HoNESt History of Nuclear Energy and Society

D 5.1 – Principles for Effective Engagement

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1. Introduction

In the context of interactions between nuclear power and society since the mid-twentieth century, this report explores various examples of historic, international engagement, informed by a review of a range of literature on stakeholder, community and public engagement. The aim of this report is to identify a number of core principles that reflect effective and positive engagement and, in turn, aspects of poor or ineffective engagement that should be mitigated or avoided during future programmes. By identifying a series of 'principles for engagement', we seek to provide guidance on future engagement practices and programmes, among both nuclear stakeholders and those in other technological fields. We identify principles of engagement that are applicable beyond those scenarios involving nuclear power development, and even energy more generally. To define a desirable engagement future, it is necessary to understand what principles or values are required to ensure fair and equitable engagement. Whilst it is impossible to predict the complexity and behaviour of human and social systems, it is possible to elicit the principles or values that have contributed significantly to the perception of successful engagement. Authors such as Bond *et al.* (2004) have undertaken similar exercises to this in reviewing and detailing broad principles of public participation, part of which involved studying the public engagement approach for assessing different decommissioning proposals for Trawsfynnydd Nuclear Power Station in North Wales, U.K. The current work seeks to similarly identify principles of effective engagement, but will include the historical experiences of various European countries to do so.

As has been argued in recent energy literature, energy developments which are planned, managed and established in institutional governance systems with few or no opportunities for citizen influence *"inherently lack social justice, procedural fairness, and ultimately, a social license to operate"* (Whitton, Brasier et al. 2017: 11). The concept of governance, and of energy governance in particular, is one which is of particular relevance to this work, and to the HoNESt project more widely, as it explores the opportunities for and responses to public and stakeholder engagement in the context of large-scale nuclear energy infrastructure across Europe. For the purposes of our work, we refer to and frame our discussions using the second and third dimensions of governance in the context of 'energy megaprojects' as proposed by Sovacool and Cooper (2013). These relate to the economics and politics of the governance system (e.g. the coalitions of interest involved in

supporting or opposing a megaproject), and the interaction between megaproject technology and the variants of social organisation created by it (e.g. whether it is controlling or democratic), respectively.

Prior to any discussion on what form 'successful engagement' may take, we explore what the term 'engagement' refers to. We begin with a broad review of the academic and grey literature to explore definitions and conceptualisations of engagement, before examining detailed country reports so as to draw out and identify principles and values which are found to constitute and contribute towards perceptions of successful engagement.

2. Engagement: a brief literature review

Noland and Phillips (2010) state that the term 'engagement' describes *"interaction that involves, at minimum, recognition and respect of common humanity and the ways in which the actions of each may affect the other"* (p. 40). Engagement is similar to participation in regards to its broad meaning, describing the various ways in which information, views or opinions flow multi-directionally between the public and decision-makers (Cass 2006). To clarify, members of the public can be engaged on a subject or decision but it does not follow that they will participate in the relevant decision-making process in an influential capacity, unless the outcomes of engagement inform the process. In short, engagement can lead to participation in decision-making, whereas participation involves engagement.

Building on the early engagement and participation categorisation work of authors such as Davidson (1998) who proposed various degrees of participation, Rowe and Frewer (2005) propose a categorisation scheme for defining various levels of engagement. In their study of public engagement mechanisms, they identify three key concepts: public communication; public consultation; and public participation. In the context of participation practices, the authors distinguish them by *"the nature and flow of information between exercise sponsors and participants"* (p. 251):

Communication - one-way information flow, from sponsor to the public, and no feedback is sought.

Consultation - one-way information flow, from the public to the sponsor (e.g. answering questions from sponsor), but with no dialogue.

Participation - two-way exchange of information, between sponsor and public, where there is the potential for opinion transformation in either party.

According to this perspective, they explain how the effectiveness of such engagement can be measured:

> *"…an exercise's effectiveness may be ascertained by the efficiency with which full, relevant information is elicited from all appropriate sources, transferred to (and processed by) all appropriate recipients, and combined (when required) to give an aggregate/consensual response" (p. 251).*

'Engagement' in the first instance is used to refer to the formal processes used to include members of the public in decision-making processes, and to facilitate the collection or integration of their views, to a greater or lesser extent (Cass 2006). The reasons for engagement are important to explore. Engagement is important, but meaningful engagement, conducted 'for the right reasons', is critical. Within a philosophical context, Fiorino (1990) provided three arguments for public engagement and involvement: the *substantive* argument, the *normative* argument, and the *instrumental* argument. These argue and promote the value of lay people's judgements on risk, the promotion of public participation based on the notion of democracy, and the mitigation of conflict and promotion of trust, acceptability and decision legitimacy, respectively. Similar arguments for public participation have been discussed by Beierle and Cayford (2002). The importance of public and stakeholder engagement has been acknowledged among varied disciplines, as demonstrated by Mathur, Price and Austin (2008) in their paper on the sustainability of construction projects. They concur with authors such as Fiorino albeit expressing the concept differently, whilst adding to these existing reasons to engage by suggesting a fourth, in that it can build social capital. They also propose that stakeholder engagement represents a process of social learning among stakeholders:

> *"…a social process where diverse stakeholders share a common forum, learn about each other's values, reflect upon their own values and create a shared vision and shared objectives" (p. 601).*

More recently, Wright (2012) has stated that not only is participation able to remove opposition to, or influence, a decision or proposal, but it is indeed a democratic right for local communities, echoing the normative argument of Fiorino (1990).

Degrees of engagement can influence levels of public and stakeholder support for large-scale developments, such as nationally significant energy infrastructure. For example, and particularly in regards to engagement with 'the public', perceptions of marginalisation and being excluded from decision-making processes can have significant impacts on public support. Barnett et al. (2012) note that when members of the public feel marginalised or perceive their concerns and priorities to be ignored, negative emotions can result, which can contribute to negative assessments of projects, which in turn can lead to their active opposition. Concurrently, the authors detail the findings of scholars who have found that positive public perceptions are associated with the active involvement of local citizens (Devine-Wright 2005, Loring 2007), whilst Wolsink (2007) asserts that local support may turn to opposition if the concerns of local stakeholders are not considered and incorporated into decision-making process.

It is important at this stage to acknolwedge the notion of 'publics' and the complexity surrounding these societal actors. Of particular interest to this work is how people in society or 'publics' are imagined by organisations and bodies such as governments and industries to use two examples, and how this influences approaches to engagement. 'Imagined publics' is a term discussed in a range of contexts in the literature, particularly in the context of expert-lay people relatonships and interactions (see Maranta, Guggenheim et al. 2003), and of relevance to this project is the context of energy technologies and developments (see Walker, Cass et al. 2010, Barnett, Burningham et al. 2012, Cotton and Devine-Wright 2012). Such studies argue that effective engagement cannot occur without first considering or 'imagining' who is to be engaged with. For example, Cotton and Devine-Wright (2012) identify the conceptualisation of public actors, by UK electricity transmission network-related actors, as 'customers' by distribution and transmission network operators and 'consumers' by the regulator, and that network operators are effectively 'hidden' from the public by *"embedded networks and regulatory structures"* (p. 31). In regards to the influence of 'the public' on sociotechnical change, Walker et al. (2010) state that 'the public' are political actors who are potentially implicated in such processes, arguing that the influence *"of public subjectivities on sociotechnical change"* applies not only to activities such as participation and protest but also by the way they are *"imagined, given agency, and invoked for various purposes by actors in technical-industrial and policy networks" (p. 931).* We introduce the concept of imagined publics here, and will explore it in greater detail in future work. We will seek to progress the concept beyond merely

how 'publics' are imagined by external actors, largely absent of input from these public actors on their identification and conceptualisation, and how engagement is often then directed and based upon these external assumptions and 'imaginings'.

The quality of participation outputs, there-in-part reflecting the quality of engagement, has long been difficult to determine due to insufficient empirical evidence from studies of the quality of engagement methods, leading to a dearth of *"appropriate benchmarks for evaluation"* (Rowe and Frewer 2000: 3). This report, whilst not intending to explicitly identify evaluator benchmarks, intends to identify important characteristics of engagement deemed by different stakeholders to be positive, of high quality, and effective; similar criteria-based studies have been conducted by authors such as Rowe and Frewer (2000). Effective engagement requires dialogue at its centre, whereby an understanding of people's circumstances, needs and priorities, as well as their applicable experience and assets, is attained (Whitton, Parry et al. 2016). As Noland and Phillips (2010) state in regards to studies of this nature, and reflecting the foundation of our document, *"at issue…is what proper engagement requires and entails"* (p. 40).

