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Public engagement as a framework for nuclear decision-making: a case study of the UK

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Abstract

This paper aims to explore under what conditions, how, and to what extent public engagement can be used to improve the efficacy of nuclear decision-making. Based on a case study of the 2007 nuclear consultation in the UK, this paper has three major findings. Firstly, our three dimensional content-process-outcome evaluative model highlights the importance of a systemic approach to public engagement. Secondly, we demonstrate how trust is an important element of effective public engagement. We specify how preexisting public distrust as well as the three trust destroying process were critical to the engagement process. Thirdly, the tensions between the traditional decision-making system and the new requirements that emerged from a more participatory governing system are found to be a major factor contributing to the limitations of the UK consultation.

Acronyms

FoE	Friends of the Earth
SDC	Sustainable Development Commission
WWF	World Wide Fund for Nature

1. INTRODUCTION

The nuclear "renaissance" in the 2000s and the abrupt policy change in the wake of the Fukushima nuclear event in March 2011 highlight the contentious and volatile nature of nuclear decision-making. The issues of nuclear risks, disposal of radioactive waste, the scale of investment required, cost overruns and social issues such as acceptability of power plant location often trigger public outcry. Nuclear decision-making has for decades posed challenges for policy-makers. Traditional, technocratic decision-making systems are often found to have major limitations in dealing with nuclear decision-making which often involves incomplete knowledge and is often value-laden (Mah *et al.*, 2013; Power, 2004; Schneider, 2001; Valentine and Sovacool, 2010). A central question to be answered is – how can be nuclear power decision-making improved?

Public engagement and trust are increasingly considered to be two of the important elements in effective nuclear power decision-making. Public engagement is the practices of involving members of the public in agenda-setting, decision-making, and policy-forming activities of organizations or institutions responsible for policy development (Rowe and Frewer, 2004). In the context of nuclear decision-making, public engagement has attracted growing interest from both academics and policy-making as a potential means to improve policy-making (Petts, 2008; Pretre, 2004). Such participatory strategies are needed to place scientific and technical knowledge in context and account for differing experiences, understandings, beliefs and values of different stakeholders (van den Hove, 2000).

Public engagement can take place through various mechanisms (e.g. public meetings, hearings, negotiation, mediations, and consensus-based advisory committees (Beirerle and Cayford, 2004), and in different forms (from information provision to consultation, collaboration and to empowerment (Kobayashi, 2004). Among the extensive literature on the forms of public engagement, Arnstein's (1969) concept of the ladder of citizen participation is particularly instructive in differentiating participation into eight rungs: from lower orders of participation that include manipulation, therapy, informing, consultation, placation, to higher orders one that include partnership, delegated power, and citizen control.

Generally, governments have been motivated to adopt a more participatory approach for a number of reasons: to improve policy quality through informed decision-making and incorporating knowledge and ideas from the public, to respond

to calls for greater transparency and accountability, and to restore public trust in government (Bäckstrand, 2003; OECD, 2001; Pretre, 2004). Information disclosure, feedback processes, deliberation, empowering the public, inclusiveness and accountability have been identified as key factor that would improve public engagement (OECD, 2001; Thomas, 1995).

Countries vary remarkably in their public engagement approaches to nuclear decision-making. For instance, in the UK, public enquiries on major policies, including energy, are commonly convened and are guided by the *Code of Practice on Consultation* (Her Majesty's Government, 2008). In Sweden, a national referendum resulted in a decision to phase out nuclear back in the 1990s (Wünsche, 1993). The Fukushima accident took place in March 2011 on the other hand underscored the importance of participatory approaches to nuclear decision-making amidst heightened concerns over nuclear risks. In Japan, the government conducted the first deliberative polling on the national post-Fukushima energy plan, resulting in a government proposal of phasing out nuclear (CDD, 2012). In Germany, the government appointed the Ethics Commission of a Safe Energy Supply to review the nation's energy strategy with an emphasis on the social and ethical considerations (Rossnagel & Hentschel, 2012). The German government then abruptly revised its nuclear position, and decided to completely phase out nuclear power by 2020 (Rossnagel & Hentschel, 2012).

Another body of literature has emerged that highlights the relationships between trust and public engagement in nuclear decision-making. Trust is a "psychological state comprising the intention to accept vulnerability based upon positive expectations of the intentions or behavior of another" (Rousseau, Sitkin, Burt, & Camerer, 1998, p. 395). Trust depends on shared values, and on confidence in persons, social relations and institutions, such as the rule of law and accountability system (Earle *et al*., 2010; Tao, 2008). Although restoring trust is not the sole purpose of public engagement, it is often a main purpose of public engagement (Petts, 2008). In situations where public trust is low and complete knowledge is not available, government may need to enhance its trustworthiness through participatory approaches in order to better manage nuclear risks and enhance policy legitimacy (Gilson, 2003; Poortinga and Pidgeon 2003; Stebbing, 2009).

