and reconcile different views and values.