Stakeholder engagement is associated with notions such as equity, fairness and justice that are considered important components of engagement which is ethically legitimate and effective. For example, Rowe and Frewer (2000) identify nine criteria for effective engagement, several of which relate to the concept of 'fairness'. Interestingly, Rowe and Frewer (2000) assert that there are few benchmarks for the assessment of engagement, whilst Rowe et al. (2008) identify that engagement processes are not commonly evaluated. Often, the concept of fairness is elaborated using expressions such as 'equity' (of costs and benefits) and 'distributional justice' (societal distribution of costs and benefits), or 'procedural justice' (fair and just procedures). Jenkins et al. (2016) note that procedural justice is closely associated with stakeholder engagement, in that pursuits of procedural justice inspire research which seeks to *"explore the ways in which decision-makers have sought to engage with communities"* (p. 175). The concept of procedural justice relates to the perceived fairness of an engagement or decision-making process (Sovacool, Sidorstov et al. 2014, Simcock 2016). These concepts inform our work of identifying necessary criteria for effective engagement, but they do not direct it. Rather, we primarily explore historical accounts and seek the views of stakeholders in order to identify such criteria, which we aim to do through this project.

The report now explores how engagement is discussed in the literature in the context of industry and business, with a focus on the nuclear industry.

2.1. Stakeholder Engagement and Industry

The importance of identifying and communicating with public stakeholders for businesses is based upon the multifarious impacts that they have on different societies. As has been shown by events such as Chernobyl in the Ukraine in 1986 and Fukushima in Japan in 2011, these impacts have been shown to be potentially significant and enduring in the context of nuclear power. Bowen, Newenham-Kahindi and Herremans (2010) note that when private firms engage or 'interface' with communities, a well-designed engagement strategy can result in firms gaining legitimacy, managing social risks and co-developing *"innovative solutions to social problems with community members"* (p. 297) (also see Lowndes, Pratchett et al. 2001, Carey, Beilin et al. 2007). Conversely, communities can benefit through access to firm-associated finances, training opportunities, influencing and, as previously mentioned, substantive improvements to social problems (Bowen, Newenham-Kahindi and Herremans, 2010).

Several academics support the notion that greater public engagement and participation serves to significantly reduce conflict and leads to more robust, sustainable decisions, including those for large energy infrastructure developments, such as nuclear power (O'Connor and van den Hove 2001, Sohn, Yang et al. 2001, Dawson and Darst 2006, Krütli, Flüeler et al. 2010). Devine-Wright, Devine-Wright and Sherry-Brennan (2010) have suggested that less opportunity for public participation increases the likelihood of public opposition and delays to developments more generally, and that these can be varying. Such developments include nuclear waste repository siting (Krütli et al., 2010), electricity transmission and infrastructure planning (Cotton and Devine-Wright 2012), wind energy developments (Cowell, Bristow et al. 2011); tidal energy developments (Devine-Wright 2011); and rural renewable energy implementation (Shamsuzzoha, Grant et al. 2012). However, in cases of airport infrastructure developments, delays can result from extensive and very costly engagement processes, such as the public inquiry into plans to construct an

additional terminal at Heathrow Airport in the U.K. (Upham, Thomas et al. 2003). To avoid such process-related delays, Soneryd (2004) suggests that planners engage with different stakeholders at an early stage to understand their different viewpoints and concerns:

"Process objectives for planners can be to reduce costs and decision delays, by ensuring that concerns, accurate information, local knowledge and alternatives are considered early on in the process; encouraging different stakeholders to express their views and making decision makers and proponents accountable" [p. 61].

In regards to nuclear power, it has been suggested by Richardson, Rickwood and Rickwood (2013) that engagement may demonstrate notable benefits, such as confidence building, increased safety and improved stakeholder relations:

"More engagement with the public in a formal process that accepts and respects the validity of scrutiny from civil society represents an immediate step the nuclear industry can take that provides additional oversight, builds confidence and can contribute to increased safety" [p. 267]

"An open process of integrating public involvement into operations can trigger a positive feedback cycle creating mutual trust between the operator and the stakeholder com- munities, and also reinforce and enhance the safety culture" [p. 271]

The authors examine five cases (Three Mile Island, U.S.; Pickering, Canada; Sellafield, U.K.; Gorleben, Germany; Östhammar, Sweden) showing different relationships between the general public and the nuclear industry, with four of these providing evidence for the positive influence of public involvement on improving safety. In the UK, research has been conducted into the *nature* of stakeholder engagement within different areas of the nuclear industry. Whitton (2009) highlights that the nature of the dialogue during the stakeholder engagement process for the Legacy Ponds and Legacy Silos (LP&LS) facility at Sellafield, Cumbria in 2005, which was intended to inform decision-making, was unclear. The study was conducted to categorise the engagement against definitions of the term 'deliberation'. Whitton observes that the form of engagement and degree of

deliberation with stakeholders varied at different levels of the engagement process, with the role of deliberation decreasing throughout the various stages of the process, and the influence of technical decision-making increasing. Consultation, not deliberation, was observed to be the dominant form of engagement. Whitton (2011) also highlights the confusion of stakeholders regarding the nature of the dialogue carried out during Nuclear Decommissioning Authority (NDA) stakeholder engagement regarding plans for nuclear site decommissioning activities, and how the process would influence the decision-making process. The author suggests that such findings represent a lack of institutionalized engagement by the NDA. Such studies assist in highlighting the complexity, and non-uniform merits, of engagement.

Undertaking engagement for illegitimate or for overly-strategic reasons is ill advised. Rowe & Frewer (2004) warn that public engagement by policy makers for the sole purpose of increasing perceived legitimacy could potentially lead to the *rejection* of decisions, should the views of the public not be recognised and the information gathered not be utilised. A more focussed observation is made by Verbruggen et al. , who propose that in political terms, nuclear power decision-making is generally characterized by *"private and/or governmental technocracy, in which democratic steering and control take up a subordinate position (2014)"* (p. 26). The grey literature has previously acknowledged the need for stakeholder engagement; for example, in the field of radiation protection it has been proposed for some time that a solely scientific or technocratic approach to assessments may be inappropriate (Dunster and Mclean 1970). In response to this perceived technocratic quandary, Verbruggen et al. (2014) suggest the need for an independent agency of global scale to undertake a review of nuclear power in the context of *"society's best interests"* (p. 26), which can serve to combat the manipulation of deliberative forums and public engagement, which they observe as resulting from the technocratic nature of decision-making, and the endorsement of incumbent policy as opposed to policy concerned with sustainable development.

In recent years, particularly in the UK with its renewed focus on energy generation capacity replacement and expansion, the nuclear industry appears to be recognising the importance and strategic value of engagement, especially that which is more greatly based upon dialogue (see NIC 2014, NIC 2015). This is not the first time that the nuclear industry in the UK has voiced its support

of public engagement and its necessary place in nuclear operations, and public consultations form an important part of the UK industry's current, and indeed, historical approach to industry practice. Importantly for this report, these recent industry-based documents focus quite clearly on moving to establish principles for stakeholder engagement. In a report published by the Nuclear Industry Council (NIC, 2014), titled 'In the Public Eye', the high level strategy for Central and Welsh Government for communication and engagement is presented. A review of the grey literature is provided in the report, where it is stated that the sector must be *clear* in its communications with the public, and that particular parts of society should be engaged by utilising a range of approaches which are *"appropriately targeted"* (p. 5). This report follows the 2013 Nuclear Industrial Strategy (BIS 2013), in which public engagement with local stakeholders is acknowledged as important for several reasons, including improving understanding of the nuclear industry and addressing barriers to local employment. The NIC (2014) report also states that mutual respect must be built by the sector in order for public *trust* in communications to be developed and realised; this requires the use of individuals who are trusted by society for public engagement purposes, including individuals such as the nuclear workforce, who are engaged in the 'front line in the sector', independent academic experts, and scientists working at academic and government laboratories. Whilst remaining at the level of engagement (i.e. consultation) as has been undertaken by the industry for many years, it reprioritises public dialogue which is *open, transparent, and understandable* to public stakeholders, acknowledged as reflecting a great diversity of individuals at the local level with different needs and preferences, both towards engagement methods and also more generally (NIC, 2014). As a result of the NIC report (NIC, 2014), the 'NIC Concordat for Public Engagement' was developed (NIC, 2015), detailing the intentions of the nuclear industry for engaging with society on nuclear energy matters and the main principles which organisations should utilise within their communication strategies. Within this document, the themes highlighted in the 2014 report – *clarity, trust, dialogue* and *consultation* – characterise the nuclear industry's approach to public engagement. It is stated that two-way communication is valued and that the public are listened to, that public trust be developed through demonstration of respect and being open and transparent in regards to challenges faced and actions taken, that engagement utilises clear, consistent and concise information, and that local communities be listened to and actively engaged.