Petts (2008) has identified three key processes in an engagement process that have the potential to impact positively on trust. These are representation, collaborative framing, and decision impact. However, a positive relationship between public

engagement and trust cannot be guaranteed (Petts, 2008). Engaging the public may has mixed outcomes. Public engagement cannot be regarded as a procedural solution that ensures a consensus can be reached when public opinion is divided among stakeholders with diverse values, interests and power (Aegerter and Bucher, 1993). Trust can be eroded in the processes of engagement if such processes are not conducted properly. Frustration can arise when participants perceive that participatory approaches are used as a means of deflecting protest, inhibiting actions or "rubber-stamping" a pre-determined nuclear decision (Adams, Wheeler, & Woolston, 2011; Jones, Eiser, & Gamble, 2012). Public engagement may result in a stalemate when decisions are needed (Aegerter and Bucher, 1993).

Nuclear decision-making often involves complex choices, trade-offs and significant uncertainty. Therefore policies to address nuclear challenges might be made more effective if we can better understand under which circumstances, and how public engagement may become a significant component of nuclear power decision-making. There is a need for an analytical approach that can give a more explicit and detailed consideration of the trust dimension of public engagement in nuclear decision-making.

This paper aims to explain under which circumstances, how, and to what extent public engagement may improve nuclear power decision-making, with an analytical focus on trust. We will address these key questions: (1) To what extent was the UK approach to engaging the public in the 2007 consultation effective? What did the UK approach achieve, and what were its limitations? (2) What were the favourable conditions under which public engagement improved nuclear decision-making, and what were the barriers? (3) To what extent, and how, did trust matter in public engagement process?

This paper presents a case study of the 2007 nuclear consultation in the UK. In that consultation, the government presented a pro-nuclear view in its consultation paper titled *The Future of Nuclear Power – The Role of Nuclear Power in a Low Carbon UK Economy* (hereafter the 2007 nuclear consultation paper) (DTI, 2007).

This case study relies on empirical data that is relatively old, and the UK is a country that possesses numerous unique characteristics in its energy policies. These may make our findings difficult to be generalised to other countries and cities. However, this consultation merits study for a number of reason. The 2007 consultation was one of the most significant nuclear consultation exercises in the

UK. The pro-nuclear view presented in the consultation paper was widely perceived as a marked shift of the national energy policies from an anti-nuclear on in early 2000s (as presented in the white paper *Our Energy Future – Creating a Low Caron Economy* published in 2003) to a pro-nuclear one. A critical examination of such major policy changes may provide fruitful analysis.

The 2007 consultation merits study also because it can provide a relatively rare opportunity for a detailed analysis of the processes, not only the outcomes, of a public engagement exercise. Despite engaging the public has been increasingly regarded as an important element in policy-making, evaluative cases of the processes of public engagement has been rare, in part because of the lack of empirical data (Petts, 2008). The 2007 consultation was exceptional. It is relatively rare in its accessibility of a large body of empirical data of the engaging process as a result of the intensive scrutiny that this consultation went through. This consultation was conducted following a High Court ruling on a judicial review filed by Greenpeace, which concluded that a preceding nuclear-related energy consultation in 2006 was procedurally "misleading", "seriously flawed", and "manifestly inadequate and unfair". The High Court judgement is a useful source of information for the contextual background of the 2007 consultation. Apart from the High Court judgement, other sources of information include an official government evaluation and a review study conducted by a group of leading experts on the 2007 consultation exercise. It was noted in the official government evaluation that "it is rare for the consultation process itself to be under such intense scrutiny" (Warburton, 2009: 32). The extent to which this consultation was under scrutiny is atypical but these evaluative and review reports provide important, detailed and credible empirical data for our analysis.

The paper is organised as follows. The following section presents our methodology that explains the research approach. It is followed by an overview of the UK case study. We then develop an integrated framework that establishes the linkages between the concepts of public engagement and trust in nuclear decision-making. Based on the framework, we assess to what extent public engagement improved nuclear decision-making in the UK, and identify conditions and factors that were key to explaining the observed phenomenon. The final section outlines the theoretical and empirical contribution of this analysis, and the policy implications for nuclear decision-making in the UK.

