



## HoNESt D1.1

Description of the Project Plan.

Version 1.0



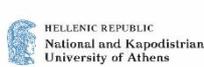
## D1.1 Description of the Project Plan

### PARTNERS

#### PROJECT COORDINATOR:



#### PROJECT PARTNERS:



Friedrich-Schiller-Universität Jena



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**NFRP 12 – 2014: Nuclear developments and interaction with society.**

**Horizon 2020: Euratom Work Programme 2014-2015 Research and Innovation actions**

**Deliverable**

D1.1 Description of the Project Plan (month 1)

**List of Participants**

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- 7 Kobenhavns Universitet (UCPH) DK
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### 1. Objectives

The research project History of Nuclear Energy and Society (HoNESt) takes as its starting point the need for a practically useful analytical framework that allows for the identification of key factors influencing the interaction of nuclear technology with civil society, notably in the energy sector. The analysis of these factors is crucial for the debate on the future of nuclear energy programmes. HoNESt presents a pioneering integrated interdisciplinary framework of analysis that will enable researchers, as well as policy makers and other stakeholders, to analyze specific large technological systems – such as nuclear technology – in their relations with civil society, in order to identify key policy issues and set policy goals accordingly.

Debates on and engagement with nuclear energy are highly emotional and are characterized by entrenched lines of conflict. For instance, in many countries, utilities have realized with dismay, that even though they have invested millions of Euros in improving the safety of nuclear power plants, public opinion and civil society groups still question the safety of nuclear installations and continue to demand their closure. At the same time, there is a wide variance between European countries concerning the perception - and societal acceptance – of nuclear energy.

The central objective of HoNESt is to identify and analyze the core explanatory factors of societal interaction with nuclear applications, based on the historical experience. This interaction – described in what follows as 'nuclear-societal relations' – includes three closely interrelated components:

- Perception: It is crucial to identify and assess the importance of the factors underlying the societal perception of nuclear developments.
- Civil society's engagement with nuclear energy: Such perceptions crucially motivated civil society's varying engagement with this technology (from tacit support to active opposition). It is important to consider that citizens and civil society groups also played an active role in engaging with the technology.
- Policy-makers' and industry's engagement with civil society: This is the main focus of the study: The goal here is to examine the effectiveness of the different mechanisms and instruments used to engage with society, in order to arrive at recommendations for an affordable, secure, and clean energy production.

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Perceptions and engagement cannot be understood in isolation. Nuclear-societal relations are embedded – and this is the core assumption underlying this research project - in complex historical, political, economic, societal and cultural contexts. Only by taking seriously the varying importance of these contexts throughout time and space, will it be possible to understand why nuclear energy is so controversial, why this differs across countries, and what can be done to adequately engage society.

### **1.1. A new history of nuclear-societal relations**

The historical knowledge about nuclear-societal relations is at best fragmentary, disjointed and scattered across contemporary actors' own accounts, often theory-driven contemporary social science case studies, or small-scale comparisons, and some national histories. For the first time, HoNESt will compile a comprehensive comparative survey and indepth analysis of nuclear developments and relations to society in Europe and beyond. Based on primary historical research across 21 countries and international organizations, including a broad range of written and audiovisual sources, as well as interviews with major stakeholders, HoNESt will be able to present a new narrative and analysis of societal engagement in the past 60 years.

Furthermore, HoNESt seeks to overcome traditional methodological nationalism through a broad historical comparison, the inclusion of international organizations – such as Euratom and IAEA – and transnational perspectives. Relations between nuclear power and society play out at various geographical levels, from the local to the global. In its case selection, HoNESt will take this into account.

### **1.1.2. An integrated interdisciplinary framework of analysis**

HoNESt's central analytical objective is to devise a practically useful analytical framework that actually allows for the identification of key factors influencing the interaction of nuclear technology with civil society.

There are three components to this framework of analysis. First of all, HoNESt is interdisciplinary. Scholars from wide variety of disciplines have studied the past, present and future of nuclear developments, including – to a larger or lesser extent – relations with society. Nevertheless, the various strands of this literature hardly engage with each other and frequently focus on specific, often national, case studies that frequently only include superficial references to other contexts and experiences. Thus, HoNESt will address the twin challenges of assembling the knowledge gained from historical research and overcoming the disciplinary and national fragmentation of research so far. HoNESt will integrate historical research approaches from many strands of history (technology, social, political, economic, environmental) with social science approaches (relating to policy studies, social movements and civil society, the public perception of risk and benefits and the study of social engagement) developed by political scientists, sociologists and social psychologists.

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Secondly, the framework takes seriously the multiplicity of actors' perspectives. It is sensitive to the different, and often contradictory, and mutually incompatible (world-) views, and practices, of the varying stakeholder groups. It is safe to assume that relations of nuclear energy and technology with society are complex because they are not simply determined by technological developments, economics and power politics. Thus, HoNESt will be sensitive to the perspectives and varying problem perceptions of stakeholders, addressing such issues as institutional cultures and dynamics, the framing of problems, or the relevance of certain ideologies and visions of the future, as well as fears and emotions. Only thus will it be possible to elucidate why different actors – including governments and civil servants, utilities' managers and shareholders, and civil society groups – perceived nuclear energy as a promise or a problem at varying points in time, and interacted accordingly.

