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# **The Hunt for Science Diplomacy: Practice and Perceptions in the Horizon 2020 Scientific Community**

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## Introduction

There are many illustrations from recent history of what we now call science diplomacy; for example, where nations have advanced scientific collaboration to build relationships and smooth hostilities in the period post World War II. However, compared to other fields such as cultural diplomacy, academics and policy makers have only recently begun to investigate and develop frameworks and tools for 'science diplomacy'. We are still in the process of testing the limits of the concept, which can most readily be explained as actions that exist at the interface of scientific practice and foreign policy.

Science is often considered alongside culture as a tool of soft power (Nye, 1990) but there are several critical differences between the two fields and they should not be given a false equivalence as a diplomatic tool. Cultural practice and knowledge are by their very nature fundamentally linked to a particular nation or group; it can be shared without diminution in value and is very difficult to lose. Science knowledge and practices on the other hand, can be transferred, sold or stolen, and used for the economic benefit or advancement of others. Intellectual property has independent economic value and must be protected; its loss can diminish competitiveness, influence and lead to conflict between states (as we see in contemporary US, China relations). Its application leads to tradeable technology and goods and hard economic advantage. Taking liberties with Nye's (1990) classic terminology, if cultural diplomacy is the runny egg of soft power, then scientific diplomacy is much harder boiled.

The first broadly accepted taxonomy for science diplomacy was proposed in 2009 by the American Association for the Advancement of Science and the British Royal Society; "science in diplomacy", "diplomacy for science" and "science for diplomacy" (Royal Society, 2010). Recently this taxonomy has been contested as primarily useful for academic and theoretical discussion and potentially limiting in understanding the evolving and multifaceted practice of science diplomacy. Writing as practitioners of science diplomacy, Gluckman et al. (2017) propose a more outcome-oriented framing;

- Actions designed to directly advance a country's national needs
- Actions designed to address cross border interests
- Actions primarily designed to meet global needs and challenges.

This reframing to focus on specific objectives has proved helpful when considering the practical implications for science and is consistent with the Commission's continued refinement of the framework programmes towards a mission focus. Nevertheless, despite increased political will and attention to the topic, the extent to which 'science diplomacy' is a concept understood by the scientists leading major international collaborations remains unclear. Science diplomacy may be easy to spot in the rear-view mirror, but without engagement of the scientific community, how to harness its potential for the future becomes the key policy question for the future.

Today, European funding programmes and international collaboration are for many scientists nothing to get excited about. Indeed, the Commission's first framework programme was established nearly 40 years ago. A generation commenced their careers in an environment where European collaboration is the norm, rather than the exception and where international networks are established early, through an Erasmus or other exchange program. This is evidence of successful science diplomacy, but it should not be assumed its effectiveness is understood by all beneficiaries. This study investigates whether, and to what extent, science diplomacy is understood within the European scientific community and explores the potential for this community to have an active role in furthering the EU's diplomatic objectives.

Research for this paper focused on the community of Horizon 2020 project and scientific coordinators. Horizon 2020 is a critical investment in EU science and innovation, its reach and impact clearly extending to the fields of international relations and diplomacy. With this in mind, the study

aims to determine in practical terms how scientists leading H2020 science projects understand and engage with the concept of 'science diplomacy'. Including;

- Overall level of familiarity with the concept and attributes of science diplomacy
- How (consciously or not) science diplomacy intersects with the project and their responsibilities
- Challenges and barriers to H2020 projects reaching their full diplomatic potential.

These results will inform how to manage and deliver the expectations and aspirations of EU and member state stakeholders in H2020 science projects and deliver broader learning relevant to the practice of science diplomacy.

This report is divided into four parts. First, it outlines the methodology and approach, part two discusses the key findings and identify some general themes relevant to science diplomacy. The third part undertakes the analysis of these findings and part four provides some recommendations for the activation of science diplomacy within the science community.

## **Methodology and Approach**

The approach was framed by two assumptions; first, that most coordinators would be unfamiliar with the concepts of science diplomacy and second, they would be focused on scientific deliverables rather than any diplomatic implications for their projects. From this starting point, we sought evidence of scientific diplomacy amongst the H2020 community.

