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Inventing a shared Science Diplomacy for Europe

InsSciDE Work Package 6: Security: Scientific and Technical Cooperation in the Context of European Diplomacy	
Case Study n°6.1	**Technological decisions and the diplomacy of sharing security critical information between EU and NATO partners**
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Abstract

Europe faces unprecedented security threats and thus great parts of the populations in its nation-states are overwhelmed by the perception of risks, even by moral panic. There is widespread approval of discussion on new forms of 'gate-keeping' that will regulate access to territories, to networks, and to social, political and economic roles and activities. The political and humanitarian aspects of massive migration, combined with the indiscriminate stigmatization of whole populations as potentially deviant cases, have made issues of control in parallel to issues of social integration even more complicated. There is an ongoing debate on how to better secure Europe's borders, while the existing shortcomings in information management and information sharing are also revealed. Constrained by the diversity of European Union members' positions, the formulation and implementation of appropriate measures necessitate persistent diplomatic and technical efforts. Working together to solve problems of border security necessitates negotiations among a variety of stakeholders: diplomats, science experts, governmental and non-governmental actors, or exponents of inter-state networks. Approaches developed in the sociology and history of science can be very fruitful in understanding these processes. Our case study seeks a comprehensive understanding of international and cross-national negotiations on technological decisions and the sharing of critical information on security technologies between the EU members, and in special cases with non-EU NATO members. Technological decisions regarding the development, maintenance, upgrading, and modification of large border control information systems are embedded in processes of political decision making and in policies agreed as a result of science and technology diplomacy.

Introduction

The interplay between policy, legal and technological problem solving in the field of security in Europe is not new. From the very beginning of the formulation and implementation of policy measures following the Schengen agreement technical issues have been at the epicentre of transnational cooperation. However, since 1995, concrete steps have been undertaken to develop border control information systems. The Schengen Information System (SIS) is now in its 3rd edition. A considerable variety of experts has been involved right from the beginning. Lawyers, and specialists in international relations, have worked alongside experts from national police forces and Europol. But their decisions had to be translated into concrete and effective border control operations. If we take in also the phase of preparation, we can talk of a 35 year history of science and technology (S&T) diplomacy with the aim to build and operate border control information systems. This process builds on previous experience from Interpol, although the science and technology aspect was not as significant in the phase preceding the 1980s. The operation of international networks of technology experts also roots in banking, with the SWIFT experience being crucial in this respect.

Why is the study of the history and present dynamics of developing border control information systems relevant for shared S&T diplomacy in Europe? Both system specifications and operational standards are to a great extent shaped by the outcome of processes of science and technology diplomacy in the EU context. Not everything must be invented. There are invaluable traditions in place that await further exploitation. But where there is a deficient perception of problems, and correspondingly of the cultural and cognitive conditions of solution-finding, or where path-dependencies and lock-ins inhibit the formulation and implementation of policies, new directions must be invented. Our chosen case demonstrates the need for new ways of understanding the transmission of policy measures into technological systems like those developed for border control, as well as new ways for understanding the modalities of uses of these technologies.

Actors

The main actors are the European Ministries of Foreign Affairs (often in collaboration with Law-and –Order ministers); The National Police Force of the EU Nations within the Schengen area; The European Commission; The EU-Large Information Systems Agency; and private IT Companies, as well as companies and research institutes specializing in biometric technologies. Various groups of experts and civil society organizations specializing in the legal aspects of border control and monitoring of minority groups are also involved in the formulation of pertinent policies.

Fields and disciplines, interfaces with technology

The study of science and technology diplomacy can learn a lot from the STS and technology history -based fields of information systems studies and strategic technological system studies, and from their interplay with socio-legal research on both negotiations and contracting. (As social artefacts, contracts play a crucial role in shaping the design and implementation of large information systems. Moreover, the settlement of disputes through negotiations culminates not only in formal contracts, but also in informal, implicit and relational contracts.) The findings of various research communities working on security engineering must also be taken into consideration. Special attention will be given to biometric technologies and their relations with big data structures, as well as to the interfaces which make these systems user-friendly and thus enable sound and effective border control and monitoring operations.