Thirdly, HoNESt bases its overarching interdisciplinary analytical framework on two approaches from the history of technology as well as science and technology studies, namely Large Technological Systems (LTS) and from Integrated Socio-technical System (IST). These approaches assume the embeddedness of technology and its application in a rich societal, political, economic and cultural context. While these approaches have hitherto been used to explain the development of technology itself, HoNESt will shift the analytical focus to relations with society, adapting core concepts to devise a framework that can help explain nuclear-societal relations.

HoNESt will thus provide the first long-term historical survey integrating social science analysis of nuclear energy's relation with society, in order to drastically improve our understanding of the debate on nuclear power. We consider the construction of this interdisciplinary framework to be a core component of its work because it will allow for the analysis of energy problems in the future. It will thus be dedicating an entire work package to developing a common framework of analysis. This is to ensure the necessary integration of data collection and analysis, by devising a coherent methodology and thus safeguarding the quality of the results.

### **1.2. Relation to the work programme**

HoNESt is designed to respond to the Call for the NFRP 12 - 2014: "Nuclear developments and interaction with society," that focuses on understanding the development of nuclear energy in Europe with a view towards clarifying the context within which certain decisions were made, identifying the factors that influenced projects' success or failure in engaging civil society and ultimately, helping to improve communication and interaction with civil society.

In particular, HoNESt responds to separate, but interconnected focuses of the work programme: the programme focuses on understanding the developments of nuclear energy in Europe and the decisions made with regard to them in their respective societal contexts. In relation to this task, HoNESt will collect quantitative and qualitative data on nuclear developments from 21 countries in Europe and outside Europe. This

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information will be compiled in a data base containing both published and unpublished sources. This data is a necessary instrument for investigating changes in nuclear developments and their varying relations with society over time at the local, national and transnational levels. This is the context within which political decisions (in democratic and non-democratic nations; centralized vs. federal states), technological decisions (to build and operate nuclear power plants and other nuclear applications), knowledge infrastructure decisions (technology transfer, education and research), and governance decisions (national and transnational legislation to manage, govern and control nuclear developments) are made.

HoNESt's interdisciplinary approach will allow for the close and integrated cooperation of historians and social scientists, in order to identify the factors which influence the success or failure of nuclear projects. HoNESt takes as a starting point the argument that nuclear developments do not take place in isolation, but in socio-technical systems that are complex and contain both material and immaterial elements. As a result, the success or failure of nuclear developments depends not only on technological excellence or failure, but also on management, governance and operation cultures, visions of society and the future. In addition, nuclear developments interact with society and these interactions (public engagement, legislation, regulation, and media) shape the structure and function of nuclear developments.

It has proven difficult or even impossible to improve communication and interaction between nuclear energy providers and their decisions and civil society, because nuclear debates are polarized, emotional and persistent. HoNESt will tackle this task by including a multiplicity of perspectives of the relevant actors, comparing nuclear communication and interaction in different societies during past 60 years. Special attention will be paid to the study of mechanisms of public participation, perception and engagement in nuclear debates. There are a wide variety of ways in which the general public has responded to the positive and negative sides of nuclear developments and there is certainly no "one best way" of communicating between the two. HoNESt embraces the complexity of interactions between nuclear developments and civil society.

### **1.3. Concept and approach**

Regarding nuclear energy, HoNESt will embrace the complexity of political, technological and economic challenges; safety; risk perception and communication, public engagement, media framing, social movements, etc. Research on these interactions has been mostly fragmented. HoNESt's interdisciplinary, multi-perspective, open and inclusive approach reflects the core demands of the Call NFRP 12 – 2014. This is reflected in particular in the interdisciplinary collaboration of historians and social scientists, and the emphasis on generating a common framework of analysis, in order to ensure appropriate an methodology and data collection. HoNESt focus on the historical and social-scientific interpretation of past nuclear developments, decision-making and associated citizen engagement. We propose to analyse and integrate this

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knowledge, including the factors underlying perception, participation and engagement, with the aim of projecting a range of engagement futures. To address the latter aspect, we propose a “Backcasting” work package as part of the project. Through a historical analysis of and social learning with regard to previous engagement failures and successes, we aim to project this forward to develop various preferred optimal future engagement scenarios. Here, the association between history, policy, engagement and civil society responses to nuclear events will be explored in detail. HoNESt’s approach is committed to an open and inclusive debate on future energy sources.

In order to undertake this large-scale analysis of nuclear-societal relations from a historical and interdisciplinary perspective, it is indispensable to define and conceptualize the two components of these relations: one on the one hand, nuclear energy and, on the other hand, the actors and methods involved in this interaction, including civil society and engagement.