2. METHODOLOGY

This paper adopts a single case-study approach (Yin, 2003). Our analysis is based on a detailed examination of the 2007 nuclear consultation in the UK. A case study has the advantage of providing answers that go beyond "what" questions to "how" and "why" questions through in-depth analyses (Yin, 2003). When compared with a comparative case-study approach, this UK case study has its limitations in the generalisability of its findings. It will however represent the one of the first analyses of current UK approaches to public engagement for nuclear decision-making. It will provide a valuable benchmark for subsequent studies that analyse nuclear decision-making and stakeholder engagement, not only in the UK context, but also in other jurisdictions that share similar governance challenges in nuclear debates.

We formulate an analytical model to examine the processes and outcomes of the 2007 consultation (to be presented in Table 2). Our model is based on literature in social science studies which conceives public engagement and trust as important elements in nuclear power decision-making. This model makes two distinct contributions. Firstly, it allows us to look beyond the outcomes of public engagement, but placing emphasis also on the processes – which is often the neglected dimensions of engagement. Secondly, it is an evaluative framework that allows us to apply elements of our analysis more systematically to the UK context.

Our analysis is based on a desk-top research. Data were collected from academic papers, publications by governments, non-governmental organizations (NGOs) and consultants. The 328-page Warburton Report published in 2009 and the 88-page Dorfman report published in 2008 both evaluated the 2007 consultation. These publications provide a wealth of detailed data for this case study. Web-based information provided by the UK government, particularly from the Department of Energy & Climate Change (DECC) and the national archives, is another major data source.

3. RESULTS AND DISCUSSION

3.1.Background to the 2007 Nuclear Consultation

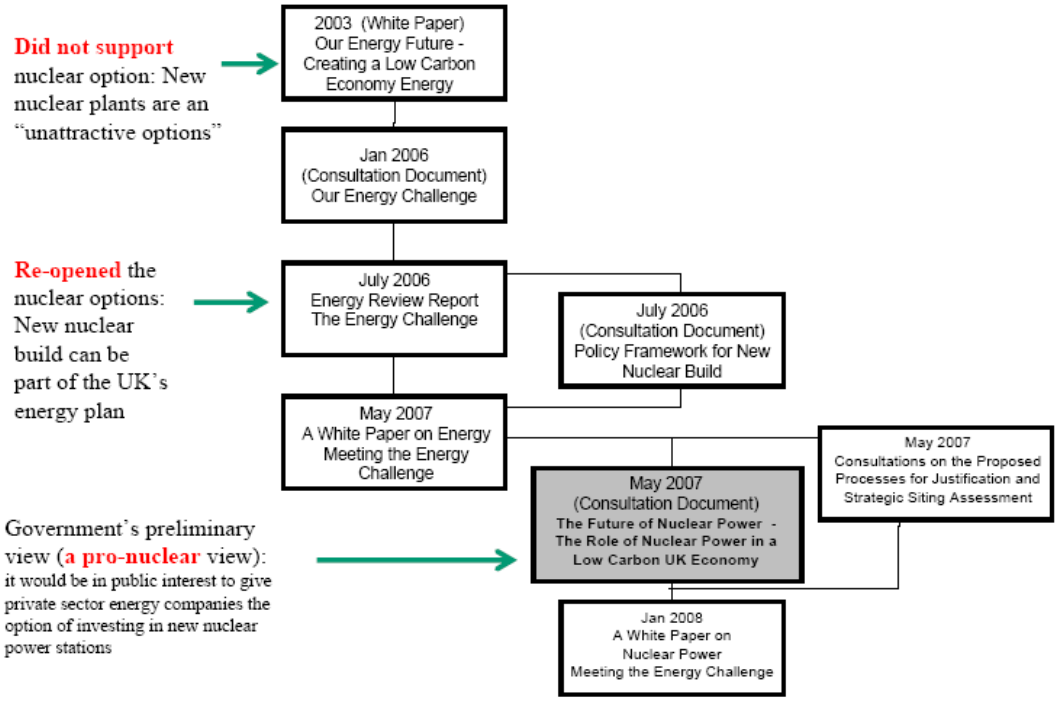
Nuclear power has been a major component of the UK's electricity sector in the past several decades (Jones et al., 2012). Nuclear power accounted for 19 percent of electricity generated in the country in 2012 (EIA, 2013). Although the UK is rich in

energy resources, the decline of the country's indigenous energy supplies, the prospect of becoming an energy importer, and growing concerns over global climate change prompted a major energy review in 2003 (DoT and DEFRA, 2003).

Since then, the Government has conducted a number of consultations relating to nuclear power while its position on this energy option has undergone major changes over time. In the 2003 Energy White Paper, the Government did not support the nuclear option and concluded that new nuclear plants were an "unattractive options". The Government also made a commitment to the "fullest public consultation" if a nuclear option were to be explored (BERR, 2008a:5). The Government then re-opened the nuclear option in January 2006 in its Our Energy Challenge consultation (DTI, 2006). The Government explicitly expressed a more pro-nuclear position months later in July 2006 in its Energy Review report. In this report titled *Energy Review: The Energy Challenge*, the Government supported new nuclear build as part of the UK's energy plan (DTI, 2006b). The report states that the government has reached a preliminary view that "the economics of nuclear now look more positive than at the time of the 2003 Energy White paper" and that "nuclear has a role to play in the future UK generation mix alongside other low carbon generating options" (p.113).