Networks and communication

This interdisciplinary approach to the diplomatic questions of border control technologies is novel. The first exploratory interviews with diplomatic circles indicate that the actors are not yet sufficiently aware of the potential of studying these facets of security policies. Little attention appears to be given to the interplay between diplomatic versus technological negotiations and coordination between European states on the one hand, and between technical staff at various echelons of EU institutions and agencies on the other hand. In the networks of diplomats these issues are communicated as if they were the result of single-track formal diplomacy, in spite of the visibly multilevel and diverse network connections between various types of officials, experts and operators.

Politics and policies

These aspects of S&T diplomacy, as well as the operational problems they may imply, emerge in social and political networks that lie for the most part beneath the radar of politicians. Politicians are only incrementally interested in these questions, for the most part as a result of their perception of political risks, especially those emerging from moral panic and xenophobia. Policies are very often the outcome of the perception of the problems related to borders and their social construction by groups of the electorate. We can see this very clearly in the case of the recent disputes on EU migration policies which play a central role for the political stability of many European countries. Here, border technologies are reduced to wire-fencing territories. But the idea behind the Schengen agreement, and of the subsequent development of border information systems, was different: the aim was to combine mobility according to the rule of law and interstate agreements (as in

the case of visa requirements), with controls that inhibit free movement only in exceptional cases. The inflows of migrants and refugees have put an enormous strain on these politico-technical systems and their operation. New decisions have to be made and new forms of interstate negotiations are needed that involve, beyond politicians and diplomats, also legal experts and most significantly information technology and biometric technology experts. This brings about new practices of multifaceted and multi-track diplomacy, of which sound practices in the field of S&T diplomacy are of catalytic, if not of pivotal importance.

Methodological approach

Two main sets of sources will be accessed: (1) Published reports in various forms (press, web publications, whitepapers, blueprints, books, academic articles, etc.); (2) In-depth narrative interviews with diplomats, technologists, or other personnel (mostly from the civil service, police and military) who have participated in diplomatic missions, task forces or project teams. The interview protocol will rely on published data and information, gathering sufficient commentary and material without need for confidential remarks on classified materials.

A vast number of official documents are publicly available, from which we can reconstruct the history of the creation and implementation of the Schengen agreement since 1985. Another set of documents allows us to reconstruct the history of the Schengen Information System (versions I, II, III), and of the systems attached to it, most importantly the information system for the management and control of the issuance and cancelation of entry visas (VIS), and the system for the management of the fingerprint database (EURODAC). But what these invaluable documents do not record is the logic of negotiations and the network relations between various stakeholders beyond the official level of the meetings of representatives of ministries of foreign affairs and of the national police forces. Especially absent from these records is information on how police force guidelines were transformed into functionalities of technological systems and modalities of interoperability between various modularly structured components of large information systems developed for European border control. With questionnaires and qualitative interviews we will try to reconstruct the sequences of decisions and actions throughout the various phases of the development of policy measures and corresponding information systems. In this way we hope to reveal the 'biography' of the Schengen large information system from the perspective of decades long processes of multi-track science and technology diplomacy as a catalytic aspect of European security diplomacy.

Our first exploratory interviews have yielded invaluable background information as well as concrete information on the institutional and technical setting of Schengen related science and technology diplomacy activities. With permission from European Union authorities, subsequent on-site field research and interviews will be conducted in the responsible agencies.

There are critical complementarities between our case study and that conducted by Ursula Naue, University of Vienna. Our study 6.1 will focus on the connection between diplomatic and political negotiations and technical decision making which requires understanding the political and legal representations of those who transform control and monitoring measures into technical specifications for border control large information systems. Naue's study 6.2 will investigate the mental representations of diplomats and other experts dealing with border control technologies, with emphasis on biometric technologies, and their impact on practices with impact on human, legal and political rights.