Nuclear energy is not simply a set of technologies and a source of power in a context of growing and changing societal demands. For HoNESt, nuclear energy is a complex sociotechnical system encompassing basic research, technology development and implementation. The technology itself is thus embedded in a large number of fields: - with regard to what it produces (energy, nuclear medicine and agriculture, isotopes in industry, etc.); - what it requires (operations demanding high reliability and safety, regulation, financing); - and what advances or limits its further development (geopolitics, national and international policy and public perception and engagement). Therefore, it is safe to argue that nuclear developments, notably nuclear energy, are closely intertwined with social, economic, environmental, political, and cultural spheres. Nuclear energy is also a globalized system involving transnational transfers of knowledge, materials, technologies, people and products including electrical power, medical elements, toxic wastes and other environmental hazards, materials, capacities and knowledge that must be carefully safeguarded. International organizations play an important role in this context. Nuclear energy is a complex social and technological phenomenon that influences societies but is also shaped by societies. Nuclear developments are based on advanced scientific discoveries, multidisciplinary technological and industrial research, multilevel national and international organizations and transnational corporations that operate, manage and govern nuclear fission, its applications and waste. Nuclear developments are “manmade” technologies and therefore they reflect demands, expectations, hopes and fears of modern societies. Nuclear developments were born in the military industrial context and this connection has not gone away, even if civilian use of nuclear energy and applications have gained a much bigger share of the field. Not least due to the association with the “bomb”, nuclear developments have been and continue to be controversial, emotionally charged and contingent on continued political support.

Problems raised by nuclear activities have an impact at several levels (local, national, international), and are multi-dimensional, i.e. they entail safety, economic, social, ethical, political, legal and environmental issues. In the face of this complexity, traditional modes of management both by utility operators and by public administrations

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appear to be quite fragmented: their reductive approach is to break down complex problems into several simplified one-dimensional issues which are more easily handled. Traditional governance has difficulties in addressing issues of legitimacy, just as it has in addressing complexity and multi-dimensionality. This situation has led to major conflicts over technological development in recent decades, and to a crisis of trust in decision-makers, as well as in experts. The key to understanding the mechanisms of interactions between the nuclear developments and the civil society is thus not to limit the scope of the analysis, but to embrace the complexity of the phenomenon. In order to tackle this complexity, HoNESt will address the task of discovering and analyzing mechanisms of interaction between nuclear developments and the civil society.

HoNESt's point of departure for the analysis of the complex and often conflictual relations with civil society are the insights provided by the Large Technological Systems (LTS) and Integrated Sociotechnical System approach (ITS).

LTS and ITS emphasize the complexity of systems that contain both technological and social elements. They assume the embeddedness of technology and its application in a rich societal, political, economic and cultural context. LTS and ITS define a system by its components and the interaction between these components. The system is not only studied with a view to its internal dynamics, but also – to a greater or lesser extent – with a view to external elements that are essential for the constitution of the system. These elements include financial systems, companies and their R&D departments, higher education systems, political organizations (or contexts), financial and law systems, textbooks and manuals, economic development policies, international scenarios, governmental sector, knowledge transmission mechanisms, societal engagement, etc. These are all considered to play a role, to a greater or lesser degree, in the constitution and development of the systems, changing their characteristics over time and as a result of interaction with the rest of the system and its own development.

The literature on LTS and STI raises a variety of issues that will inform HoNESt's approach to studying nuclear-societal relations, notably:

- Systems' internal logics: It is necessary to understand the nuclear sector's own rules and systems dynamics. HoNESt will study the development of the nuclear sector considering these internal logics – shaped by e.g. the education and attitudes of the innovators, system-builders and managers, technological developments, innovation and decision-making, and the implications this has for dealing with the challenge of engaging with society.

- Change over time: In the course of time, socio-technical systems tend to grow in size and momentum. At the same time, systems lose flexibility, become conservative and resist innovations and radical change. They also reduce risks and technological failures by promoting incremental innovation, transnational political control and governance and technological standardization. HoNESt will take such phenomena into account, not only with a view to the development of technology, but, in particular, also with a view to dealing with public perceptions and the modes of engaging with society.

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- Geographical scope: Socio-technical systems – such as nuclear energy – tend to grow and expand beyond local and national borders. Adaptation to new political, economic and cultural environment requires technological and social innovations. Technological styles reflect the social, cultural and ideological values of particular countries. HoNESt will consider this insight into account in the comparative setup of this study, based on national cases. Given that nuclear developments are transnational by their very nature, HoNESt combines this with a transnational history approach that pays attention to networks and flows of ideas, goods, knowledge and technologies. In addition, attention is paid to appropriation and technologies and ways in which nation states link to or de-link from each other.

- Linkages beyond the system: The systems approach has been criticized for its emphasis on engineering and management, while largely ignoring the external and internal interest groups that influence the development of large socio-technical systems. Newer upgraded systems approaches have responded to this critique by including customers, political parties, political leaders and other stake holders into the analysis. These studies highlight the importance of these actors in shaping large technological systems. Their perception of risks, fears, expectations and ambitions are important with regard to decision making in the system.

### **1.3.1.2. Conceptualizing interaction with civil society: perception and engagement**

In order for HoNESt to understand the complex interaction between nuclear energy and civil society, it is crucially important to understand the actors and modes of interaction involved. The call NFRP 12-2014 refers to civil society as the main participant in this interaction. Civil society describes a societal realm that is neither government nor market. In this intermediary sphere, and this is the central idea, citizens can associate freely, independent of the state, discuss concerns that are of political relevance to them, feed them back into the political discourse and thus participate in the decision-making process. Normative political theory attaches great hopes to civil society, regarding the mode and quality of its interaction, and its political consequences. As emphasized, civil society tends to engage in rational discourses. These not only lead to greater democratic legitimacy of decision making, but also to a substantively better quality of decision making and policy results.