In addition to opposition that a technology such as nuclear power may face in broad terms (i.e. whether nuclear power should be developed and utilised at all), the controversial nature of technological infrastructure siting is known to commonly generate opposition and struggle to gain widespread support. As Cotton and Devine-Wright (2012) suggest, development success is in part dependent on the acquisition of support from various aspects of society, such as local communities and stakeholder groups. In order to achieve this and to mitigate opposition, stakeholder engagement and participation in decision-making processes is cited as a common solution:

"Where such opposition occurs, one oft-cited solution is to improve the level of direct community and stakeholder involvement in the processes and outcomes of decision-making" (ibid: 19).

Such notions are echoed by Young (2004), who asserts that societal acceptance of modern technologies which are associated with risk and generate concern requires dialogue which is both open and utilised throughout the development process. Not only this, but Young also suggests that technological and science-based opportunities are more likely to be realised if the appropriate individuals are engaged early and throughout this process, and in an appropriate manner:

"Information must be made available in a format that can be understood easily. All sides in the debate have responsibilities: scientists must be willing to answer questions openly and honestly, industry must engage early and widely, and pressure groups and the media must be responsible in their use of science" (p. 12).

Authors such as Hagendijk and Irwin (2006) have noted that efforts by organisations and companies in European countries to include and involve public and stakeholder groups are borne out of a desire to mitigate scepticism and mistrust which has impacted the realisation of technological infrastructure projects. Indeed, in the UK in particular, engagement and a move towards greater dialogue with stakeholders has become more common, away from the limited provision of 'updates' and one-way information; the House of Lords Select Committee on Science and Technology (2000) describe this move as indicating that dialogue and engagement are integral to science-based policy making. In January of this year, the OECD Nuclear Energy Agency

concluded at an expert-attended workshop in Paris that public engagement was of central importance to the industry, and that *"stakeholder support and involvement are essential to achieving accepted and sustainable decisions for nearly all aspects of nuclear energy"* (OECD-NEA 2017). This increasing support for engagement has led to changes to the nature of *"political decision-making over the governance of technological decision-making"* (Cotton and Devine-Wright, 2012: 19), whereby engagement at different stages of developing policy has become institutionalised practice, and whereby the utilisation of deliberative methods have become common practice.

Whilst effective stakeholder engagement has increasingly become a central goal for many involved in large-scale technological developments, common flaws and limitations in engagement processes have been highlighted. Wilsdon and Wallis (2004) observe that risk-focussing often takes precedent in engagement forums, whereby the known risks as presented by experts are discussed in detail, whilst unknown and unanticipated consequences, more commonly raised by public stakeholders (see Grove-White, Macnaghten et al. 2000), receive little attention. A further flaw of engagement processes is the origin and composition of their content, as Wynne (2005) notes. He highlights that public engagement is devised by experts with very little or no input from those who are to be 'engaged'. Therefore, members of the public may participate in engagement but will have no capacity to influence, create or negotiate *"more diverse, public meanings"* (p. 67). Wynne asserts that this presupposes *"a normative, standardized model of citizens"* (*ibid*), associated with the imposition of *"standardized and supposedly objective public meanings"* (*ibid*) which he terms 'risk issues', issue definitions which are perceived to be solely the domain of experts and institutions. Thus, engagement is limited and the outcomes of engagement process are tethered and pre-determined.

2.2. Engagement and Sustainability

Decision-making and engagement for new and emergent energy technologies such as new nuclear power stations are areas which have been highlighted as critical for their success and sustainability. Whereas sustainable development refers to a timeline, whereby various *"principles, approaches, strategies and policies may help us to develop and implement our future vision of a sustainable society"* (Glavič and Lukman 2007: 1884) for current and future generations, sustainability refers to the ability to and potential of maintaining progress along this timeline and acheiving this reality. Cotton (2014) asserts that support for these technologies, from established elected members and shareholders to locally affected communities and public interest groups, is seen as increasingly important by governments and technology development organisations in the face of social and ethical challenges. The author states that public support is considered necessary both *"as a process of justifying technological policy openly in civil society"* and for *"defusing the types of public opposition that can result in development failure and wasted public sector and industry resources"* (*ibid*: 1). Cotton also stresses that debates about the impacts of technological development and implementation cannot continue to follow the traditional format of expert-led technocracy, or as Cotton writes, *"a purely objective and factual discussion, bounded by the rationality of techno-scientific analysis"* (*ibid*: 161). The author explains why this is both insufficient and inappropriate:

> *"Neither quantitative risk assessments alone, nor finding ways to encourage better public understanding of scientific and technical issues will facilitate consensus building or public acceptance [of] SECT[s][1] in the public realm, because the nature of risk debates implicitly involves complex ethical issues, numerous and conflicting relationships, trust and social capital" (p. 161).*

In a recent study, Verbruggen et al. (2014) consider the 'sustainable' nature of nuclear power; concerned with assessing the potential role of nuclear power (fission) in sustainable development.

[1] SECTs - Socially and Ethically Contentious Technologies (Cotton, 2014)

They develop and apply a 19 criterion framework in their study based upon the five dimensions of 'Environment', 'Economy', 'Risk', 'Society', and 'Governance'. They question the capacity of nuclear power to legitimately contribute towards broad sustainable development, which is further impeded by an apparent lack of engagement or dialogue between nuclear proponents and opponents specifically as to the potential role of nuclear in a low-carbon energy future. Insufficient or ineffective engagement with those impacted directly by developments may mitigate the ability of developers to understand how these impacts are experienced 'on the ground', and which impacts are felt most strongly by affected communities. If the main impacts of developments on communities are not economic, then economic solutions are unlikely to adequately address community needs and concerns. For example, Kunreuther et al. (1990) has highlighted that compensatory actions can be deemed and interpreted by those in receipt of such economic payments as bribes when they are unrelated to a facility's direct impacts, such as health-related impacts, which can 'backfire' upon the operator.

In a European energy context, public engagement is currently viewed as necessary and appropriate. The EC Energy Road Map 2050 asserts that decision-making processes should ensure that citizens are informed and engaged, and Dorfman, Prikken and Burall (2012) propose that if this is conducted meaningfully whereby public stakeholders are involved in and are able to influence the process, the resulting integration of knowledges (public, policy, expert) facilitates accountability, transparency and action regarding necessary change.

We have reviewed both a range of literature to provide context on the concept of engagement, highlighting what it commonly entails, its recommended form, and how stakeholder engagement for the nuclear industry, particularly in the UK, is currently evolving. Informed by our review of both the academic, governmental and industrial literature, several principles for effective stakeholder engagement have been identified, and are presented in Table 1.