The initial proposal was for a three-stage qualitative and quantitative research process, the core of which was a broad quantitative evaluation of coordinators across the H2020 program. Unfortunately, for privacy reasons, coordinator contact details were not released by the Commission. As there are currently well over 10,000 active projects being undertaken within the H2020 framework, manual gathering of this information made the logistics of a broad-based quantitative study unfeasible. Accordingly, the methodology was adapted to focus on an in depth qualitative investigation.

Sixteen semi-structured in-depth interviews were conducted with H2020 coordinators, between February and April 2018. Each interview was approximately one hour in duration, allowing a substantial discussion pertinent to the research topic. In selecting project coordinators to approach for an interview, the following criteria were applied:

- A topic with implications and applications beyond the EU
- A broad consortium, ideally with country participation beyond the EU
- The deliverables include scientific or technical outcomes
- Commencement date prior to 1 June 2017
- A significant investment in EU funds (over 2 million Euros)

These criteria were intended to direct us to projects where it was relatively more likely (and possibly necessary) that an understanding or practice of science as a diplomatic tool would exist.

It is perhaps useful to clarify what is meant by the term 'science' for the purpose of this study. A spectrum of scientific activity exists from basic science to market readiness, and at a certain point that activity could be called innovation. For those engaged in basic materials science, for example, the impact of their research may not be seen in society for decades. Indeed, the applications envisaged today may be entirely different to what is ultimately delivered to market. But as we approach market or societal application, the projects engage very different stakeholders and raise new diplomatic issues and opportunities, many aligned with economic and trade interests. This study

considers projects across this spectrum, with its focus being the scientist, rather than the project output.

*Sample Characteristics*

The intention of this study was to reach projects covering a range of research fields and technical readiness levels (TRL), to avoid either of these factors becoming sources of bias. A good diversity of projects was achieved.

<b>Geographic Diversity</b>	<b>Project Focus Areas</b>	<b>Other Variables</b>
Belgium – 8	Border Security - 1	Range of TRL; basic science to pilot programmes
Germany – 2	Circular Economy - 3	Consortium profile; mix of levels of industry involvement
Italy – 2	Climate - 2	One third female coordinators
Switzerland – 1	Energy Security - 2	
Czech Republic – 1	Food Security - 3	
Sweden - 1	Emerging Technologies - 2	
UK – 1	Health/Pandemics - 3	

As might be expected given the nature of the H2020 program, the project coordinators interviewed are leading diverse, often multi-sector, multi-disciplinary consortia. They represent academic institutions, public/private networks, research institutes and government bodies. The study endeavored to keep geographic scope broad, while acknowledging a bias towards Belgian based coordinators, representing approximately forty percent of the sample. Although the sample is not large enough to validate this finding, there was no indication that geographical location of the coordinator was a significant influencer of attitudes compared to other variables, for example, project TRL, or the coordinator’s career stage.

*Discussion Framework*

As each of the coordinators and projects presented a specific insight into the topic, the interviews were conducted in a semi-structured format, that generally aligned to the following framework.



It was considered important however, not to be too prescriptive about science diplomacy (lacking a precise definition in any case), rather, to elicit the scientists’ own interpretation in the first instance and then make an assessment from the broader conversation of any evidence of science diplomacy proper. As expected, the attitudes and examples of activities that were shared in general discussion about the project or in the context of international science collaborations generally, were often more revealing than answers to direct questions.

## Findings

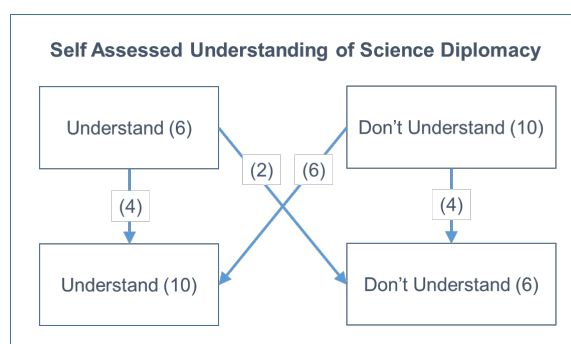
### Stage 1 - Understanding of "Science Diplomacy"

Coordinators were asked to assess his or her understanding of the term and then describe it in their own words. Each interviewee knew the topic of the conversation would be about science diplomacy but as little background as possible was given, hoping to gain an unprompted reaction to the terminology and ideas.

The academic or policy language of science diplomacy was not generally familiar to the coordinators, even for those operating in the cross hairs of international engagement at government and policy level. The first reaction in most cases, was to think about relationships between academic, research and industry bodies, rather than to place it in a government or national context. On the other hand, the attributes of science that create the potential for diplomatic impact are well understood.