However, more broadly understood, civil society has come to mean all the societal organizations and interaction in the intermediary sphere of politics. These include individual citizens and their associations (“civil society groups”). On this broader understanding, these groups include lobbying and interest groups, labour unions, business groups and social movement organizations. Social science studies on these organizations focus on their organizational problems, their aims, ideas and motivations, and their involvement and effectiveness in interest representation as an important sphere of politics. HoNESt will draw on this literature, notably the literature on social movements, both with a view to their findings regarding nuclear policy and with a view to improving our understanding of how civil society – as an actor – engaged with

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nuclear power.

For the analysis of nuclear-societal relations over the course of time, HoNESt draws on concepts of engagement, i.e. measures undertaken (or not undertaken) by decision-makers to raise the legitimacy and acceptance of decisions regarding nuclear technology. The social science literature on engagement has highlighted the crucial link between perceptions and democratic, participatory procedures of engagement. In line with the debates on civil society, participation and discursive democracy, many social scientists have criticized the traditional technocratic approaches to decision making with regard to new technology. Technical specialists tend to assume that decision quality suffers when non-expert lay people are involved in techno-scientific policy-making. They fear that decisions will be driven by ‘public sentiment’ rather than sound science.

In modern democracy, most social scientists argue concepts related to public acceptance (e.g. fairness, equality of access to decision-making) should be key facets of participation in policy settings, for at least three reasons: First, technocratic decision-making based solely upon technical criteria is not as interest-free or value-free, as is usually assumed. Technical experts inevitably prioritize not only technical evidence but also their own values. Secondly, avoiding fair consultation and participation, ignores and challenges the rights of affected citizens to be involved in environmental decision-making (e.g. under the Aarhus Convention). Thirdly, even if the legitimacy of technocracy may have varied over time and between countries, research suggests that ignoring public concerns has been a consistently ineffective and unsuccessful form of nuclear policy decision-making in practice.

Quantitative and qualitative evidence of the public acceptance of nuclear technologies records highly complex factors influencing and shaping perceptions and values, including issues such as institutional trust, procedural fairness, risk tolerability and availability of scientific information. However, there are also significant external factors such as nuclear power’s role in mitigating anthropogenic climate change and the ‘anthropogenic shock’ of nuclear events such as the Chernobyl disaster, and more recently the Fukushima disaster. Such complex factors go beyond simple direct interactions with government and the nuclear industry and incorporate a spectrum of interactions within local communities and within wider society.

In trying to understand what shapes public perceptions and will lead to successful, fair and sustainable decision-making in the field of nuclear technology, HoNESt will draw on these insights and map and evaluate key factors. At the same time, it will also take into account varying contemporary perceptions of what is necessary for successful engagement. For instance, while in the early postwar period, trust in science and experts tended to be very high, this eroded since the 1970s. With the emergence of the Public Understanding of Science movement in the 1980s, public involvement in techno-science largely focused on information provision, public relations, and public education. This has been criticised as ‘deficit model’ thinking, whereby a rhetoric of making the lay public “experts” was seen as the means to ameliorate public opposition to scientific and technological developments.

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Fair and open public participation is nevertheless hard to achieve, and rich in preconditions. Many of the limitations experienced in participatory processes have their roots in the organisational cultures of those who sponsor or participate in them. For example, non-negotiable positions, or lack of clarity regarding the influence of participants may simply be the result of pre-determined positions decided at higher levels within the organisation prior to participation in the process that representatives do not feel able to negotiate. The proposed HoNESt conceptual framework is intended to raise awareness among policy makers and other stakeholders of their own organisational culture and its implications for fair and successful engagement.

### **1.3.2. Between idea and application**

HoNESt is entirely based on original research: first, in conceptual terms, it will develop a pioneering interdisciplinary analytical framework; second, for the first time, it will undertake a comprehensive collection and review of existing studies on a continental scale, and thirdly, it will carry out a large-scale study, based on primary sources, of the as yet unwritten history of nuclear-societal relations in Europe. At the same time, the goal is to distinguish and assess the key factors and mechanisms relevant for engaging civil society, and feeding them back to and discussing them with stakeholders. Thus, the project seeks to produce practically relevant and applicable results.

In the area of methodology, HoNESt will demonstrate the necessity of an interdisciplinary approach to the analysis of nuclear technology, and to present a sophisticated image of how technological progress comes about. For solid empirical work in multifaceted fields, it is necessary to combine the contributions of different scholars who understand each of the divisions of innovation technological systems (technology, institutions, political and economic organization, etc.) and who are committed to collaborating towards a common understanding. This provides the basis for the developing a common interpretative framework. As already mentioned, HoNESt aims to challenge traditional analyses of technology development through an interdisciplinary examination of actors, elements and contexts at various levels. The main empirical framework for the research will be historical and sociological, with a multidisciplinary approach (economic, cultural, political, psychological, social and environmental history and history of technology and science) which intends to establish a common basis for the utilization of theoretical tools from social and historical sciences, economics and cultural studies. The methods of the historical research will combine qualitative interpretations of historical sources (including e.g. discourse analysis) and quantitative analyses (e.g. based on economic and statistical data).