The 2006 Energy Review consultation however met with a major setback. In a judicial review brought by Greenpeace to the British High Court, Justice Sullivan ruled that the 2006 Energy Review consultation was "misleading, seriously flawed, manifestly inadequate and unfair" because insufficient and "misleading" information had been made available by the Government for consultees to make an "intelligent response". Justice Sullivan ruled that the Government's pro-nuclear decision was unlawful (Warburton, 2009). In consequence, the Government was obliged to conduct another nuclear consultation in 2007, which is the focus of our investigation. An overview of the major consultation exercises and changes of the Government's position on nuclear between 2003 and 2008 are provided in *Figure 1* and *Table 1*.

Figure 1: Major nuclear-related energy consultation in the UK and the changes in the Government's position on nuclear power



*The shaded box highlights the 2007 nuclear consultation exercise which is the focus of our investigation in this case study.

Table 1. Major consultation and government documents of nuclear power in the UK (2003-2008)

Year	Documents/ Events	Details
2003	Energy White Paper 'Our Energy Future - Creating a Low Carbon Economy'	The government did not support the nuclear option: This White Paper concluded that nuclear power "is an unattractive option for new, carbon-free generating capacity". It also made a specific commitment to further public consultation if a nuclear option is to be explored: "Before any decision to proceed with the building of new nuclear power stations, there would need to be the fullest public consultation and the publication of a white paper setting out the Government's proposals" (Warburton, 2009: 61).
2006	Consultation document 'Our Energy Challenge – Securing Clean, Affordable Energy for the Long Term'	Nuclear option was re-opened. The consultation asked: Are there particular considerations that should apply to re-examining nuclear?
2006	Energy review report 'Energy Review: The Energy Challenge'	Government indicates its pro-nuclear position. The review report states that the government has concluded that "new nuclear power stations would make a significant contribution to meeting our energy policy goals" (p.17). This report was published with a corresponding consultation document, *Policy Framework for New Nuclear*, which proposes a policy framework under which developers would be able to make proposals for new nuclear build. This document also includes a Statement of Need, which states that any future planning inquiry should not have to consider whether there is a need for nuclear power.
2006	Greenpeace filed a judicial review	This application for a judicial review was brought against the Government's pro-nuclear position as stated in the 2006 Energy Challenge consultation. It was on the ground that the consultation was procedurally flawed and that therefore the decision was unlawful.
2006	High Court Judgement	The High Court ruled that the 2006 consultation was "not merely wholly inadequate", "it was also seriously misleading, the consultation process had been procedurally unfair; and that therefore unlawful".
2007	Sustainable Development Commission's briefing paper 'Public Engagement and Nuclear Power'	The Commission, the government think-tank, suggested five principles for effective engagement: Clarity, integration, independence, layered approach and feedback.
2007	Consultation document 'The Future of Nuclear Power - The Role of Nuclear Power in a Low Carbon UK Economy'	The Government stated its preliminary pro-nuclear view on the future role of nuclear power in the UK and invited public feedback on that.
2008	White paper 'Meeting the Energy Challenge: A White Paper on Nuclear Power'	Three months after the completion of the 2007 nuclear consultation, the Government stated in this white paper that it has taken a decision to allow nuclear power stations to be built.