Principle	Summary of Principle
Timely engagement	Engage with stakeholders 'up-stream' and prior to key decision-making periods to legitimise engagement and stakeholder input
Dialogue-based engagement	Information provision and expert-to-stakeholder communication alone is often inappropriate and insufficient. A dialogue-based approach enables both parties to explore issues and decisions, and also understand stakeholder values and priorities. This is not to discourage the provision of 'project updates' entirely, but to utilise more direct than indirect communication
Wide and objective engagement	Engage with a range of stakeholders and understand the positions and needs of various stakeholders, absent of bias or subjectivity. This is important for reasons of democracy, equity and procedural justice.
Open and transparent procedures	If processes of engagement are limited, if dialogue is restricted, or if those involved are unwilling to discuss important issues, constructive outcomes and shared learning are less likely to occur
Context Dependency	Engagement structure and content should be in-part determined by stakeholders, so as to validate topics under discussion and to address issues of greatest concern for all parties. Understanding the specific context of each community or group facilitates more effective engagement and decision-making.
Extra-political engagement	The impacts of infrastructure decisions often exceed political timescales and terms of office, and affect local stakeholders to a greater degree than those in decision-making positions. It is recommended that stakeholder engagement is not excessively influenced by political timescales and the intentions of changing political parties.
Procedural justice	Fair, inclusive, accessible and well-conducted procedures can be as important as decision outcomes themselves. If procedures are seen to be conducted fairly, then resulting decisions, whilst not being explicitly supported, may be accepted by stakeholders

Table 1. Public Stakeholder Engagement Principles

We now explore several country-specific reports produced as part of the HoNESt project in regards to evidence of historical engagement. We examine seven country-specific cases to identify examples of engagement, what these process of engagement entailed and did not entail, and what these processes highlight in regards to important aspects or components of 'effective' or 'successful' engagement.

3. Country-specific Reports: Examples of engagement

The report now briefly discusses each of the seven countries under consideration, which were selected according the criteria of geography (location), political system, social movements of opposition, and culture and democracy:

- United Kingdom (Butler and Bud, 2016)
- Ukraine (Kasperski, 2016)
- Germany (Kirchhof and Trischler, 2016)
- Bulgaria (Hristov and Tchalakov, 2016)
- Sweden (Kaijser, 2016)
- Finland (Michelson, Bergman and Harjula, 2016)
- Spain (Rubio-Varas, De la Torre, Espluga and Presas, 2016)

Each sub-section is directly informed by the historical short country reports produced by leading historians in their respective countries, and highlights aspects of the social history of each case which involve instances of engagement, or lack of engagement.

3.1. United Kingdom

In the UK, stakeholder engagement has enabled public or 'lay' contributions to be made into traditionally expert-limited processes. Examples of stakeholder engagement include the planning inquiry held from 1977 - 78 for the Thermal Oxide Reprocessing Plant (THORP) that involved environmental NGOs, and the Sizewell B planning inquiry held from 1982 - 85 for the first Pressurized Water Reactor (PWR) in the UK, which took place over 340 days and took reference from 16 million words of evidence, including from non-nuclear industry bodies and stakeholder organisations. At the time of the Sizewell B inquiry, Davies (1984) noted the apparent objectivity of the process, whilst questioning the usefulness of the inquiry and its ability to facilitate genuine participation:

"Even though the Inquiry will not be able to make everyone happy, and even though its cumbersome process will not provide a perfect model for future inquiries, the Sizewell B Inquiry does appear so far to have been objective and accurate. But no matter how fair and balanced the Inquiry can be, doubt must remain about its ultimate usefulness as a decision-making tool and as a vehicle of real participation in the assessment of this technology" (p. 21).

Furthermore, Davies argues that the inquiry was representative of progress in the context of nuclear decision-making and public access to information:

"For a country more accustomed to making nuclear power decisions literally in the classified environment of the corridors of power, the participatory form of the Sizewell decision-making process is a significant advance. For the first time, the whole nuclear safety case is fully available for public scrutiny (except for some proprietary technical details)" (ibid).

During the mid-1980s, Davies (1984) notes the importance of engagement and procedure in the context of decision-making; whilst members of the public may have significant outcome-related concerns, the complicated nature of arguments to inform judgements on safety or cost for example, mean that procedure-related concerns are also very important. More recently, procedural considerations and effective engagement has been discussed in the context of themes such as social and energy justice (Whitton, Parry et al. 2015, Whitton, Parry et al. 2016).

It is also apparent that the UK government considered the confidence of the British 'imagined public', on which their elected power is dependent, in the national nuclear programme to be of such importance that it necessitated the choice of the safest nuclear reactor technology available during the mid-1970s. Concerns about the response of such imagined publics are proposed to be a factor in major changes made to planned policy or engagement tactics (Walker, Cass et al. 2010, Barnett, Burningham et al. 2012, Cotton and Devine-Wright 2012). Such concerns about the sensitivity of

imagined publics contributed towards the construction of the more expensive, but technically safer, British Steam Generating Heavy Water Reactors in order to replace several Advanced Gas-cooled Reactors.

More recently, following the publication of the *2008 Energy White Paper on Nuclear Power*, the UK government published details of its extensive consultations on the paper with various groups, including the general public. In a series of discussion sessions, citizen panels and focus groups, members of the public were asked their opinions on the safety and reliability of nuclear power compared with renewable sources, and opinions on the notion of expanding the country's nuclear capacity. Responses to such questions were mixed, highlighting moral concerns about nuclear power, but also indicating a reluctant acceptance that nuclear power was a necessary part of the energy mix in a low-carbon economy. These sessions, which were managed by a private communications group and assessed by other groups to ensure validity, were opposed by environmental groups such as Greenpeace and Friends of the Earth who argued that they were biased towards the pro-nuclear intentions of government and decisions that had already been taken. Whilst the process was termed a 'public consultation', the process informed policy decisions being made by the Department for Business, Enterprise and Regulatory Reform (BERR 2008a, BERR 2008b), and had an impact on the 2008 White Paper. Finally, and although not related to nuclear energy generation, the site selection process for a geological waste repository conducted in Cumbria in 2012 (see WCMRWS 2012) provides an more recent example of a significant period of stakeholder engagement, which whilst demonstrating a number of aspects of good practice such as early engagement, opportunity to volunteer, and several opportunities for public involvement, saw the process and final selection decision ultimately undermined by the realisation of a binding threshold after which the decision to host the repository could not be vetoed or retracted by the community and its representatives.

3.2. Ukraine

Contrasting with countries such as the United Kingdom, Ukraine provides an example of where engagement has historically been avoided. Of particular interest is the absence of public

engagement regarding the Chernobyl accident. Ukraine, Belarus and Russia were heavily contaminated with radiation following an accident at the Chernobyl NPP in April 1986. However, information by the authorities was very slow to be released, the amount of information released was limited, and false narratives were released by the state media to play down and misreport the consequential risks of the accident. It was not until two days following the accident that evacuations from Ukrainian and Belarusian towns and villages local to the Chernobyl facility took place. Very little information was provided to these people regarding the accident, despite the knowledge of local communities that something significant had taken place at the plant. The lack of information provided to workers who were sent to manage the impacts of the accident, and the inadequate provision of protective clothing led to the development of serious health problems and fatalities among workers.

Public communication was limited in order to limit knowledge of the event and mitigate a resulting societal response to it. Instead of providing appropriate and adequate warnings to affected and potentially affected communities in the days and weeks following the accident, infrequent messages of optimism, control and appropriate management of the situation were disseminated. In addition, some evacuations did not occur until weeks after the event, risking the health and well-being of local residents.

This was perpetuated, and the reality of the situation falsified, by the persistent narrative provided by officials of the successful management of the consequences from the accident for a number of years after in the state controlled media. This asserted a reality of life returning to normal with no grounds for public concern, instead focussing on stories of the heroism of emergency workers against a depicted radioactive monster. The State ensured that the message put to Ukrainian society through the media was one of the Soviet people fighting together against the disaster, with the use of military rhetoric and images pervasive in the Soviet media. The accident appeared in public discourse from regulators as a crime of communist authorities against the Ukrainian nation and society, and whereby national independence was perceived to be the solution for saving people from the events of Chernobyl and instigating a national renaissance, viewing Chernobyl as a symbol of colonial power. This resulted in anti-nuclear protests between 1989 and 1991.