It was interesting to note that self-assessment proved very unreliable. Over half of those who claimed no familiarity with science diplomacy demonstrated a good understanding of its core concepts, and some were actively networked into national and international policy groups.

Although this test requires a broader sample to draw any firm conclusions, it is of note that contrary to the starting assumptions, the majority of coordinators did articulate an understanding of science diplomacy and/or gave examples that demonstrated understanding of core concepts, in the context of advancing EU or national interests.



### Stage 2 - Response to Potential Attributes of Science Diplomacy

As a prompt for further discussion, reactions were sought to five descriptions that might be considered aspects of science diplomacy.

#### 1. *Improving international relationships at government level, through scientific collaboration*

Most coordinators' first reaction was positive, but in a general context of improving relationships, scientific, academic or societal, rather than specifically 'at government level'. On further discussion, however most understood the distinction and agreed with this statement as a description of science diplomacy. One spoke of his project increasing collaboration between nations in the Mediterranean Basin; "science can help to overcome political frictions, in scientific research there are no regions, just one problem, one solution" (Coordinator, Italy).

For others a government focus was specifically rejected. There were two issues; first, a belief that international scientific collaboration is now 'just science' and with the exception of funding, does not imply government engagement, and second, science improving international relationships at government level simply feels too ambitious, particularly for their projects.

#### 2. *Building international scientific relationships for skills transfer and capability development*

There was broad agreement that skills transfer and capability development is fundamental to international scientific collaboration and essential for the advancement of science. The group was evenly split however, on whether this activity should be described as science diplomacy. The issue for many was as one said, "you can call it diplomatic, but for most scientists it's just part of their job."

Diplomatic impact may be incidental, but not an objective, and most saw the role of government in this area as a funding source, essential to stimulate opportunities.

For those who understood the diplomatic potential, examples included science mobility for EU cohesion, and creating a 'level playing field' for science. Some also saw in their projects, and from past experiences, the potential to address social problems and increase EU influence in neighbourhood countries through capability building.

### *3. Disseminating scientific knowledge and applications beyond borders*

Similar to the previous statement regarding skills and capability, dissemination is regarded primarily as an activity fundamental to the scientific role. Whether it might also be a diplomatic activity was a question that divided the group. In making any assessment, it is important to consider the context, and the level that the dissemination is occurring. Most did not consider this to be a diplomatic activity, however many mentioned the role of dissemination in increasing EU competitiveness and strengthening international relationships through shared data and common applications.

### *4. Using science to engage in problem solving at global level*

There was widespread support for this description of science diplomacy. The need for science and governments to work together to solve global problems was explicitly recognised by many coordinators. One coordinator did not agree with the categorisation of 'science diplomacy', however gave as justification identical reasoning; that science can contribute, but only by political will can global problems be solved.

Not all were aware of the proposed mission-oriented thinking for research and innovation<sup>1</sup> as a framework for future EU funding programs, however the response was generally supportive, that this is a positive direction for the EU. Some concerns were raised, the importance of maintaining investment in blue-sky research being the primary issue.

### *5. Using scientific projects or outcomes, to achieve a foreign policy objective of the EU, or your country.*

This was identified by most as the closest to a classic description of science diplomacy. It was also recognised by many of the coordinators that their projects serve or are aligned to EU policy objectives. But of all the descriptions this evoked the most negative responses, with some coordinators rejecting any implication that science might be politically directed, rather than motivated by the unbiased scientific enquiry and/or achieving a societal benefit.

This 'ethos of science' if you like, was a recurring theme through many of the interviews. The neutrality of science is fundamental to its potential for diplomatic impact, and we will explore this further in the analysis section.

## Stage 3 - H2020 as a Diplomatic Initiative of the EU

Unsurprisingly, given the need for geographic diversity in projects, most coordinators consider the H2020 programme to be both a scientific and diplomatic initiative. The consortium requirement was most often cited, along with the goals of EU cohesion and advancing EU competitiveness.