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InsSciDE Work Package 6: Security: Scientific and Technical Cooperation in the Context of European Diplomacy	
Case Study n°6.2	**Migration and border management**
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Abstract

Our InsSciDE case study 6.2 seeks an understanding of how diplomats, foreign policy experts, and home affairs experts perceive the application of biometric technologies in the context of securing the Schengen boundaries – on national level, European Union (EU) level, and in domestic cooperation between home affairs and foreign affairs. In the context of preventive diplomacy, security-focused EU/Schengen border management and the utilization of biometric technologies raise questions about the role of scientific and technological diplomacy within the EU global strategy for security. The establishment of centralized databases for the purpose of migration and border management (European Parliament 2016) became increasingly significant in the last years and impacts the development of policies for EU external border crossings. We investigate the role given to bioinformation such as DNA and fingerprints: biometric technologies appear to be viewed as a powerful and effective way of testing trustworthiness of persons, an important aspect in the overall political context of securitization of migration and asylum. We will conduct a qualitative study using expert interviews, policy documents, relevant literature and media as sources for the analysis.

Introduction

In case study 6.2, country case studies will serve as a basis for discussing science diplomacy (as preventive diplomacy) regarding a security-focused EU/Schengen border management utilizing biometric technologies. We will investigate the way in which way scientific collaboration and policy learning takes place, and which role bioinformation such as DNA and fingerprints is given.

The guiding research question is the following:

> How do diplomats/foreign policy experts and home affairs experts perceive the application of biometric technologies in the context of securing the Schengen boundaries –on national level, EU level, and in domestic cooperation (between home affairs and foreign affairs)?

In this context, we will deploy the following relevant presuppositions, referring to science diplomacy as the co-production of biometric technologies and the securitization of Schengen border management:

> 1) The history/tradition of applying biometric technologies in the context of securing the Schengen boundaries impacts upon how countries act (history matters)
>
> 2) The geographical distance from Schengen borders impacts upon how countries act (geography matters)
>
> 3) The recent/current number of migrants/asylum seekers directly at the respective Schengen borders impacts upon how countries act (affectedness matters)
>
> 4) The political orientation of countries/governments towards (perceived threats posed by) migrants/asylum seekers impacts upon how countries act (attitude matters)
>
> 5) The transfer and also the implementation of EU policies regarding the focus of the task is crucial when evaluating the impact of presuppositions 1) – 4) on political practices in the field.

Actors

The relevant actors in the context of case study 6.2 are the a) diplomats, b) foreign policy experts, and c) home affairs experts – both on the national level (especially regarding the domestic cooperation between home affairs and foreign affairs), and on the EU level.

Politics and policies

The focus of our research question is on policymaking on different political levels (country level, EU level), on the cooperation between these political levels, and on the cooperation between home and foreign affairs. This multi-level approach is necessary to be able to analyze political practices – the status quo, and also trends and developments – of European science diplomacy when it comes to the application of biometric technologies in the context of securing the Schengen boundaries.

Especially in the last years, movements of persons have been associated with various challenges, including terrorism, criminality, and national identity issues (cf. Huysmans 2000, 751; Léonard 2010, 231). This has led in the course of time to an increased securitisation of migration and asylum (cf. Huysmans 2000; Léonard 2010). In this context, the EU's Schengen border management policies focus on the creation and development of instruments, agencies and practices to meet "heightened security concerns", as the European Parliament (2017) argues. In the last years and regarding the development of policies for EU external border crossings, the establishment of centralised databases for the purpose of migration and border management (European Parliament 2017) became increasingly important. These databases refer i.a. to biometric technologies which enable the EU and its Member States to collect data on persons and to trace these persons. Especially significant in this context is the Prüm Treaty to reinforce transnational collaboration in combating crime, terrorism and illegal migration (Prainsack/Toom 2013). Collected in large databases, bioinformation such as DNA and fingerprints is perceived as a powerful source: biometric technologies seem to be an effective way of testing trustworthiness of persons (cf. Hall/Naue 2015) which is an important aspect in the overall political context of securitisation of migration and asylum.

The EU's reaction to these movements of persons is to deepen the coordination between its home affairs (internal rule of law) specialists and its diplomats (preservation of international order), combining foreign policy and home affairs expertise (Brady/Parkes 2015, 7f). In this context, 'preventive diplomacy' is a way to "... work with countries of origin to address and prevent the root causes of displacement, manage migration, and fight trans-border crime." (European Union 2016, 27)

Disciplinary/methodological approach

While the main approach for our case study is a political scientific one, it is important to combine this approach with a) an analysis of the respective legal context and b) with an STS perspective on science diplomacy (as preventive diplomacy) policymaking with a security-focused EU/Schengen border management. Heinemann et al. 2015 have shown that a combination of scientific approaches is an appropriate way to approach the subject. Nevertheless, what is new in the context of our case study is the fact that it goes beyond mere analysis and intends to re-connect the scientific findings with concrete policymaking in the field of science diplomacy – in adjusting the expectations and identifying the many facets of the potential of science diplomacy in the field of security related issues and the utilization of biometric technologies and also, in developing policy recommendations.