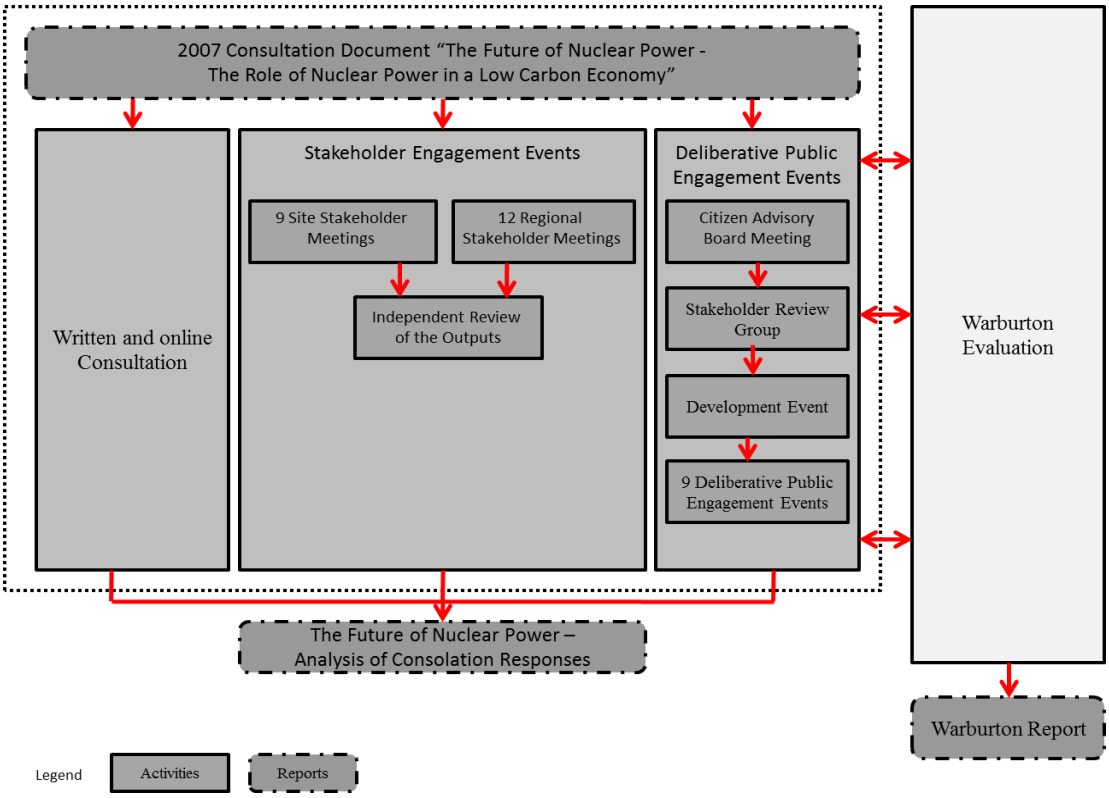
(Source: compiled by authors)

The 2007 nuclear consultation was a 4.5-month exercise conducted between 23 May and 10 October 2007. In its consultation document the Government stated its preliminary view on nuclear power and invited public feedback on this. This preliminary view, which was widely perceived as a pro-nuclear one, states that the Government believes that the disadvantages of nuclear power, including the radioactive waste issue, "can be managed and mitigated so that they do not in themselves provide a reason for not allowing energy companies the option of investing in new nuclear power stations" (DTI, 2007: 11). Following this consultation, the Government published three publications: a report *The Future of Nuclear Power: Analysis of Consultation Responses*, and a white paper *Meeting the Energy Challenge* which were published concurrently with *Impact Assessment of the Government's White Paper on Nuclear Power* in January 2008.

This consultation was large-scale, well-structured and inclusive. A total budget of £2.4 million was allocated for the implementation and subsequent analysis of consultation responses (BERR, 2008a). 2,700 written responses were received and 1,600 people participated in meetings and events organised across the country (BERR, 2008b).

An extensive range of engagement formats and measures was adopted over the 4.5 months of the consultation period. The consultation comprised three main components. These were the written and online consultation, stakeholder events and public events. These components were complementary to each other and were conducted concurrently (*Figure 2*). This kind of engagement design, called a layered approach, aims to use different engagement activities to address the needs of different stakeholder groups that may have distinctly different knowledge, experience and exposure levels of nuclear risks. For example, different stakeholder engagement events were organised in order to target communities that are presently living with nuclear power stations, and those which are expected to host the new build stations. This consultation was also inclusive in nature. It was able to involve those who were not normally engaged in such processes. For example, the deliberative public engagement events invited random citizens. This enabled the Government to listen to a demographically representative sample of the UK population (BERR, 2008b). Participants were paid an incentive fee to encourage participation (Warburton, 2009).

Figure 2: The layered approach of the 2007 nuclear power consultation in the UK



(Source: the authors; data from DTI, 2007; Warburton, 2009)

Another important feature of the 2007 consultation is that the entire engagement process was subject to major and serious evaluative assessments. Every stage of the consultation was overseen by an official government evaluation which was commissioned to an NGO 'Shared Practice'. The report published by Shared Practice in 2009 (hereafter the Warburton Report) comprises a 328-page final report and 204 pages of annexes (Warburton, 2009). It provides a detailed account of the consultation exercise and an assessment of its impact.

Another major evaluative exercise was a review study conducted by the Nuclear Consultation Working Group – an independent body comprising leading experts in the fields of environmental risk, radioactive waste, energy policy, energy economies, political science, social science and environmental justice. The report (hereafter the Dorfman Report) concluded that the 2007 consultation "has failed" (Dorfman, 2008).