Notwithstanding the diplomatic and cohesion benefits delivered by a multi-member consortium, it was clear that in practice, scientific and operational needs take precedence when assembling collaborating partners and, in many cases, consortia were built from existing scientific networks and

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<sup>1</sup> As proposed by Mariana Mazzucato in Mission-Oriented Research & Innovation in the European Union: A problem-solving approach to fuel innovation-led growth.

relationships. That is not to say that geographic diversity was considered merely a bureaucratic requirement. For most coordinators it was an important part of the program;

I really believe more and more, that the geographic solution must be relevant, not only to make the EU economy more competitive, but also to create Europe. (Coordinator, Italy)

Most of those expressing a view considered that in an international context, H2020 enhances the reputation and influence of the EU. The level of investment and the programme's reputation for scientific excellence were considered of major impact, in general, there was agreement that H2020 'puts the EU on the global stage'. Of those who were not convinced, the view was rather that H2020 is not unique, but as one UK coordinator stated, "just another big funding programme".

A better understanding of the external diplomatic impact of the H2020 programme emerged from general project discussion with those coordinators working with partners external to the EU, in South America, Africa and the Mediterranean Basin. They collectively demonstrate a sophisticated approach to engagement with local issues, a consciousness of mistrust derived from colonial practices (and more recent exploitations) and a focus on capability building and collaboration rather than imposition of solutions; "we are coming as equal partners, not as funders, or doers, or heroes from the EU" (Coordinator, Sweden). There is an awareness, gained through experience, that EU objectives are sometimes not aligned with local priorities and must be managed; "we think we know, because we can control it in Europe, but maybe we are not talking to the people on the ground, they are having other problems" (Coordinator, Belgium).

It is reported that the EU teams, in comparison to other nations have developed trustful and productive relationships with this positive impression flowing upwards; in one coordinator's words, "[The project] has so much visibility... Governors will be there, politicians and VIPS will be there to welcome us." This success is attributed by the coordinator to a framework that rewards collaboration and encourages networks, as part of the scientific programme.

Understanding that H2020 has a diplomatic agenda however, does not translate to coordinators identifying themselves as acting in a representative, or diplomatic capacity. Despite his engagement in international policy making, one coordinator commented, "I've never considered myself a science diplomat, I'm not even sure what that means... I want to do actionable science" (Coordinator, Germany).

Many felt the description 'science diplomat' was simply inaccurate for the coordinator role, a misalignment of capabilities, responsibilities. Some acknowledged that while their participation at global conferences or summits could place them in a representative capacity, this activity was not generally considered 'diplomatic'. A number observed that role of H2020 coordinator is one of influence and coordination rather than direction, and thus the role functions 'diplomatically' vis a vis project partners and external stakeholders. It is important however, to make the distinction between working in a diplomatic manner, versus functioning as a diplomat.

For the few who identified as a 'science diplomats' or as having acted in a diplomatic capacity, this was not in their role as H2020 Coordinator, but through for example, participation in international networks or policy groups, UN authorities, or if specifically asked to represent EU science in an international forum.

Overall and in the hypothetical, there was a more positive response to the title 'science diplomat' than was anticipated at the time of writing the EL CSID application in 2015. Only a third considered it to carry a negative connotation. These varied in the detail, but most shared a general concern, that it implies an agenda that is not necessarily 'science first'.

I prefer to see diplomacy as a by-product that comes naturally, rather than to be my deliverable... engaging with political stakeholders could be one of my deliverables and that

would be very good but hide the word diplomacy because it has its own purpose. The primary product is your science. (Coordinator, Sweden)

As we discuss in detail in the analysis, most crucial is the question of function and capability. Whether it is possible, or desirable for scientists leading H2020 projects, or indeed any scientist leading an international project, to take on a diplomatic role.

#### Stage 4 – Policy Involvement and Familiarity with Relevant Foreign Policies

Due to the nature of the projects, most of the coordinators we interviewed are working within a complex policy environment, some relevant to international relations, but also at local and industry level. Many projects included contribution to policy as a specific deliverable.

##### *Engaging with Policy as H2020 Coordinator*

Half of all coordinators judged that their role required actively engaging, or seeking engagement, with policy makers. For some this was an explicit requirement of the Call, others understood it as a necessary step to ensure impact of their project results. For all, the priority is to provide unbiased, evidence-based advice; “As a science, we don’t enact policy... it needs to be quite separate. I provide advice and it is unbiased advice.” (Coordinator, Germany) The nature and level of the policy forum varied, from contributing to international bodies, on global issues such as climate and food security, to internal policies designed to enhance EU competitiveness.