We will conduct a qualitative study (in the context of a comparative case study approach), through expert interviews, policy document analyses, and literature and media analyses. Currently (July 2018), we are discussing different scenarios for the case study selection, based upon the presuppositions mentioned in our introduction above. It is planned to conduct 2-3 interviews per country and also, at the EU level (depending on the final number of countries researched and compared). Several case country selection scenarios with

representative/significant results are possible and will be finally decided in cooperation and coordination with A. Kyrtsis (case study 6.1).

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InsSciDE Work Package 6: **Security: Scientific and Technical Cooperation in the Context of European Diplomacy**	
Case Study n°6.3	**ITER and the changing role of security: European science diplomacy in nuclear fusion collaboration**
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Abstract

The actors and processes of cooperation around nuclear fusion are studied through the case of ITER, a large-scale fusion facility currently under development in Cadarache, France. The construction of this facility started in 2007, after more than 20 years of negotiation and deliberation between the involved partners: the European Union, India, Japan, Russia, China, South Korea and the United States. Currently, 35 states are involved in the project. Construction and assembly are expected to be completed in 2025. ITER is one of the largest scientific cooperations in the world today, and it entails scientific and diplomatic complexities on many levels. The case study is relevant because it shows the role of science diplomacy in negotiating and handling such complexity, but also because large-scale, long-term cooperation between global actors of the kind that is showcased can be a model for cooperation around other global problems, and there may be lessons learned from the ITER experience in this regard.

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The InsSciDE case study on ITER focuses on collaboration around nuclear fusion as a historical case of handling issues of nuclear and energy security through science diplomacy. By studying the diplomatic processes around international fusion research collaboration, the aim is to outline changes taking place in the practice and conduct of European science diplomacy in transnational energy collaboration, as well as highlight the complex and changing scientific, technological and political contexts to which science diplomacy actors must respond.

Fusion research has been a subject for international scientific cooperation for over 60 years. It was central already in the exchanges taking place when the Atoms for Peace program started at the Geneva Conference in April 1955. The Soviet Union was a prominent fusion research environment but also a major nuclear power, and for US and European actors nuclear cooperation was at seen as a crucial strategy for disarmament and weapons control. In 1982 and 1983, during a period of renewed Cold War tensions and nuclear security threats, fusion again became a vehicle of high international politics, with the goal of building trust in negotiations that would also include arms control. In 1985, at their first meeting in Geneva, Ronald Reagan and Mikhail Gorbachev initiated a large international cooperation around a fusion facility called ITER, together with the European Union (EU). The construction of this facility started in 2007 in southern France, after more than 20 years of negotiation and deliberation between the involved actors: EU, India, Japan, Russia, China, South Korea and the United States. Construction and assembly are currently expected to be completed in 2025.

The ITER project is an example of a project of Cold War diplomacy having to adapt to a post Cold War reality, and which has survived many political upheavals and crises. A study of the diplomatic process around ITER will allow deeper insight into how actors in science diplomacy adapt and relate to changing networks and contexts, as well as how they participate in the creation of knowledge networks and negotiate the changing concept of security over time.

ITER moreover is unique in its organisation, with the use of an in-kind system for contribution. This means that the different components of the reactor are for the most part not built on site, but by national organisations in the different participating countries and then shipped to Cadarache to be assembled. Most of the funding is also handled on a national level, and not on the site itself. The reason for this is to allow each participating country to develop the competence needed to build a fusion reactor, however, it can be cumbersome when considering that an end-product needs to be delivered on a deadline, and that many of the components are "first-of-kind". The coordination of everything including the high-precision science, the parts and materials, the transports, international law and the transnational work on the site is a gargantuan endeavour in itself, and while there are those who criticise this organisation, it is the result of historic negotiations, which I will delve into in my work.