Historical research conducted as part of this project has shown that many local inhabitants were aware that the Chernobyl accident was far more serious and dangerous that officials were stating. As a result of this and the behaviour of officials, public trust was severely damaged by the event and the associated secrecy surrounding its consequences and management, which played a key role in the resistance of Ukraine against Soviet rule. Many experts in the country proposed informational and educational work with the public as a method to address this mistrust, reflecting a position of 'experts know best' and the knowledge deficit model approach (Wynne 1982) of gaining support through the provision of scientific facts whereby a better informed public is created, and therefore allowing societal concerns to be overcome by an understanding of 'scientific facts'. However, the Ukrainian case study highlights the importance of trust in communications and engagement between governmental, industrial and public stakeholders. The dearth of any genuine and inclusive engagement with members of the public, in particular so as to inform and warn people of the impending dangers following a significant nuclear accident, arguably lead to a growth of mistrust towards both the government officials and the government-supported nuclear industry, which could not then be remedied by providing scientific information. The lack of public trust in those in strong support of such scientific endeavours led to future difficulties for many in Ukrainian society placing trust in scientific communications from such sources. The Ukrainian case is also insightful in the context of energy governance, in that it demonstrates an example of technological growth in a country as a result of political influence and external powers of governance. This was acutely apparent following the Chernobyl accident when technological protection and political security was prioritised over societal safety and human health.

3.3. Germany

In the initial period of Germany's nuclear history, public engagement was limited. Between 1952 and 1957, opportunities for public or civilian involvement in the German Atomic Program were scarce, and despite the attempts of the scientific community to establish and maintain nuclear science as a civilian endeavour, military interests and rationales remained central to the nuclear programme. Throughout the 1970s and 80s, public interaction and engagement with nuclear power

most commonly took the form of resistance. Protests and direct action against nuclear facilities proposed by the government became common, fuelled by limited opportunities for social groups to participate in the planning of such infrastructure. The organised movements against nuclear power in Germany have included the involvement of environmental organisations such as Greenpeace, and have on many occasions demonstrated both planning and coordination. Continual protests and activist-based action represents the primary mode of interaction between society and nuclear power developments in Germany. Bearing in mind the decisions taken by the 'Red-Green' coalition (the Social Democratic Party of Germany and Alliance '90/The Greens, 1998-2005) and the serving coalition government (the Christian Democratic Union of Germany, the Christian Social Union, and the Social Democratic Party of Germany, 2013-present) following the events at Fukushima in 2011 to move away from nuclear power, the resistance demonstrated by groups within the German populace against nuclear power appears to have had a desired impact on national energy policy. It is due to this that many in German society and politics interpret this resistance against nuclear power and the eventual phase-out as a deeply democratic success story.

Three notable events in Germany's history in the context of public engagement experiences include the Gorleben, Wackersdorf and Whyl examples. All three represent examples of protest by local inhabitants who gained support from other members of wider society, with the proposed repository site near the village of Gorleben generating the largest public protests and direct action of all three cases. The three examples reflect the regularity of protest against nuclear infrastructure proposals throughout the country's history; at the present time, nuclear power is planning to be phased out by 2022. What they also seem to demonstrate is the consistent utilisation of a decide-announce-defend strategy by the nuclear industry and German government, whereby engagement has been insufficiently inclusive or upstream and has resulted in protest and resistance to proposed developments. As Devine-Wright (2009) observes, a person may feel their attachment to a specific place may be negatively impacted by the development leading to contemplations of moving away, which can then be combated by opposition groups that form to protest the development and mitigate such social dispersions from taking place. Calvano (2007) argues that conflicts between multinational corporations and local communities arise due to the confluence of stakeholder power

inequality, cultural context and stakeholder perception gaps, of which the German case shows evidence in the context of nuclear power. The German case also appears to reflect a common societal response of communities responding to large-scale developments as discussed by Cotton (2013) in asking a multitude of questions on a broad range of issues such as energy strategy and community-level fairness (also see Cotton and Devine-Wright 2013), although insufficient engagement on and responses to such societal questioning has led to the adoption of more direct and violent approaches to make oppositional positions clear. While many in German society and politics interpret the controversy over nuclear energy including the phase out as success story and regard the process as deeply democratic, many other countries in Europe are critical of the violence of the debates and protests, and consider the phase-out decision as a misguided interpretation of the precautionary principle (Moore 2012). However, it is arguable whether the views and arguments of those vocal actors involved in the anti-nuclear protest movements were representative of the wider German public, and therefore whether a process so clearly influenced by these actions can be classified as truly democratic.

3.4. Bulgaria

Public engagement in Bulgaria in regards to nuclear power developments has, as in other Eastern European countries, been limited. The response of Bulgarian society to the significant nuclear accident in Chernobyl in Ukraine in 1986 is also of particular interest from a social science and interactional perspective, in that it represents a rare response of resistance and questioning from the Bulgarian population against the nuclear power programme. The Chernobyl accident also represents a key political moment in that it characterizes the end of the Bulgarian Soviet alliance. When the accident occurred, the Bulgarian communist government did not inform their population about the real scale and consequences of the accident. The lack of official announcements or information about the accident, explanations about the necessary radiation-prevention measures, eventually led to growing uncertainty, feelings of insecurity and helplessness among the Bulgarian people. The state-owned national media reports were minimal, suggesting that there was no serious danger to the population, echoing the messages of the Soviet government, thereby misinforming people of the potential risks they faced. Activists in Ecoglasnost demanded

information about the environmental pollution caused by large-scale technological projects and by the Chernobyl accident. These inquiries were assisted by the national television release of a short documentary/ environmental movie by the journalist Jurii Zhirov in 1987, on gas and sulphur pollution emanating from a Romanian factory across the Danube River, which was found to be highly informative for and well received by the Bulgarian public.

Despite the accident, the nuclear programme in Bulgaria was not negatively impacted by the Chernobyl accident, and the government continued planning for a second nuclear plant near the town of Belene. In the years following the Chernobyl accident, social and environmental movements began to develop in Bulgaria. In March 1988, a civil society committee for environmental protection of the city of Rousse was founded, and from this point, environmental problems became matters of public discussions in an otherwise closed totalitarian society. It was not until the Communist regime collapsed in 1989 that there was an asserted response to the accident from Bulgarian people and groups. The Green organization Ecoglasnost, founded by Sofian intellectuals and activists, were key actors in bringing about political and social changes in Bulgaria.

The 1989 movements began as a response to environmental problems, and following more information about the Chernobyl accident coming to light and the risks becoming better understood, it developed in-part into protesting by Bulgarian green activists against the inadequate measures of the Communist Party in the days following the Chernobyl accident and the lack of any information provided to the public, leading to wider protests against nuclear facilities. In October 1989, details of the Chernobyl accident and its consequences were presented and discussed, with a report about the criminal behaviour of the communist ruling elite providing important information to members of society, and further discussions being held about the condition of nuclear power facilities in the country and the future of nuclear power in Bulgaria.

The Bulgarian nuclear power sector has historically been strongly influenced by the political environment of the time. During the first thirty years of its development the nuclear industry was directed by the ruling Communist Party. Following political change in 1990-1991, public opinion on nuclear power became more vocalised, primarily facilitated by the independent Green movement 'Ecoglasnost', which in 1992 evolved into a political party. Similar to the Ukrainian example, the Bulgarian case provides an interesting example of energy governance, whereby political security and technological prosperity was for a significant time deemed more important than the well-being and safety of the Bulgarian populace by a communist government, as demonstrated by the government's post-Chernobyl response. This then contributed to political fracture and the growth of both public questioning of and uncertainty towards nuclear technologies. Thus, it is observed that a dearth of social justice prior to the end of the Bulgarian-Soviet alliance facilitated societal movements which increasingly posed questions of governments and industry and sought answers in the pursuit of social justice.

3.5. Sweden

Since its initial stages of development and establishment in Sweden, support for nuclear technology has not been ubiquitous or uniform, particularly among political groups. The discussions held within the Social Democratic Party on the justification for and future of nuclear weapons development in Sweden during the 1950s, despite involving both opponents and proponents of the nuclear weapons issue, did not provide an opportunity for wider Swedish society to partake or contribute to discussions or influence the decision. This reflects in-part a general lack of opportunity for public involvement in technological decision-making in Sweden, as is common with many European countries, particularly historically. Therefore, public engagement and participation has been viewed as being able to offer limited input into discussions of a technical nature, reflecting the technocratic culture which commonly existed in the mid to late-twentieth century throughout Europe. However, as we see with companies such as SKB (see Bergmans, Elam et al. 2008, Holmes, Scott et al. 2016) and radioactive waste management in particular, stakeholder and public engagement has come to be recognised as an important component of the decision-making process in Sweden.