Other coordinators are less connected to policy making; they understand and navigate their projects through the policy environment, but do not have, or seek, a role in influencing it. One coordinator leading a technology driven agricultural project, spoke of hopes for a more optimised regulatory environment, but commented “we have no power to change such policies... we don’t interfere”.

It seems that the path to policy engagement is not always clear, even when coordinators recognise it is important for their project. A number reported frustrations navigating the DG environment and, in a few cases, struggled even to connect with their project’s designated project officer.

##### *Familiarity with National or EU Foreign Policy Objectives*

A broad diplomatic agenda of EU cohesion and EU competitiveness may be understood by most, but very few coordinators could identify an agenda or specific objectives, relevant to their projects, either in relation to the EU or the consortium countries.

After attempting to discuss their national science policies with the coordinators, it was clear that there was little perceived connection between their work in H2020 projects and furthering a national foreign or science policy. Coordinators from Germany, Switzerland and the UK were aware of investment in national science infrastructure and an agenda for competitiveness in the knowledge industries. Beyond this, the groups’ understanding of any national agenda for science was very limited.

There appears to be a corresponding lack of awareness by national governments of their country’s participation in H2020 projects, or the level of scientific work being done. In one example;

“The Minister for Foreign Affairs had to organise a meeting [at the G7] concerning biosecurity... they didn’t know we have been working on this topic for fifteen years. The Canadian delegation told them... do you know you have a group with a lot of expertise, they are recognised and have coordinated many projects? Then they called us.” (Coordinator, Italy)

There is significantly more familiarity with the EU’s policy objectives, given the three pillars of the H2020 framework. The Call is the most significant source of specific information about EU objectives and coordinators have taken their policy cues from that document. The call was usually referenced



by those claiming an understanding of EU policy in connection with their project. If the call is not explicit about any diplomatic agenda however, priority and focus are understandably given to the projects' sizeable scientific deliverables. Only a few coordinators reported receiving additional information, from workshops or meetings hosted by the relevant DG, and one coordinator drew a more general policy context, via his involvement in international bodies.

Overall, the responses vary widely, a significant proportion of the group sees their project almost exclusively in terms of its science and technical deliverables. On the other hand, it is clear from our discussions that some coordinators, particularly the more senior scientists, readily understand and engage with the diplomatic and policy implications of their project, even if this is not language they would use to describe it.

#### Stage 5 – Issues and Barriers to Scientists Working in a Diplomatic Capacity

It seems that leading a H2020 project does not leave much spare time for musing whether there is a diplomatic opportunity in parallel with the project's hard scientific deliverables. Neither do the interviews suggest that scientists are generally given to such musings. But overall, they are more receptive than initially anticipated to the purpose and value of science diplomacy, even as they remind us that they are not diplomats and that the skill sets are vastly different. Many commented on a need for better understanding of cultural issues and political sensitivities beyond (or within) the EU.

Lack of clarity of diplomatic context or agenda is an issue, but rarely is further information available beyond the call. Scientists will not often infer a broader agenda than the scientific deliverables unless explicitly stated (and funding allocated). Some specifically commented on the 'woolly' or 'fuzzy' nature of diplomacy and the need for hard deliverables to bring the subject into focus.

"I've never seen any opportunity provided by the Commission to say well you guys are interested in foreign affairs, relationships or international policies, or how your project might interact with the policy elements, and sometimes I wish there'd been something like that because I know some of my colleagues don't have that exposure and at times make suboptimal decisions just because they're not aware." (Coordinator, Germany)

Bureaucratic challenge is also an issue. A number of difficulties were reported at the interface of the project and the Commission; opaqueness of policy influencing process, access to the correct commission officers, perceived lack of communication and coordination between DGs, a sense of helplessness in the face of the 'black box'.

It's quite a challenge to winkle out from them, from the vast DG, who we speak to, how we do this. We are meant to have a policy officer, this person hasn't...we've had no contact from these people... (Coordinator, UK)

It is a challenge working in a DG environment finding someone who is connected, who can act as information broker. It seems such a bottom up approach for a coordinator like myself to have to get in a room with [various DGs] who never speak to each other... I feel like there's some missed opportunities here. (Coordinator, Germany)

The priority expressed by many was that science has impact, is actionable, and it is generally understood that diplomatic and political efforts are integral to this, even if it is simply for establishing funding or infrastructure. The challenge for scientists unfamiliar with a policy environment is lack of support, or access to policy making.