In my case study I will follow the institutions and the actors working to make the ITER project a reality. Member countries participate in ITER through a dedicated Domestic Agency, while the EU acts as a single partner in the project, through EURATOM. Including EU member states the full count of participating countries comes to 35. National and international organizations too have played important roles in the project, with IAEA for example being active in the early negotiations. Several important actors surrounding ITER started as scientists or engineers, and later ended up working in science administration, in state or private organisations. One goal of my study will be to follow these actors to look at how certain among them end up being science diplomats, and whether they consider themselves as such. Many of these actors have also been in the fusion field a long time and have strong networks on both a scientific and a political level.

The network surrounding ITER and fusion research as a whole is a tight-knit one, since fusion has to a large degree been an international endeavour since the 1950s. Many of those involved in the negotiations around ITER had earlier worked with other transnational fusion projects, and this historical connection is also something that interests me. I believe that these networks are crucial for the success of the ITER project, for several reasons. For example, US and Soviet scientists already knew each other closely before the summit in Geneva in 1985, and thus could discuss upstream how to present the project to their respective political decision makers. Many of my interviewees also cite trust as a central requirement when embarking on such a project, and some of this trust has been built over many years within networks. If the network is already there, it is also easier to grasp an opportunity when it arrives.

In the course of such long negotiations as those taking place around ITER, such varied actors as scientists, civil servants, diplomats of different ranks, lawyers and top politicians have all been involved and dealt with varied issues. My study will look at when and how different actors are engaged, and how priorities change with actors.

One interesting question in regard to the technoscience of ITER is, in my opinion, how the science and technology itself is influenced by the diplomatic discussions. As an example, due to the in-kind system many things decided at organizational level may not be ideal from a scientific or technical point of view, but must now be dealt with during the construction. I will look at some such instances and analyse the different priorities in play. One other interesting scientific issue is that depending on the culture of a given scientific field, negotiations and/or collaboration may look different. For example, nuclear fusion and nuclear fission, although being closely related scientifically, have very different cultures in terms of security and information sharing. How do such factors influence the possibilities for scientific collaboration?

ITER has been a political project from the very beginning, when the first agreement was signed in 1985 at a summit between the leaders of the two major parties opposed by the Cold War. Politics have also influenced who has joined or left the project over the years. It is therefore important to see ITER as a part of a larger negotiation strategy between countries. Often, diplomatic negotiations take a broad approach, and a given scientific project is negotiated as a part of making deals concerning other industrial cooperation. This has also been true regarding ITER, and one part of my analysis will discuss the project as part of a broader political process.

I believe that there is a lot to learn from the ITER project as a whole. It is one of the largest scientific cooperations in the world today, and it entails scientific and diplomatic complexities on many levels. The case study is relevant because it shows the role of science diplomacy in negotiating and handling such complexity, but also because large-scale, long-term cooperation between global actors of the kind that is showcased can be a model for cooperation around other global problems, and there may be lessons learned from the ITER experience in this regard.

Disciplinary/methodological approach

Sources for the study will include archival material from the European Commission Historical archives, as well as oral history interviews with actors central to the negotiations. I have identified central actors with the help of contacts at ITER, and I have been able to interview them during a visit to the site. Some interviews have also been done on Skype. While I have access to written material, much of what happens during negotiations is not written down anywhere, and interviews are therefore crucial to fill in the blanks. Using the historical method, I will analyse the material, identifying actors, networks, strategies and concepts central to the ITER project.

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InsSciDE Work Package 6: Security: Scientific and Technical Cooperation in the Context of European Diplomacy	
Case Study n°6.4a	**Addressing nuclear security through the study of IAEA's safeguards system**
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Abstract

This InsSciDE case study focuses on the historical role of the United Nations International Atomic Energy Agency (IAEA) in the creation and maintenance of the global nuclear safeguards system. Nuclear security is more than a matter of nipping nuclear weapons programs in the bud. Instances when nuclear proliferation is halted at the last possible moment before weapons-grade fissionable material is produced and explosive devices are assembled may offer the public the most drama. But history suggests nuclear security is a more subtle matter, involving global knowledge networks created and shaped by careful science diplomacy. We consider the paradoxes of the IAEA as an agency and system aiming at both the development of nuclear technologies (nuclear power, exploitation of nuclear raw materials), and their control and restriction. Our study seeks a comprehensive understanding of the negotiations that took place within the IAEA's most powerful policy organs such as the Board of Governors, the Safeguards Committee, and the Scientific Advisory Committee throughout the early years of the agency's operations. In addition, it follows the transformation of the safeguards system through the Iraqi crisis in 1991. The above negotiations reveal the interplay of nuclear science and diplomacy in the context of the most powerful international organization in the nuclear realm, allowing us to draw lessons in handling nuclear security issues and developing a shared nuclear diplomacy on a European level.