3.2. An assessment on the 2007 Nuclear Consultation: A three-dimensional content-process-outcome model

Based on the literature that sheds light on the engagement and trust dimensions of nuclear decision-making (Bijlsma et al., 2007; Brecher and Flynn, 2002; Cuppen, 2012; Rower and Frewer, 2000, 2004; United Nations, 2005), we formulate an evaluative model to guide our examination of the 2007 consultation. This model comprises three key dimensions: content, process and outcome. The *content* dimension highlights the quality of the information, knowledge and arguments created, utilised and disseminated in the public engagement process. The *process* dimension draws attention to the interactions among actors that take place in the process while the *outcome* dimension highlights the changes that result from the interaction process. Timeliness, representativeness, capacity building of civil society, consensus building, adaptive decision-making, and transparency are identified as the key parameters of the process dimension. Quality decision, policy legitimacy, trust enhancement, and conflict resolution are identified as the key parameters of the outcome dimension. The content-process-outcome evaluative model, and its associated parameters and indicators, is presented in *Table 2*.

By applying our model to the UK case, we found that the 2007 consultation was able to meet certain parameters of effective public engagement, but was failed to do so in other important aspects. *Tables 3* to 5 show our assessment with illustrative examples.

Table 2: The content-process-outcome evaluative model

Dimensions	Parameters	Indicators
Content	Accuracy	■ Remove error or provide more precise descriptions
	Comprehensiveness	■ To exchange information on the knowledge, attitudes, values, practices and perceptions of interested parties concerning the issues
	Balanced-views	■ A balanced inclusion of the variety of perspectives that exists within the stakeholder population ■ Provide the participating parties all the available information rather than biased or partial information, or misinterpretation of information
Process	Timeliness	■ Early involvement ■ Adequate time provided to consider, discuss and challenge the information
	Representativeness	■ Inclusion of all stakeholders rather than the selected few
	Capacity building of civic engagement	■ Meaningful engagement supported by adequacy of resources
	Consensus building	■ Participants' value/ opinion changed rather than intransigence (refused to be persuaded)
	Adaptive decision-making	■ Evolving process rather than pre-determined decisions
	Transparency	■ Transparency in arriving at and implementing decisions ■ Accountable to the decisions made ■ Be honest, candid, and open ■ Information is provided proactively in a meaning, accessible form free of charge or at a reasonable cost
Outcome	Quality decision	■ Policy quality is improved through informed decision-making and incorporating knowledge and ideas from the public ■ Policy changes are made that reflect inputs from the public
	Policy legitimacy	■ People have trust in the motives, transparency and competency of the government ■ Working relationships are strengthened
	Trust enhancement	■ To foster trust and confidence in the policy process ■ Mutual respect among all participants is strengthened
	Conflict resolution/ Improved capacity of problem solving	■ Access to expertise; improve competence, have adequate knowledge on the subject matter ■ To promote awareness and understanding of the specific issues under consideration during the policy process, by all participants

(Sources: Bijlsma *et al*., 2007; Brecher and Flynn, 2002; Cuppen, 2012; Rower and Frewer, 2000, 2004; United Nations, 2005)

Table 3: An Assessment on the UK Experience of Engaging the Public for Nuclear Decision-making – The *Content* Dimension

Dimension	**Parameters**	**Assessment**	**Illustrative Examples (IE)**
Content	Accuracy	√	1. A broad range of stakeholders were accessible to the relevant information. This enabled the stakeholders to review the accuracy of the information.
	Comprehensiveness	√	2. New knowledge derived from those SDC reports was found to be critical to the nuclear decision-making. SDC's findings informed the High Court Judgement in 2006, and the 2007 nuclear consultation. The 2007 nuclear consultation document contains 6 references which were drawn from SDC's publications. 5 of them were drawn from the evidence based reports. 3. A broad range of stakeholders with differing knowledge, experience and exposure were engaged through its layered approach to engagement design. Views from experts, NGOs, people who live near nuclear power plants and random citizen were included.
	Balanced-views	√	4. It improved accuracy and objectivity of the consultation back-up information by inviting NGOs and other informed stakeholders to a Stakeholder Review Group to examine if the views presented in the consultation paper were balanced.
		×	5. Dorfman Report: The government erred in asking the public to take a decision "in principle" for more nuclear power when significant "what if" issues were not consulted on in any meaningful way, or resolved in practice including uncertainties about nuclear fuel supply and manufacture, vulnerability to attack, security and nuclear proliferation, radiation waste, radiation risk and health effects, reactor decommissioning, reactor design and siting, cost of electricity generating technologies, energy distribution models, true renewable and energy efficiency modelling. 6. Biased or impartial information was provided to the participants. Green NGOs complained that alternative scenarios, tradeoffs and conditionality were not adequately discussed. The official government evaluation (Warburton Report, p. 168) noted that "the quantity of information on opposing and alternative views could have been greater". Greenpeace observed that as an "advantage" of nuclear power it was presented to be "substantially cheaper than wind generation" and that on the whole renewables were "handy for low-power uses such as solar powered garden lights and battery chargers" (Greenpeace, 2007b). 7. A report that analysed the consultation responses noted that "Some of those opposed to nuclear power express anger that the Government is posing a false dilemma so as to steer the results of the consultation towards the decision it has already made" (BERR, 2008a).