## General Themes

The attributes of science that underly its potential in diplomatic relations were well known; for example, that science is borderless and that common problem-solving leaves political conflicts at the door. These and more examples, were regularly mentioned during discussion.

“When you talk about science there are no more barriers and I believe researchers are the best, or among the best people to make connections between countries having problems, political problems or other problems.” (Coordinator, Italy)

Other general themes emerged, that shape the overall attitudes and perceptions of science diplomacy in this community. They can be categorised as; the changing practice of science due to globalisation; the importance of maintaining neutrality and credibility; and the challenges for science to communicate effectively.

### *The Globalisation of Science.*

Today like many industries, science is conducted on a global basis; international collaboration is common and leads to widespread dissemination and applications. Scientific groups are increasingly focused on an operating model of ‘specialise and connect’, given the diversity of skills, techniques and approaches required. Such connections arise through membership of disciplinary bodies, workshops, conferences, travel and exchange programs.

“Now you have 10, 15, 20 people [as authors of a paper] and each contribute something important. It’s globalisation; the way we can address a single question and its very rare that a single lab can master all the technique, all the approaches, so you have to collaborate. Science is changing, the way we do science is very different now.” (Coordinator, Switzerland)

Transdisciplinary and multidisciplinary approaches are becoming essential as problems become more complex. Industry is increasingly engaged; making and funding calls, cooperating in pre-competitive basic science. Industry also poses a threat; in the data/technology space EU science must address the impact of GAFA (Google, Apple, Facebook, Amazon).

### *The Essential Neutrality of Science*

There is a pragmatic understanding that governments and policy makers will, and must, be involved in science. But there is much suspicion of the short termism and political gain seeking of governments. In general, most were comfortable knowing that their project is **aligned** with policy, as long as it is not **directed** by policy. Even when positive examples are given (such as a govt program to cure disease/to address climate change) many felt it important that the scientists themselves are motivated solely by the societal benefits.

Collectively, a set of ‘scientific ideals’ emerged from the interviews -

- Science should be for the benefit of society.
- Scientific collaboration is problem focused and neutral; without regard to nationality, religion, politics of the collaborators
- Scientific knowledge should be open and disseminated broadly, in particular where it has been gained through public money.
- Even though some problems cannot be solved without government, or engagement of policy makers, the scientific work must not be **directed** by government.

### *The Communication and Credibility of Science*

The communication challenge has two aspects; firstly, how to deal with the public perception of science and the broad dissemination of scientific knowledge, secondly is how to communicate most effectively with policy makers and government.

Of common concern was the diminishing trust of science by segments of society. It is widely felt that vis a vis the public, there is a need for science to better represent itself, to communicate in appropriate language, and to champion an evidence-based approach to problem solving. Recurring issues included;

- The difficulty with conveying complexity to a public or political audience
- Not understanding the end user/public priorities and thus being unable to convey what is most important and useful.
- Misunderstanding of the scientific practice of peer challenge and review, leading to a misconception that science findings are just a matter of opinion (and/or all opinions equally valid)
- Misinformation - mainstream media (most useful sound bites), social media (sharing false or disproved science, for example, as has occurred leading to vaccine hesitancy)

Communication challenges flowed over into dealing with policy and government stakeholders. Many noted that the time frame for science, particularly blue-sky science, was at odds with that of politics (vote seeking) and industry (profit seeking). It was felt by some that this contributed to a lack of political will to argue for the potential unpopular, even when the science clearly supports new policy (eg the potential value of genetic modification versus the public reluctance.). Others identified the gap between popular political objectives and scientific feasibility, and how to “say things that are true, even if they are not popular in Brussels.” (Coordinator, Czech Republic)

## **Discussion and Analysis**

Speaking at the European Research Council in 2016<sup>2</sup>, Commissioner Carlos Moedas said, “science has become so advanced and complex that no single individual can expect to produce major breakthroughs alone – even in that most solitary of sciences, mathematics”. He made this comment in support of his argument that science is a critical tool for modern diplomacy. This observation however, also aligns with the finding that international collaboration and borderless working is simply modern science. It is important to avoid attributing too much to the mere fact of international collaboration, when it is vastly more common for it to occur without a specific diplomatic outcome or purpose. If not, as Van Langenhove (2017) warns, we risk overstressing the concept so much that we render it meaningless.