An important actor in the Swedish case was a scientist named Hannes Alfvén, who was responsible for the growth of nuclear critique in Sweden and was highly influential in the perceptual shift against nuclear energy. He was awarded the Nobel Prize in Physics in 1970 and was highly respected. Alfvén became increasingly critical of nuclear power, writing articles in newspapers and contacting politicians, and he soon became influential because of his knowledge and the difficulty in being able to question his insight and experience. Of particular influence were parliamentarians who began to question nuclear power, some of which were part of the Centre Party, the second largest party after the Social Democrats, and some of which were part of the Communist Party. They were successful in achieving parliamentary approval in early 1973 for a proposal to investigate the risks of nuclear power, and for this to be done before any decisions about new nuclear power plants were made. The Centre Party had traditionally been the political representative of Swedish farmers, but as rural populations rapidly decreased, the party attempted to attract urban voters with a "Green" policy of environmentalism and decentralism. In 1978, a national advisory referendum concerning the future for nuclear power in Sweden was demanded by an umbrella organization of environmental and political groups called Folkkampanjen mot Atomkraft (the People´s Campaign against Atomic Power); this referendum represents the most well-known event in the history of nuclear power in Sweden. Whilst intensive preparations were made for campaigning in 1979, the Three Mile Island accident occurred in the United States. Swedish mass media reported extensively about it, with nuclear activists claiming that the accident proved that nuclear power plants were vulnerable and dangerous. From this point forward it became much easier for them to collect signatures in support of the referendum and gain public support. The referendum campaign dominated political life and the mass media for several months prior to its occurrence. It served to bring about the coalescence of grassroots movements and activists across Sweden, and the membership of the leading organization behind it grew significantly. A week before the referendum, huge demonstrations were organized all around Sweden, with at least 25 000 people gathering in Stockholm in support of the movement against nuclear power expansion. However, the referendum was lost and the campaign for continuation and expansion of nuclear power in Sweden was successful in winning the vote. In the context of energy governance, this reflects positive elements such as procedural justice; an open, national procedure which enabled members of the public to have their say on and influence a matter of national energy-related significance. The Swedish case demonstrates instances of social justice,

through the utilization of democratic and inclusive procedures for example, that are largely absent from other European cases such as Ukraine, Bulgaria and Spain.

Over a decade later in 1990, a former trade union leader was newly appointed as Minister of Energy, and a tripartite agreement was reached between the Social Democrat Party, the Centre Party, and the Liberal Party in 1991 which postponed the start of the nuclear decommissioning programme; however, this did not alter the agreed 2010 end date. This demonstrates the different influences of government actors on the fortunes of the nuclear programme. Finally, environmental activists found that similar groups in the United States were increasingly questioning nuclear power during the 1970s, which encouraged them to learn more about the growing critique against the proposed large-scale programme of nuclear power and began disseminating it to wider society.

The Swedish case reveals a transformation of sorts in the context of engagement, from limited public stakeholder involvement and the dominance of political groups surrounding nuclear discourse during the early phases of nuclear development in Sweden, to a modern appreciation of the consultation and consideration of public stakeholders as demonstrated by a current variety of public engagement activities as carried out by organisations such as SKB, particularly surrounding nuclear waste disposal projects. This, as can also be seen in Finland, reflects in-part the liberal democratic nature of the country. The Swedish case differs from those of cases such as Ukraine, Bulgaria and Spain in the context of energy governance in that greater levels of trust of those involved or associated with nuclear energy have emerged from decades of public engagement and opportunities of choice, such as national referenda.

3.6. Finland

Finland's political system has allowed for democratic debate that has enabled the involvement of both proponents and opponents alike. Policy making in Finland is traditionally a democratic process that engages groups from across society. Political parties are also seen to be divided on key issues concerning nuclear energy. In general, Social Democrats and Conservatives, and recently the Populist Party, have supported nuclear energy, whilst the left wing socialists in the Green party have opposed its utilisation, whereas Finland's Central Party has seen its views fluctuate over time.

During the 1980's and 1990's the party opposed new nuclear initiatives, but recently the party has been one of the most vocal supporter of new nuclear power stations. At present, the Finnish government and parliament have accepted licenses for two new reactors (Olkiluoto 3 and Fennovoima 1). This decision has faced opposition in Finland, with people claiming the uncertain economic situation in Europe warrants a move towards less costly technologies.

The Finnish nuclear industry has reduced in size considerably since the 1990s, and those in opposition to nuclear energy claim that there is no longer a need for large-scale, centralized electricity production, but rather a move towards more decentralised generation of electricity. Others believe it to still represent a key source of reliable base-load electricity generation. This also comes at a time when Finland has suffered with the decreasing success and profit-making of several Finnish technological companies in a fiercely competitive international market, such as Nokia. At present, for the first time in their history, there is no political consensus on how the Finnish energy policy should be formulated.

The use of nuclear technology for civil purposes is an influential aspect of nuclear-society interaction. The country has not experienced an erosion of trust in the sector and government more widely. A techno-centric approach to decision making is still common in Finland, as with other European countries. However, unlike other countries, trust in nuclear energy has largely remained due to the avoidance of pursuing nuclear military applications. Finnish society does not view the decision-making of experts without significant input from wider society as wholly negative, but still, there has been opposition against nuclear for many years within government and civil society. Public engagement forms a central part of site-related decision making processes, and remains to the present day to such an extent that Finland is now in a political deadlock over energy policy; this perhaps highlights some of the difficulties in discussing energy governance, such as what it should involve versus what should result from 'positive' energy governance, and whether political deadlock over the future of a technology is a 'successful' outcome of a democratic approach to governance. However, the relationships between nuclear energy companies and Finnish society, when compared to other countries, can be viewed as more positive with less controversy.

3.7. Spain

The transition in Spain from the authoritarian Franco regime, following his death, to democracy in the mid-1970s resulted in significant institutional change, and new opportunities for public engagement and intervention. The governmental transition led to an increase in public debate and from 1977 onwards, the government's Energy Plan was reviewed, discussed, and approved in a multi-party parliamentary setting. Opportunities were also presented for Spanish society to be heard, especially in regions where nuclear power stations were being constructed. Even prior to Franco's death, there were unstructured informal social groups which proposed formal complaints by local authorities in most of the locations where nuclear projects were discussed and planned, but following his death, civil strategies which were illegal within the dictatorship such as meetings, pamphlets, demonstrations, parades, voluntary confinement emerged and were more greatly utilised. Increased local media coverage also brought lobbying by stakeholder groups further into the public eye.

The moratorium on nuclear development in 1984 due to economic and political factors resulted in a cessation of the state nuclear programme. Many private meetings took place between government officials, electric utilities and both national and international banks; these discussions did not permeate to the public level. Indeed, the government disbanded any communication strategy for informing the public about the moratorium, and neither anti-nuclear movements nor local citizens were consulted about the moratorium. The moratorium remained in place until 1992, during which period communications and engagement activities were few. Communication surrounding the operationalisation of nuclear power infrastructure mainly took place in the media.

In regards to public opinion towards nuclear energy in Spain, historical research has shown that the evidence available on this subject is rather limited and fragmented. Longitudinal studies are

only available from the 1990s, which show that the majority of Spaniards opposed nuclear energy and the development of nuclear power stations, and that these levels of opposition and rejection of nuclear expansion in Spain are high when compared to other EU countries, such as the U.K., and are more comparable to public opinion in Germany. Social movements in the 1970s, 1990s and mid 2000s demonstrate this. Following the fall of the Franco Regime, anti-nuclear protests during the 1970s were associated with strong regional identities. In the Basque case, this translated into violent action, with 13 lives being lost. In 1976 this movement progressed and became increasingly organised, with the Committee for the Defence of a No Nuclear Basque Coast (CDCVNN) forming through an a amalgamation of anti-nuclear neighbourhood associations, cultural groups and professional associations. In 1991 during the Gulf War the campaign 'Living without nuclear' was launched, which saw approximately half a million signatures collected, requesting a referendum to close nuclear power plants in Spain. In 2007, more than 600,000 signatures were collected and brought to Brussels demanding the shutdown of plants, uranium mining and research on their effects on health.

Whilst it is possible to assume that the dearth of nuclear-related public engagement for many decades in Spain has directly contributed to the lack of support for nuclear power (e.g. the OECD (2010) suggests that lack of information contributes to concerns towards nuclear power), there is little social science research on this subject to provide support for such assumptions.