HoNESt will devise tools to identify (operationalize) the relevant ideas, perceptions and organizational structures, and economic elements of nuclear energy as a technological system. In the area of empirical analysis, HoNESt is committed to comparative methods and transnational approaches. It will devise a systematic framework for the comparative analysis of national systems, while considering transnational linkages, including those mediated via international organizations. This provides a thorough empirical foundation

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for understanding of public policy, decision-making on energy policy and relations with civil society in various settings.

Sources for the research include new archival material from the countries and the international institutions to be considered. Published materials such as economic studies, ministerial materials, statistics, agreements, contemporary research, autobiographies, journals and newspapers will also be used. Interviews with the actors involved in knowledge transfer will be of great importance in providing material to support the archival and other material, and in providing crucially important insights and first-hand accounts (interviews). However, HoNESt's researchers are well aware of the methodological problems related to the limits of memory. These issues will be addressed by combining and cross-checking different kinds of sources.

### 2.1. Expected impacts

Providing the first large-scale and long-term systematic analysis of nuclear developments and their interaction with societies, HoNESt will offer new and unprecedentedly comprehensive insights into how European societies have perceived innovative technologies, in particular nuclear energy. It will demonstrate how and to what extent this has changed over time. HoNESt will not only draw clear conclusions about the key factors and mechanisms involved, it will also discuss and mediate these back to stakeholders across Europe.

Providing highly policy-relevant knowledge, HoNESt will have a major impact in, at least, four areas:

- (1) the expected impacts specified in the call and work programme,
  - (2) on European societies' competitiveness in terms of high technology and innovation,
  - (3) on environmental, social and societal issues,
- and finally on
- (4) humanities and social science research.

HoNESt is designed to achieve the impacts specified by the Call by integrating innovative interdisciplinary research with active communication, engagement and discussion with and dissemination to the relevant stakeholders, including different research communities. Such a strategy seeks to ensure that actual lessons can be drawn from 60 years of nuclear-societal relations.

Three limitations of nuclear debates are of particular relevance for this project:

First, our perception of societal relations with nuclear energy is characterised by a lack of historical reflection. While references to history frequently serve as a political argument, actual information about how societies viewed and engaged with nuclear

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technology is highly fragmented. Moreover, due to the politicised nature of the debate, perspectives are frequently distorted. This is also reflected in the rather scattered academic research on this issue. Agenda-driven accounts of contemporary actors have reiterated past lines of conflict. Some theory-driven analyses of contemporary social scientists exist, focussing on specific aspects relevant to the respective theories. Finally, there is sporadic, at best incipient research on specific cases by historians of science or environmental historians. By providing a comprehensive historical overview and analysis for the first time that considers varying contexts throughout time and space, HoNESt will allow a singling out of key factors characterising societal engagement throughout time. Moreover, academics as well as stakeholders are often unable to understand the complex logic of societal relations with nuclear technology. Clearly, there is a lack of mutual awareness and recognition of the preferences, perceptions and modes of thinking of the different stakeholders. Scientists, policy-makers, civil-society groups and citizens' usually have very different goals, concerns and worldviews. They use different languages and often confusing jargon that is not understood by outsiders. This has led to a lack of mutual understanding – a veritable “dialogue of the deaf”. This phenomenon also characterises most of the existing research on societal relations with nuclear energy.

Assembling the relevant information from technology, science, economy, politics and society allows lessons to be drawn from a large number of examples of different engagement practices. By systematically juxtaposing these, it will be possible to uncover relevant mechanisms and key factors. At the same time, change over time, path dependencies, learning processes and the impact of changing societal and political contexts, will become visible.

### 3. Implementation

HoNESt's work plan comprises 6 work packages, each contributing to the central idea of providing a new, comprehensive, and interdisciplinary analysis history of nuclear-societal relations, thus offering a “performance assessment” for the first time. Both historical and sociological work packages will be coordinated by UPF (WP1) in order to achieve the ultimate goal of the project, which is to develop a practically useful historical and interdisciplinary analytical perspective, with a view to feeding back and discussing the findings with the relevant stakeholders. A consistent methodology will be developed in order to fulfill all the call requirements. In addition, given the novelty of this methodology – the joint work of historians and sociologists applied to the nuclear history – a specific Work Package will link the specialists and the knowledge from both sciences (WP3). Attention will be paid to the dissemination of the outputs, to the full range of stakeholders within and beyond the nuclear community; but also to the general public.