International science as undertaken today within the H2020 framework involves a multiplicity of actors, stakeholders, and end-users, working both inside and external to project consortia. The projects contain a multitude of work packages and deliverables, often across disciplines and TRLs. In such a complex environment, bringing a potential diplomatic component into focus is not always easy, especially when looking ‘bottom up’ from the scientists’ perspective.

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<sup>2</sup> Science diplomacy as a driver of excellence, full speech available at [https://ec.europa.eu/commission/commissioners/2014-2019/moedas/announcements/science-diplomacy-driver-excellence\\_en](https://ec.europa.eu/commission/commissioners/2014-2019/moedas/announcements/science-diplomacy-driver-excellence_en)

Ruffini (2017, p8) poses a number of questions, amongst them and most relevant for this study, “Are scientists good ambassadors for their country?” and “Does science diplomacy threaten the independence of the researcher?” In subsequent discussion, he contrasts the impartiality and the search for truth embedded in the scientific ideal, with the politically motivated and not always forthright practices of the professional diplomat, but “while we start from a point where there is strong contrast and well entrenched position prevail, these differences are becoming smaller in the momentum of action.” (Ruffini, p30). This aligns with the findings of this study - the suspicions encountered around short term political thinking and misaligned priorities do exist but are accompanied by considerable willingness from scientists to engage with the diplomatic agenda. Many understand the reality that science may need to operate in a political environment to achieve impact.

This willingness is not unconditional however, scientists must work with ‘clean hands’ to retain credibility, they are highly protective of their role as unbiased advisors and are motivated by increasing scientific impact and actionable results. And willingness alone is not sufficient, a gap remains, namely the means or skills to appropriately engage, or to put it into Van Langenhove’s terms (2017), there is willingness, but not capacity. In this case we must return to the importance of the call.

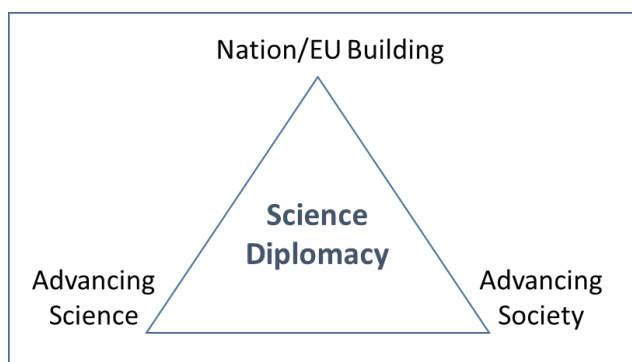
The more context and clarity that can be brought to the call, its overall contribution to the ‘bigger picture’, and thus the project design, the better equipped that scientists leading these projects will be to achieve the broadest possible impact of their science. And because coordinators are minutely aware of the terms of the call and understand that precisely meeting all aspects it is a requirement for securing an award, it is possible to encourage even those who are less attuned to diplomatic possibilities.

“You can’t make scientists politicians, they’re not, but the call will drive the scientists to do some things... so I think ensuring policy issues are part of the call and there is money for meetings, international meetings.” (Coordinator, Sweden)

Yet, it should not be assumed that scientists, even given context and opportunity can deliver a diplomatic outcome. As Flink and Schreiterer (2010) note, ‘it is crucial to get the right people to the job, be they career diplomats who are familiar with S&T, or S&T professionals who command excellent personal skills and political judgement.’ Many senior scientists have developed skills, through interest, talent or necessity that enable them, by their own account, to function at a high level of engagement and influencing, however this will not always be the case. Of course, the need for diplomatic skills is project dependent and in the majority of projects the soft benefit of enhanced international relations through scientific collaboration and capacity building does not necessarily require, or benefit from, an explicit understanding by the participants of the diplomatic value of their work.

This leads to another key question; to what extent can, or should we engage scientists in science diplomacy as a forward directed tool? This is a far bigger question than this study can address in depth, but the research does suggest that forward momentum is achieved by scientists informing and influencing policy, rather than working at the its behest. Any suggestion of direction by political agenda is to be avoided, and indeed appears unnecessary if the objectives are framed correctly. As was identified during the self-evaluation of diplomatic familiarity, some senior scientists are active in a diplomatic context, but not having that terminology, just consider it work required for delivering the project.