4. Engagement Spectrum

In order to conceptualise the engagement experiences of the seven countries considered in this report, we attempt below to indicate broadly where each country lies on an engagement spectrum, depicting engagement activity and a broad representation of the efforts made by governments and industry organisations to engage with public stakeholders about nuclear power since the mid-twentieth century. This is shown in Figure 1. We acknowledge that the degrees of engagement for each country have varied over time, but focus in this report on identifying pricniples for engagement; this aspect of the historical development of each country will be considered in future work.

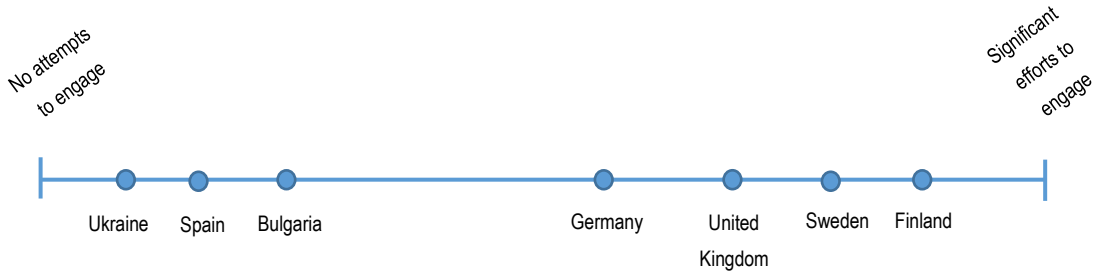

Figure 1. Spectrum of Stakeholder Engagement Activity for seven European Countries (~ 1950 – Present)

Whilst this spectrum reveals the degree to which these countries, in general terms, have engaged with their respective general publics and public stakeholders in the context of nuclear power, it does not reveal in turn the 'success' of those engagement activities. Rather, we observe the apparent implications of these varying approaches to engagement employed by each country in an attempt to determine which approaches to engagement have had positive social impacts in their respective contexts. The word 'context' is particularly important here; we propose it to be inappropriate to work towards a single 'best practice approach' to engagement without an appreciation of the, sometimes significant, differing cultural and political circumstances and history of each nation under

consideration. Indeed, an approach to engage 'effectively' with public stakeholders in one country may be inappropriate and ineffective in another. Linked to the notion of country-specific context, we also consider the notion of 'publics', in that we seek to identify where possible between whom engagement has taken place and how this has occurred, and how different 'publics' have affected engagement in general. Rather, as the title of the report indicates, we seek to identify broad principles of engagement based on national historical experience which lead to societal benefit and democratic gain. We identify these principles more specifically in the following section.

5. Principles of Engagement: Criteria for Effective Stakeholder Engagement

In reviewing the historical experiences of the seven countries included in this report, it is clear that systems of energy governance leading to political influence has been significant in regards to the degree to which governments have engaged with their citizens. Whilst in some countries this has been minimal and has led to widespread public mistrust in both government and industry bodies, in others it has been more comprehensive, based on a commitment to democracy and building relationships with public stakeholders. If goals such as trust-building and developing solutions with widespread public support are to be pursued, it appears that politics and governments should reduce their dominant influence and enable public stakeholders to become more informed, and for processes to become more transparent. The OECD (2010) has stated that a 'lack of knowledge' is a key driver of public concerns towards nuclear power. However, we argue that this persistent approach of the nuclear industry and many government bodies alike to quell the concerns of public stakeholders predominantly by scientific education, in order for them to build trust in experts and decision-makers and accept the proposals of these actors, is one which retains the priorities of experts at its centre and therefore cannot be sustainable within democratic systems. To continue to focus on achieving public acceptance and consistently engage in 'deliberative speak' (Hindmarsh and Matthews 2008) without legitimate decision-making influence being afforded to public stakeholders, whilst failing to understand the needs, priorities and legitimate concerns of public stakeholders through deliberative dialogue, is to ignore the often inappropriate orientation of much historic public engagement on nuclear energy.

As part of our principles of engagement, we propose that engagement reflects the lifespan of nuclear infrastructure and their occupancy of space within localities; that is, nuclear power stations continue to operate and exist among communities during numerous changes in national and local government. We argue that this would demonstrate an improved form of energy governance which is inherently more acknowledging of the nature and impact of such energy infrastructures. To govern such nationally significant infrastructure projects in a way which responds to political will

but not to the needs and priorities of those communities most directly affected by them is to mitigate any legitimate achievement of social justice and sustainable partnerships with local populations. Recent governance literature concurs with such assertions; Jordana (2017: 43) notes that *"most infrastructure decisions have temporal implications beyond electoral cycles"*, and that the stakeholders who benefit most from large infrastructural projects are different to the individuals who are impacted most greatly and must deal with the negative consequences of living close to them. In this context, stakeholder engagement programmes that function regardless of the political party in place at any given time would appear to demonstrate to public stakeholders a commitment to engagement and an indication of trustworthiness and long-term intentions. If such commitments are unable to be made, we argue that progress in regards to trust-building and confidence in sustainable industry engagement will be limited.

The following section reflects upon and discusses the experiences of the seven country case studies, from which a set of principles for effective engagement is proposed. These are supported by country-specific examples of such principles and when these have been evident.

5.1. Discussion of Country Experiences and Influence on Engagement Principles

The experiences of the seven countries discussed in this report all inform in various ways the principles for effective engagement that we seek to develop. By combining academic and industry literature in what is discussed, reported and proposed regarding successful or effective engagement, and in conjunction with the lessons we can take from the history of engagement from each country, we look to develop principles which acknowledge the inevitable difference of each country, in regards to how engagement should be conceptualised, developed, and conducted, so that there may be constructive outcomes for both the 'organisers' or 'convenors' of engagement, and for those 'participants' of engagement processes. Cultural context and other notable factors (*see* Calvano, 2008) must be recognised as playing a significant role in shaping and dictating the

extent to which engagement processes will integrate these or similar principles, and it is for this reason that at this stage, prior to the more detailed analysis of future work, we do not propose a conceptual framework of effective engagement within an idealised energy governance structure. Rather, we propose principles that promote fair procedures and maximised opportunity for dialogue and influence. As this report and the historical country reports on which it is based indicate, energy governance takes a multitude of forms, employs diverse approaches, and may deem some principles of greater importance than others. The principles we propose aim to be reflective of wider processes of effective governance, which encompass themes such as equity, respect, reciprocity, and opportunity.

As we demonstrate in Figure 1, the seven countries we consider in this report have experienced - in some respects vastly - different experiences in regards to their interaction and relationship with nuclear energy and also the engagement associated with this interaction. There appears to be an identifiable experience divide between Western & Northern Europe (Germany, United Kingdom, Sweden, Finland) and Eastern & Southern European (Ukriane, Bulgaria, Spain) in regards to changes in political structures and regimes, and their influence on the engagement opportunities and access to information regarding nuclear energy developments and decision-making. The political response of several of the countries under consideration to negative events such as nuclear accidents is also an important factor when considering the scope and role of engagement activities. Between the 1950s and the 1990s, there were two nuclear accidents in Europe; the Windscale Fire in the UK and the Chernobyl accident in Ukraine (the accident at Three Mile Island in the United States in 1979 is also notable during this time period in a global context). Such events revealed the reluctance of the nuclear industry and political establishments at the time to inform their respective societies beyond the minimal level required, or in the case of Ukraine and Bulgaria, decided to produce false reports of the severity of the incident and risking the health and well-being of citizens. The cases demonstrate that in the mid to late-twentieth century, the seven countries considered in this report were engaged in varying but low levels of engagement, and operated primarily on a ‘need to know’ basis, whereby more than key information points were seen as unnecessary to civil audiences or only likely to cause concern. In these cases a limited approach

to engagement sought to enable the industry and those in political power to operate without inducing societal panic whilst protecting their respective positions and futures. Whilst it may be argued that extensive engagement is not always required or demanded by a given society, opportunities for engagement, should it be deemed necessary or appropriate and demanded by those societies, should be present and able to be utilised effectively.