Introduction

In 1957 numerous nations across the globe welcomed the establishment of the IAEA for diverse political reasons, but almost all shared the expectation of acquiring nuclear energy in order to bolster industrial development. Yet the IAEA's application of a centralized safeguards system, that could and should "begin to diminish the potential destructive power of the world's atomic stockpiles" according to the US President Dwight Eisenhower, was not equally welcomed. The Agency's safeguards initially encountered mistrust and resistance from the member states of the developing world, and most significantly from the Soviet bloc. In addition, given that the European Atomic Energy Community (EURATOM) was actually the first that institutionalized safeguards at a regional level in 1957, some West European states saw the attempt to establish a safeguards system as a direct threat to EURATOM.

The reluctance of nations to place their programs under international control was smoothed only when the Unite States decided to transfer to the IAEA responsibility for safeguarding its nuclear exports to non-European countries. The fact that the Soviets gave full support to the IAEA safeguards system in 1963 also leveled debates. From 1965 to 1967, the IAEA was able to review its safeguard system and establish a more rigorous one covering reactors of all sizes, reprocessing plants, and fuel fabrication plants. A major turning point was the 1968 Treaty on Non-Proliferation of Nuclear Weapons (NPT) that allowed the application of safeguards to all the nuclear material in the states that had not acquired nuclear weapons. The treaty entered

into force in 1970 and the Board of Governors approved the IAEA safeguards system a year later. Although limited, the safeguards system focused on nuclear sites that each member state declared as such and willingly placed under the IAEA inspection. The possibility remained that undeclared plants might exist, but the IAEA safeguards had no power to inspect them. The architects of the system assumed that clandestine nuclear programs and undeclared plants would be detected by other means. It took them two decades and the Iraqi crisis to realize that only a stronger safeguards system might have the chance to unmask illicit nuclear activities.

Case study 6.4aseeks a comprehensive understanding of the negotiations that took place within the IAEA's most powerful policy organs such as the Board of Governors, the Safeguards Committee, and the Scientific Advisory Committee over safeguards throughout the early years of the IAEA's establishment. Checking the "EU Science Hub" website[1] in 2018 we learn that "Nuclear safety, security and non-proliferation are absolute priorities for the EU, supporting the international initiative on a holistic Safety, Security and Safeguards ('3S') concept for nuclear energy. The European Commission as guardian of the Treaties operates as an effective regional nuclear safeguard system (EURATOM) in close partnership with the International Atomic Energy Agency (IAEA)." How did diplomatic negotiations on safeguards within the IAEA–EU context evolve from mistrust to close and trusting collaboration? The history of IAEA's safeguards can indeed provide penetrating insight into security issues with strategy lessons for both EU diplomats and scientists.

Actors

The main actors are historical figures such as the senior members of each diplomatic delegation of IAEA Member States who participated in the meetings of the Board of Governors and the Safeguards Committee. In addition, important actors are the scientists composing the Scientific Advisory Committee set up in 1958 by decision of the IAEA Board of Governors to advise on the scientific program of the Agency.

Disciplinary/methodological approach

This study stands at the intersection, on the one hand, of history, philosophy and sociology of nuclear science and technology and, on the other, of international history and diplomatic studies. The aim is to develop a comprehensive understanding of nuclear diplomacy. For this we focus on formal diplomatic negotiations that took place at a highly international and institutional level, trying to identify the transformation of nuclear diplomacies during (roughly) the second half of the 20th century.

Our approach targets diplomats working in national delegations of IAEA Member States, nuclear science diplomats, diplomatic editors of major newspapers and electronic media as well as historical actors key to the case.