The rationale behind the division of the different activities is scientific and functional. On the one hand, the scientific side of the project is divided in four WPs. One of them corresponds to the historical research (WP2), two to the social sciences (WP 4 & 5) and

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another one to the linking of both perspectives (WP3). On the other hand, activities like management and dissemination have their own individual WPs. In essence, HoNESt's planned work will be organised as follows:

- WP1: "Management and coordination structure and procedures" corresponds to the administration, management and coordination of the consortium; Scientific Secretary (**UPF**; **UPNA**)

- WP2: "History of the civilian production and use of nuclear energy in Europe, 1945-2013; Constructing the narrative" will realize the historical research and divided in two steps, according to the main activities: First, the collection of the historical data, including archival research and interviews, from the 21 selected countries. This information will be stored in HoNESt's Database and made accessible in country reports, and the analysis and interpretation of the data in order to construct a narrative that will be used by the sociologists in the following WPs (**LUT**; **UPF**; **UPNA**; **UCPH**; **SM**; **UPMC**; **KTH**; **UoA**; **EHU**; **TU/e**; **DM**; **FSU JENA**; **UPlovddiv**; Federal state budget institution of science Institute of History and Archeology of the Ural branch of the russian Academy of Sciences)

- WP3: "Translating, linking and bridging: Phase 1 (History) and Phase 2 (Social Sciences)" is the scenario where sociologist and historians meet, where they agree how to properly analyse the data collected and end up providing a suitable research model (**UPNA**; **UPF**; **LUT**; **UCLAN**; **DIALOGIK**; **UCPH**; **UAB**; **Försvärshögskolan**, Swedish National Defense College; **SM**; **GRE**; **KTH**; **TU/e**)

- WP4: "Understanding perceptions and mechanisms for societal engagement" will develop preliminary and in-depth analytical frameworks to suitably interrogate the evidence generated by the empirical historical research in WP2 and to offer enough evidence for the Backcasting exercise in WP5. (**DIALOGIK**; **UCLAN**; **UCPH**; **UAB**; **UANTWERPEN**; **FHS**; **GRE**; **USFD**)

- WP5: "Backcasting: ideal futures" will include the Backcasting exercise, which strongly depends on the outcomes of the WPs 2, 3 and 4. HoNESt relies on this innovative exercise in order to achieve the success and go beyond the star of the art (**UCLAN**; **DIALOGIK**; **UAB**; **UANTWERPEN**; **GRE**; **USFD**)

- WP6: "Dissemination and Engagement" is devoted to the dissemination to and engagement of the stakeholders, as specified in the Call. All partners will participate in the dissemination of the outcomes of the project at a national level. In addition, a selection of institutions will also take part in all sorts of international events in order to maximise the impact of the project (**UCPH**; **UPF**; **UPNA**; **LUT**; **CIEMAT**; **UCLAN**; **DIALOGIK**; **UAB**; **UANTWERPEN**; **Försvärshögskolan**, Swedish National Defense College; **SM**; **GRE**; **USFD**; **UPMC**; **KTH**; **UoA**; **European Humanities University**; **TU/e**, **DM**, **FSU JENA**; **UNIVERSITY OF PLOVDIV**, Federal state budget institution of science Institute of History and Archeology of the Ural branch of the russian Academy of Sciences; **SPI**).

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### 3.2. Management structure and procedures

Considering HoNESt's size, length, life cycle and funding scheme, a lean management organization is considered to be adequate to guarantee a fluid and efficient communication between partners and to preserve the quality of the results according to the objectives of the Call. However, this lean approach must be tailored to the particular characteristics of a research and innovation-focused project whose main research goals are related to the successful production of results and a broad dissemination effort in order to ensure the desired impacts. Therefore, incorporating mechanisms of Quality Assurance, the management structure will focus on the Project Board, which will serve as the managing body.

In addition, the project members will sign a Consortium Agreement, which will address issues such as property rights, confidentiality issues, voting rules or monetary obligations, amongst others. The consortium agreement will define all of the concepts (definitions, rights and obligations) related to IPR and create a general management framework for the exertion and protection of the single partners claims.

A schema of the envisaged HoNESt's management structure is the following:  
Management working structure

HoNESt's management working structure basically consists of two levels: work package level, and project level as projected in the four dimensions of the management: technical, analysis, dissemination and day-today management.

#### 3.2.1. Project Board

The Project Board will manage the project. The Board is in charge of the project's financial management, monitoring progress and management of risk in the consortium, within the framework provided by the Horizon 2020 contract.

The Project Board consists of representatives of each WP (typically the Working Package leader plus the Project Coordinator) and the Scientific Secretary. The WPs' representatives and the nominated managers will be appointed at the kick-off meeting to take place within the first month of the project. The Project Coordinator will chair the Project Board and will perform as a link between the Horizon 2020 and the Consortium. The Project Coordinator will also be in charge of recording, distributing and implementing the resolutions of this committee. HoNESt's Project Board will deal with Project Assurance. Assurance involves checking that the project remains viable in terms of costs and results (business assurance), checking that the Call requirements are being met (user assurance), and that the project is delivering the envisaged results according to the scheduled plans. The Board is also responsible for implementing contingency measures in those cases where deadlines are overrun, budget under/over spent, or partners drift off topic.

After the launching of each stage, the Project Board will discuss assurance with special

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emphasis on reviewing and assessing the project achievements in terms of the Key Performance Indicators as defined for the evaluation and for achieving the impact of the results of the project.