For countries such as Spain, operating under the dictatorship of General Franco until the mid-1970s, citizen engagement was considered unnecessary at any level. Today, support for nuclear power in Spain remains lower than countries such as the UK and Finland, where engagement has been more prevalent. This contrasts with countries such as Germany, which have operated within a democratic system for far longer than Spain and have enjoyed the democratic freedoms that come with such structures of government. The result of this more democratic structure is the opportunity for German citizens to demonstrate against an industry which many believe, and have done for many decades, is too dangerous to continue in the context of national energy generation, in addition to continued associations with the development of weapons for nuclear warfare. Such experiences demonstrate that whilst engagement is promoted as the most likely method to garner support and mitigate opposition, it is not a guarantee for ensuring public acceptance. The persistent violence and protest action against nuclear power development in Germany serves as an example of some of the most sizeable and vehement opposition movements to any energy technology, and these have accumulated in a national moratorium against further nuclear power-related development in the country.

The more ‘open’ and integrated nature of nuclear engagement in countries such as Germany, the UK, Sweden and Finland has seen different results, which in-part reflects the cultural and political nature of each case and highlights the need for further analysis of these differing socio-political contexts. Despite facing different futures in regards to nuclear expansion and development, both Sweden and Finland appear to demonstrate a culturally-driven respect for and trust in experts and specialists such as engineers and industry personnel, which may have played a significant role in

pre-empting the protest activity seen in Germany. The nuclear industry in both Sweden and Finland can also be seen to have incorporated public and stakeholder engagement into their site-specific operations for many years, and public referenda such as that held in Sweden in the late 1970s on the future of nuclear reflect a liberal and democratic approach employed many decades ago. Although it may be argued that the UK does not share the same degree of trust in scientists and engineers as its Scandinavian counterparts to operate in the best interests of local and wider society, it has demonstrated throughout its history episodes of positive if not ideal engagement, such as the Sizewell B Public Inquiry in the 1980s and a large-scale public consultation on a geological disposal facility in Cumbria in 2012-14. More recently there have been calls from the UK nuclear industry to refocus on stakeholder engagement and employ more dialogue-based approaches to communication efforts (NIC, 2015).

In response to that which we have examined and discussed – both the experiences of engagement detailed in the literature and detailed country reports – we now return to the identification of principles for effective engagement. These combined accounts of historical examples of engagement approaches enable us to reflect upon and develop the initial set of principles in Table 1, and present a set of principles for effective engagement in Table 2, which will inform future work as part of this project.

Principle	Summary of Principle	European examples (support and oppose principle assertions)
Timely engagement	Engage with stakeholders 'up-stream' and prior to key decision-making periods to legitimise engagement and stakeholder input	Sweden and Finland – site-related decision-making (common practice) United Kingdom – 2008 White Paper on Nuclear Power public consultations, public responses seen to influence White Paper, whilst environmental groups deemed process biased and decisions pre-determined
Dialogue-based engagement	Information provision and expert-to-stakeholder communication alone is often inappropriate and insufficient. A dialogue-based approach enables both parties to explore issues and decisions, and also understand stakeholder values and priorities. This is not to discourage the provision of 'project updates' entirely, but to utilise more direct than indirect communication	United Kingdom – public consultation on geological repository site selection in Cumbria (2012); 2008 White Paper on Nuclear Power public consultations
Wide and objective engagement	Engage with a range of stakeholders and understand the positions and needs of various stakeholders, absent of bias or subjectivity. This is important for reasons of democracy, equity and procedural justice.	Sweden – national advisory referendum on the future of nuclear power (1979) United Kingdom - 2008 White Paper on Nuclear Power public consultations, seen as valid period of public consultation by some and biased process based on pre-determined outcomes by some groups

		Ukraine, Bulgaria and Spain – lack of societal engagement for many decades has resulted in the growth of environmental and nuclear opposition groups, protests and direct action
Open and transparent procedures	If processes of engagement are limited, if dialogue is restricted, or if those involved are unwilling to discuss important issues, constructive outcomes and shared learning are less likely to occur	***(Greater transparency)*** Sweden – national advisory referendum on the future of nuclear power (1979) United Kingdom – Sizewell B NPP public inquiry (1982-1985), Trawsfynnydd NPP decommissioning proposals (1994, Bond et al., 2004)
		(Less transparency) Germany – protests by local farmers to local site development proposals Spain – low levels of trust persistent from times of authoritarian regime (until mid-1970s) Spain – social movements of opposition (1970s/1990s/2000s) following fall of dictatorship, where public engagement was very limited Ukraine and Bulgaria – distrust among citizens as a result of industry and governmental

		responses to Chernobyl accident (1986 onwards) Finland and Sweden – long tradition of engaging with local communities, trust in experts and scientists if relatively high (common practice)
Context dependency	Engagement structure and content should be in-part determined by stakeholders, so as to validate topics under discussion and to address issues of greatest concern for all parties. Understanding the specific context of each community or group facilitates more effective engagement and decision-making.	United Kingdom – public consultation on geological repository site selection in Cumbria (MRWS, 2012) Spain – social movement of opposition specifically associated with Basque country ('The Committee for the Defence of a No Nuclear Basque Coast' (CDCVNN) formalized in May 1976)
Extra-political engagement	The impacts of infrastructure decisions often exceed political timescales and terms of office, and affect local stakeholders to a greater degree than those in decision-making positions. It is recommended that stakeholder engagement is not excessively influenced by political timescales and the intentions of changing political parties.	United Kingdom – Trawsfynnydd NPP decommissioning proposals (1994, Bond et al., 2004)
Procedural justice	Fair, inclusive, accessible and well-conducted procedures can be as important as decision outcomes themselves. If procedures are seen to be conducted fairly, then resulting decisions, whilst not being explicitly supported, may be accepted by stakeholders	United Kingdom – Sizewell B public inquiry, utilisation of various methods of engagement and collection of information (1982-1985); 2008 White Paper public consultations, national consultation

		period which influenced nuclear documentation Sweden – national advisory referendum on the future of nuclear power (1979)
Access to engagement processes	All social groups and interest-based organisations should have the opportunity to participate in processes of engagement, as a range of views and knowledge are necessary for effective and legitimate decision-making. This is also important to ensure procedural justice and socially just decision-making.	United Kingdom - 2008 White Paper on Nuclear Power public consultations, a range of groups were invited to participate Sweden – national advisory referendum on the future of nuclear power (1979), inclusive of all Swedish citizens wishing to participate
Access to information and individuals	Without access to the full range of information to make informed decisions, or access to officials, experts and decision-makers to ask questions, engage in deliberation or voice concerns, engagement will not meet the demands of democracy or social justice	Ukraine, Bulgaria and Spain – little information provided to members of the public, understanding of nuclear power and impacts was low during authoritarian and communist regimes, environmental groups and movements brought about periods of significant education and learning on the nuclear topic through public lectures and campaigning
Reciprocity	All parties involved in processes of engagement must benefit in a tangible and legitimate way	United Kingdom - Trawsfynnydd NPP decommissioning proposals (1994; Bond et al., 2004)

Table 2. Principles for Effective Engagement

The authors have sought to understand the principles and values that are required in order to ensure that engagement is fair, equitable, and ultimately effective, whether this be through impacting policy or practice; a more detailed analysis of engagement on country-specific policy or practice is a central part of our future work. We have reviewed several country reports to identify examples of historical nuclear power-related engagement and have detailed the lessons provided by them in regards to conceptualising engagement principles which can be utilised by the nuclear industry, and others, to ensure that public and stakeholder engagement processes are constructive for all those involved. Engagement steered by such principles should provide opportunities for participants of engagement to both express matters of concern and priority, and share knowledge and experience with other parties. We find that our discussion on principles for effective engagement naturally sits within a broader discussion on energy governance and how this should be both conceptualised and executed within different cultural and political contexts.

The principles of effective engagement presented in Table 2 highlight the different historical experiences of countries across Europe, and reveal the pitfalls and opportunities in either restricting or promoting engagement respectively. For a topic as significant as nuclear on local, national and international scales, adhering or at least taking from these principles can assist in mitigating social injustices and threats to democracy which are all too evident in Europe's history, particularly in regards to national energy policy and the political complexity associated with it. In conjunction with other work that attempts to formulate a series of critical criteria for ensuring 'success' during engagement with citizens or impacted communities, we argue that future processes of engagement should utilise the lessons of history to enhance the communicative and interactional processes of the future, whether in Europe or further afield.

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