Key to this task is the textual analysis of published and unpublished sources to be identified in the IAEA archive and website relevant to the development of the safeguards system. Especially important are the recently declassified IAEA records of the Board of Governors, the Safeguards Committee, and the Scientific Advisory Committee. Important too is archival material from the European Commission Historical archives. In addition, our study considers visual material and objects to be texts (McKenzie, 1986). The textual analysis we employ here is original: using methods from a range of disciplines it places texts in a field of social forces and, at the same time, attempts to analyze them conceptually.

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InsSciDE Work Package 6: Security: Scientific and Technical Cooperation in the Context of European Diplomacy	
Case Study n°6.4b	**Role of the IAEA in the Development of Nuclear Techniques, Safety, and Security Measures in Morocco**
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Abstract

In this study, I take up the matter of the role of the International Atomic Energy Agency (IAEA) as well as various bilateral relations in the development of a secure, productive nuclear technological infrastructure in one of the European Union's most important neighbors, Morocco. For years, the various authorities involved in the development of nuclear energy in Morocco have maintained relations with countries like France and the United States, as well as with international and supranational organizations like the IAEA and, more recently, the European Union. This study considers how these relations contribute to the advancement of a secure national, regional, and global nuclear infrastructure.

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The IAEA's founding mission, established in the late 1950s, was two-fold: to monitor against the proliferation of nuclear weapons, and to encourage the development of nuclear technologies in developing countries that lacked them. There is an important historical literature concerning the founding and early history of the Agency, one in which scholars critically examine the degree to which the IAEA reinforced rather than sought redress for the global inequalities that marked the Cold War. In addition, there is a longstanding scholarly concern with the effectiveness of the global non-proliferation regime, including the role of the IAEA. Still to be fully addressed, however, is the question of how and with what effectiveness the IAEA has provided an aide-based framework for the development of nuclear technoscientific infrastructures in member states. How, over the last half-century, has the IAEA provided support for its member states in the development of a useful and secure nuclear infrastructure? To what degree has it succeeded—and how is "success" to be understood and measured?

The present study examines these questions in the case of the Kingdom of Morocco. This is for two reasons. First, Morocco has a long and rich history of collaboration with the IAEA. Since the beginning of the 1960s, the Kingdom has called upon the IAEA to collaborate in areas ranging from basic assessment of infrastructure, to nuclear techniques in medicine and agriculture, to studies of desalination and power-producing plants, to exploration for nuclear raw materials. This especially wide spectrum of activity provides the opportunity for a historical study of nuclear energy in all its dimensions, including the role of other international organizations like the UNDP, UNESCO, and the OECD.

Second, Morocco's geography and history make it especially important strategically, for Europe and Africa. Morocco is linked by pipeline and electric undersea cable to Europe. Historically, Morocco has had close connections especially with France and Spain. The former connection is particularly important in the field of nuclear energy, as many Moroccan nuclear engineers and scientists have trained in France and continue to maintain relations with their French counterparts on a bilateral as well as international basis.

IAEA, French, and US archives yield rich sources on the history of the Moroccan nuclear program's relationship with both the international agency and the nuclear authorities of those countries. While Moroccan archival resources are sparse, my research includes interviews with key Moroccan scientists and administrators involved in the realization of a program that has now become a regional international training center in the areas of radioprotection, nuclear safety, and nuclear science and technology services.
Preliminary results indicate novel findings of at least two sorts. First, the role of the IAEA is not to be underestimated in the development of a nuclear technoscientific infrastructure in the Kingdom. However, the historical process was rarely one of direct technology transfer. Rather, it was more often a process of what might be termed "collaborative nuclear reflection," as Moroccan authorities treated the administrative steps expected by the IAEA as moments to consider carefully the future direction of their nuclear program. Their assessment of that direction changed considerably over time.

Second, perhaps the most significant outcome of Morocco's decades-long collaboration with the IAEA, as well as with French and US administrations, is the present nuclear research center at Maâmora, north of Rabat—and its international orientation. Maâmora has become a key regional training center in the areas of radioprotection and nuclear safety, meaning the diplomatic initiatives in which Morocco was a junior partner have resulted in a situation in which the Moroccan research center now functions as an independent node in the IAEA-centered global nuclear security and safety network.

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