The Work package 6 (Dissemination and Engagement) Leader and the Project Coordinator will provide information about the Key Performance Indicators (KPIs) achievements in their respective areas and will propose actions and repurposing of task in case of necessity.

The Project Board's responsibility extends also to the strategic Management, which is concerned with the final objectives of the project. The management will assure the success of the whole project, and the securing of the expected results both in terms of quality, costs and time, and in terms of their further dissemination and utilization. This function also includes a basic Quality Assurance System for the project itself and its results. Strategic issues also include the management of conflicts or possible changes or project re-orientation. The Project Coordinator will provide the Project Board with information on the monitoring of the strategic issues, and will propose decisions, which will to be made by majority, where necessary.

### **3.2.2. Advisory committees**

Assisting the Project Board in key questions, and ensuring the quality and relevance of the research results (in scientific terms and with regard to dissemination), HoNESt incorporates two external committees: a Scientific Board and a Stakeholders' Committee.

The Scientific Board will exercise a function of periodic academic evaluation of the project (at 8 months, 20 months and 30 months). Similarly, the intermediate deliverables and milestones of the project will be presented and discussed with the Stakeholders' Committee representing the groups that HoNESt addresses:

industry, politics and citizenship (12 months and 36 months). This structure will ensure project success. Membership of both committees will be by invitation only.

### **3.2.3. Work package organisation**

Each work package has one or two work package leaders. This person is responsible for designing and implementing the work package on time (as in the schedule approved by the Project Board), costs (overseeing the appropriate use of finance budgets associated with each WP) and content framework (integration of activities and ensuring quality of assigned deliverables) as given in the framework provided by the Board, WP leaders are required to coordinate partners in planning and organizing regular WP meetings during the project and returning reports to the Project Coordinator as required within two weeks of the event. Of special relevance is their role in building a sense of common purpose among the WP partners, which means building the consortium into a coherent

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group oriented towards seeking overall benefits beyond the WP.

WP leaders will also serve as a contact point for the other work package leaders. The work package leaders will report to, and be coordinated by, the Project Coordinator, who will serve in this respect as a technical coordinator, by collecting, collating and assessing information for periodic reports from contributing partners according to guidelines provided by the Project Coordinator.

### 3.2.4. Management

The institution Coordinator is UPF which will lead the work of HoNESt and be a key person in the achievement of the project's objectives. The role of the Project Coordinator in HoNESt will be to provide a management structure that both helps and monitors the project development and to perform administrative duties, thus serving as a crucial tool for its success. The Project Coordinator will thus take on the day-to-day management, assisted by appropriate hired personnel. This will involve the following tasks: Monitoring the development process, coordinating the work packages, supervising and supporting the work package leaders, establishing events, supporting the external scientific and stakeholders' committees, and ensuring that the project meets its objectives. The day-to-day activities are under the responsibility of the Project Coordinator, both on an administrative and a technical level. UPF as the co-ordinating contractor will be responsible for the consortium management and technical co-ordination. UPF will provide legal and financial administration, drawing on its very extensive experience of managing European collaborative projects in FP5, 6, and 7 to provide the Administrative Unit that manages HoNESt and supports the Project Coordinator. Additionally, the Scientific Secretary will assist the Project Coordinator in the task of monitoring the academic progress of the project, coordinating the scientific results, and guaranteeing the smooth internal communication of the academic achievements across the WPs to the Advisory Boards and Project Board.

The Scientific Secretary will also be in charge of supervising the external flow of information through a close collaboration with the Dissemination Manager.

### 3.2.5. Project Communication

Official internal project communication will be carried out by means of meetings, video-conferencing, webinars and reporting.

### 3.2.6. Meetings

The organisation of meetings will follow the management structure and comprise meetings on two levels: Board meetings will take place every semester, starting from the first day of the HoNESt project. They will consist of reports of the Project

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Coordinator, the Dissemination and Engagement manager and the technical committee with the participation of work package leaders, and will decide on all relevant project issues: release of work package deliverables, preparation and follow-up of reviews, discussions with the EC and/or external partners, cost issues, participation, organization of workshops and conferences, etc. Board meetings will be organized by the Project Coordinator, with a written agenda as part of the invitation, and the taking of minutes. Board meetings should be attended by the Project Coordinator, the Academic Secretary, the Dissemination Manager and the work package leaders (or the designated deputy), who constitute the Board Members. Voting right is only with the Board members. Work package meetings and other workshops will be held as scheduled. These meetings will be arranged by the work package leaders' prior communication to the Project Coordinator. The results of these meetings will be documented in minutes that will be forwarded to the Academic Secretary within two weeks of the event. The Dissemination manager will be informed both by the Project Coordinator and the Academic Secretary of the meetings taking place on the different working packages so that the events can be announced and results disseminated promptly and efficiently (see below). For work package meetings, webinars and teleconference meetings will be preferred.

### **3.2.7. Reporting**

There will be strict reporting procedures:

Work package members will send trimester reports to the work package leaders, who will consolidate these and send them to the Project Coordinator and Scientific Secretary (administrative and scientific reporting).