Table 4: An Assessment on the UK Experience of Engaging the Public for Nuclear Decision-making – The *Process* Dimension

Dimensions	**Parameters**	**Assessment**	**Illustrative Examples (IE)**
Process	Timeliness	×	8. The 2007 consultation was conducted after a preliminary view of the Government was formed. 9. Inadequate time was provided to consider, discuss and challenge the information. Information perceived as critical for the participants to challenge the Government's claim was presented only late in an engagement event. The Dorfman Report notes that "Interestingly it was only very late in the 1-day events that the, by now tired, members of the public were given another hand-out which, half way down page 17, noted that the rebuilding of the UK's nuclear fleet would mitigate only 4% of our CO_2 emissions".
	Transparency	√	10. Information was made accessible to the public and different audience groups through a variety of formats.
	Representativeness	√	11. The layered approach was inclusive – it involved those not normally engaged in such processes.
	Capacity building of civic engagement	√	12. Capacity of claim-checking. Civil society was enabled to counter-check the government's claims. Those views of the conventional authoritative voice are challenged and debated. It is noteworthy that the SDC's reports are of importance because it provides authoritative and credible information to the civil society, and therefore empowers green NGOs. The SDC's position paper and the 8 evidence based reports were influential as they are quoted and referred to in the consultation document that formed the basis for all consultation stimulus materials. The reports data and findings were also quoted and referred to in NGO materials to formulate their own positions. For example the notion that nuclear will only be able to reduce GHG by 4% does appear in the stimulus materials (though was only shared at the end of the day) is generally quoted by NGO's. In terms of engaging the public, the report was accessible through the SDC website and was downloaded 4,665 times (SDC, 2007b). 13. Capacity of getting engaged. Participants were provided payments for transportation and accommodation to attend engagement events. A total budget of £2.4 million was allocated to implement and run the consultation and collate and analyze the responses. No breakdown is given though this covered consultants, advertising and materials. "*Public participants were all paid an incentive fee: those who lived more than one hour away from the venue (some of whom had to stay overnight) were paid £125; those who lived closer were paid £75. Travel expenses were also paid by arrangement".*
		×	14. Capacity of problem solving: did not show improvement
	Consensus building	×	15. WWF-UK withdrew from the engagement process
	Adaptive decision-making	×	16. The Government's preliminary view on nuclear was explicated stated in the consultation document. After the consultation was completed and the White Paper published (in January 2008), a commissioner of the SDC openly criticized the consultation process in the media, raising concerns that some of the most crucial questions around nuclear energy raised by the public in the consultation remained unanswered (Warburton, 2009: 28). The Government's pro-nuclear position was perceived as unchanged after the consultation and did not respond to some key public concerns.

Table 5: An Assessment on the UK Experience of Engaging the Public for Nuclear Decision-making – The *Outcome* Dimension

Dimension	**Parameters**	**Assessment**	**Illustrative Examples (IE)**
Outcomes	Policy legitimacy	×	17. A review study conducted by the Nuclear Consultation Working Group – an independent body comprised leading experts in the fields of environmental risks, radiation waste, energy policy, energy economies, political science, social science and environmental justice – concluded that the 2007 consultation "has failed".
	Trust enhancement	×	***18.*** ***Lack of trust in the motive*** of the Government: The motive of the Government was questioned. After the consultation was completed and the White Paper published (in January 2008), two of the SDC Commissioners challenged the motives of the Government in the media, questioning the consultation was simply a disguised justification for a pro-nuclear decision that the Government already made, and criticizing the Government for ignoring the warning of its own advisor (Warburton 2009: 28) 19. ***Lack of a respectful / collaborative relationship*** between Government and green NGOs. FoE-UK denounced the consultation as a "public relations stitch-up". WWF-UK withdrew from the engagement exercise.
	Quality of decision improved	×	20. A number of rewordings. But not substantial policy changes were made that reflect inputs from stakeholders

Our assessment indicates that in terms of the *content* dimension, the consultation contributed to the accuracy and comprehensiveness of the information and arguments in a number of ways (IE No. 1-3). The consultation provided an arena for parties outside the government, most notably the Sustainable Development Commission (SDC) and green NGOs, to create and inject new knowledge into the consultation. It also improved the quality of the background information for the consultation by inviting NGOs and other informed stakeholders to a Stakeholder Review Group to examine if the views presented in the consultation paper were balanced.