From the perspective of the coordinators, if science is to thrive in a diplomatic context, it is necessary to keep the three elements of nation, science and society in balance. This corresponds incidentally, to the three pillars of the H2020 programme.



In the realm of nation building, the importance of EU cohesion programmes is without doubt, and recognised by most, but this objective was not as highly prioritised by the coordinators as might be expected, as one of the younger scientists commented;

“I can imagine in the early days it would be quite novel to work with groups from different countries and this would have been a real step forward... but now it’s very established and I think people take it for granted.” (Coordinator, Belgium)

However, the need to improve the EU’s scientific standing in the world is a consistent theme, not only among coordinators working within the pillar of Industrial Leadership. It is considered increasingly undesirable for example, to be at the mercy of US industry, in areas such as data ownership and applications necessary to participate in the Internet of Things.

As science and technology approaches the market, coordinators must deal with a complex network of stakeholders and industry end-users, often required by the call to be included within the consortium. Any diplomatic effort is more correctly now called innovation, or economic, than science. As Leijten (2017) points out, ‘companies and their representative organisations are becoming increasingly important players in the domain of foreign policy.’ Certainly, the evidence demonstrates that the big industry players in Pharma and Agriculture are wielding significant power, and coordinators are aware that leaving them out of the conversation, even in the earliest developmental stages, is no longer an option. As the power increasingly shifts from nations to major industry, the most critical interface for science is also shifting. Whereas we have observed a disconnect between the coordinators and their national foreign policies, there is much less difficulty for coordinators articulating the key drivers and objectives of industry.

## Conclusion and Recommendations

Science diplomacy is a shared competence, but it is clearly not a level playing field among member state when it comes to focus and capability in this area. Van Langenhove (2017) notes this unevenness and the lack of strategic vision for science diplomacy at member state level and argues for more support from the Commission in developing both strategy and support tools in this field. This study suggests that in forming any such strategies, politicians and policy makers who tend to see and speak of science diplomacy through a lens of past collaborations and successes, look instead to current and emerging scientific practice, new technologies for information and exchange, globalisation and the impact of big industry and not to be overlooked, the changing nature of political discourse.

This would significantly advance science as a tool for diplomacy in the EU, but it is still far removed from activating science diplomacy within the scientific community and importantly, understanding its limits. From the practitioners’ perspective, it is clear that any engagement in diplomatic objectives must be approached with both clarity and sensitivity. And in very practical terms, as one coordinator pointed out, leading a substantial H2020 project is a big job, to what extent do you also expect them to actively participate in diplomacy?

However, there is significant upside in providing appropriate context and increasing capacity in some segments of the scientific community, particularly as science reaches higher TRLs and engages with

a multiplicity of policy, industry, government and community stakeholders. Here science and technology may make a hard impact in economic and societal terms and awareness of political context can increase the likelihood of delivering actionable outcomes.

There are several recommendations for the Commission that emerge from the research, that would improve the ability of scientists to contribute to the policy conversation:

1. Raise awareness of the political and diplomatic context. Ensure that coordinators have access to an appropriate brief regarding any political or diplomatic sensitivities in countries in which they may be operating, particularly external to the EU.
2. Clarify the deliverables; ensure that the call is specific regarding any specific actions or outcomes that could contribute to a foreign policy agenda of the EU, or a member state.
3. Increase transparency and access to the policy making process, so that science can better make its contribution.
4. Improve communication between Commission and member states; optimise the opportunities for diplomatic impact by increasing awareness at member state level of the major scientific achievements and projects being undertaken in European framework programmes.

Improvement in these areas will not be the complete answer to engaging the scientific community in achieving diplomatic objectives but would certainly optimise the opportunities as they present themselves. And if greater clarity and ease of process can improve the societal and scientific impact of projects, then both science and diplomacy will benefit.

Science has an important role to play in the relations between nations, within the EU and beyond. The desirability of harnessing and directing science for diplomatic purposes is assumed by most academics and policy makers, and there is certainly much that can be done at all levels to enhance its contribution. The caution to be observed, is that drawing scientists too much into a diplomatic agenda or loading projects with diplomatic objectives or overtones will place in jeopardy the very neutrality of science that makes it so powerful. Thus, perhaps the most critical recommendation from the study, is that in any efforts by the Commission to engage its scientists in diplomatic efforts, the halo of neutrality that enables science to function in as a diplomatic tool, and the credibility of science and scientists as unbiased experts, must be protected.

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