Work package leaders will provide input in relation to both administrative and academic issue to the sixmonthly report, which will be drafted by the Project Coordinator and the Academic Secretary, as input for the Board review. These reports will also be delivered to the Dissemination and Engagement manager.

There will be an annual report that documents HoNESt's progress for the interested parties outside of the project and the public. Additional reports, for reviews and other occasions, will be provided on request. In exceptional cases (e.g. Horizon 2020 requirement), at the request of the Project Coordinator, work package leaders will be obliged to submit progress reports on their respective work package within one week.

### **3.2.8. Decision Making**

Decision making will normally be carried out during meetings. Issues to be decided must be announced in the invitation convening such meetings, with sufficient notice provided. The decision must be stated in written form in the minutes of the meeting, in order to be verifiable by any interested third parties. In special cases, or in urgent cases, decision by email will also be permitted if no partner objects. In such cases, it will be

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the task of the work package leader (on the work package level) or the Project Coordinator (on the Board level) to organize this decision and count the votes. As with other decisions, email decisions should be documented in the minutes of the meeting following the making of such decisions. Unanimous decisions will be preferred over absolute majority, but in exceptionally contentious cases a simple majority vote will suffice, except in the cases noted below. Decision lines The line of decision-making reflects the different levels of the project organization. Decisions on the work package level: Technical decisions within the scope of a work package will be taken by the work package leader, after consulting all work package partners involved. If partners of the work package do not agree unanimously or by absolute majority, the decision will be brought to the Board. Furthermore, if the scope of the decision extends beyond the scope of a single work package, the Board must be involved. Decisions on the Board level: Decisions that concern the project as a whole will be taken on the Board level. This refers to project priorities, content of the development, funding issues, formal contacts with other partners, and similar risk management and contingent measures, etc. Decisions taken by the Board members will be by absolute majority; in cases involving partners' performance (for failure to deliver etc.) a majority of two thirds of the votes will be required. The Project Board will entrust the Project Coordinator and the Scientific Secretary with the implementation of its decisions.

### **3.2.10. Results Management**

At the kick-off-meeting, HoNESt Project Board will nominate the Project Coordinator to be the responsible for planned results. The Project Coordinator will make certain that the latter are created and delivered as planned by ensuring that work in the different WPs conforms to the requirements of interfaces and identified requirements; by assessing work progress and forecast enhancements regularly and by ensuring that completed results meet quality criteria.

### **3.2.11. Dissemination Management**

HoNESt has nominated Copenhagen University (UCPH) as Dissemination and Engagement Manager. UCPH will be responsible for the execution of the Communication Plan and planned activities, maintaining, updating and activating the information channels and, in particular, proposing and planning the Data Management Plan.

The project Dissemination and Engagement manager will also be in charge of publishing the six-monthly reports on the Dissemination and Engagement activities undertaken by each partner. In coordination with the Project Coordinator and the Academic Secretary, the Dissemination leader will be responsible for publishing the meetings taking place within the different work packages, so that the events can be announced and results disseminated promptly and efficiently. These reports and event notifications on activities will be used for the newsletters and project website updates.

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The Dissemination and Engagement manager will make sure that the communication plan will be regularly revised to include improvements based on the experiences in the course of the project.

#### **3.2.12. Management of IPR**

With the Intellectual Property Rights (IPR) policy, Project Coordinator will track the IPR issues, and the foreground/background components that arise during the project. The list of IP-relevant components will be kept up-to-date by the Project Coordinator.

#### **3.2.13. Standardisation Management**

The Project Board will monitor and support standardization activities, especially in the interdisciplinary collaboration in WP3 between historians (WP2) and social scientists (WP4, WP5) - for instance, by setting the rules of the different country reports, and making sure they reach the people in charge of the historical data collection in WP2 - and entitle project members to act on behalf of the project as a whole. The management of the project will take the following list of Milestones as the basis upon which to assess its development.

### **3.3. Consortium as a whole**

HoNESt Consortium comprises 23 institutions belonging to 16 countries. The joint experience of the consortium experts allows extending the research to 21 national case studies, plus the role of multilateral institutions dealing with the implementation of nuclear energy in the World and in Europe.

The Consortium matches the project's objectives by providing the local, the national and the international perspectives. Clarifying the context within which certain decisions regarding nuclear power were made, identifying the factors which influenced projects' success or failure in gaining engagement of the civil society and ultimately, help improving communication and interaction with civil society for the benefit of all

public and private stakeholders concerned, requires the combination of the three levels. No national research project could in isolation achieve such objective without taking into account the international and comparative perspective. The need for international perspective is clear when the stakeholders in many occasions were beyond the boundaries of each of the nations (the reactor building companies for instance). Geopolitics and international economics played a role as much as local communities regarding nuclear decisions. Bringing a pan-European consortium, with the addition of the major supplier of nuclear technology in the early days of the industry, the United States, provides the widest possible perspective – from local to international.

HoNESt partners will provide sufficient evidence for the social scientist in the

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Consortium to compare and contrast the range of mechanisms industry and policy makers historically used across Europe (and beyond) to engage with society on the nuclear issue; assess any evidence on the effectiveness or otherwise of the different approaches; and provide recommendations on relative effectiveness of mechanisms (and their context dependency).