However, it is important to note that although the consultation was able to improve the impartiality of the information (IE No.4), but only to a limited extent. The SDC – the Government's independent advisor on sustainability issues, the Dorfman Report and green NGOs raised concerns about the presentation of biased views (IE No. 5-8).

In terms of the *process* dimension, it is evident that the layered approach adopted in this consultation improved its representativeness (IE No. 11) and transparency (IE No. 10). The consultation indirectly enhanced the capacity of civil society to get engaged. Green NGOs were empowered by the SDC to counter-check the government's claims (IE No. 12) while the involvement of the general public was facilitated by the engagement events (IE No. 13). However, problem solving capacity was not enhanced. This reflected the lack of a consensus between the Government and green NGOs (IE No. 14-15). Timeliness of the process was another major limitation. A major criticism of the consultation was that it was conducted only after a preliminary view (which was a pro-nuclear one) had been taken by the Government (IE No. 8). In addition, critical information was provided to the public at a late stage (IE No. 9). There was also a lack of adaptive capacity in the decision-making process despite substantial inputs from stakeholders (IE No. 16).

On the other hand, the 2007 consultation has limitations in terms of influencing the *outcomes* of nuclear decision-making. Specifically, it failed to improve the quality of the decision, policy legitimacy and public trust (IE No. 17-20). The consultation did not influence the final policy conclusions. The public engagement resulted in a number of rewordings but there was no major shift in the Government's decision on nuclear power. Three months after the completion of the consultation, the Government stated in a white paper for nuclear power *Meeting the Energy Challenge: A White Paper on Nuclear Power* that it has taken its decision to allow nuclear power stations to be built (BERR, 2008b).

One of the key objectives of the public engagement exercise is to restore trust in the UK nuclear decision-making, which had been eroded in the preceding judicial review and

government consultations. However, ironically, the 2007 consultation was also found to *damage* trust. The trust issue has remained. In 2012, a request was made by civil society to re-open the nuclear debate. Some NGOs requested a Select Committee inquiry to investigate if misrepresentation of information took place during the nuclear consultation (UnlockDemocracy and ACS, 2012).

3.3.3. Understanding the effectiveness of the 2007 consultation

Why, then, did the 2007 consultation fail to effectively engage the stakeholders? Our analysis provides four major observations as follows:

(a) The lack of a systemic approach to engagement

By applying the content-process-outcome evaluative framework, this analysis sheds light on the importance of adopting a systemic approach to evaluating engagement. The 2007 consultation was able to meet some of the criteria but failed in meeting others. This may partly explain why while the Government itself was satisfied that consultation was good enough to allow it to discharge itself from the 2003 commitment to the "fullest public consultation" on nuclear, the consultation was denounced by the SDC and major environmental groups. The lack of a systemic view limited the Government's ability to conduct a critical assessment on its performance.

(b) Trust as an important dimension of public engagement

Our analysis sheds light on the mechanism of trust building in the context of public engagement, by highlighting "when" and "how" trust matters in public engagement for nuclear decision-making. We found that trust matters, both before, in the course of, and after consultation. Our analysis suggests that trust matters as a contextual factor as well as a governing process.

Pre-existing distrust before the 2007 consultation was critical. The Warburton Report highlights the importance of this pre-existing trust as a contextual factor that affected the engagement process. It notes that "an atmosphere of hostility, caution and anxiety is not conducive to the flexible and creative environmental that is ideal for the design and delivery of engagement activities" (Warburton, 2009: 32).

Further to this, trust appeared to be eroded rather than enhanced during the engagement process. Engaging the public in nuclear decision-making is intended to restore public trust

and improve policy legitimacy. However, as the Dorfman Report noted, a poor consultation practice undermined people's trust in government. Our analysis identifies three trust-destroying processes in the engagement exercise, which were areas where the Government exposed its weaknesses in engaging the public. These were pre-empting the engagement outcomes, presenting biased or impartial information, and ignoring (and not adequately integrating) feedback. Trust was further eroded in the engaging process when information was perceived as biasedly framed, and feedback being neglected rather than respected.

(c) The role of the Sustainable Development Commission as an independent government advisor

Our analysis suggests that the SDC played an important role in empowering the civil society to counter-check the government's claims as well as revealing the weaknesses of the consultation. The SDC, which was established in June 2000 and dissolved in March 2011, was the UK government's independent advisor on sustainability issues. The SDC had carried out three major activities in the 2007 consultation. Firstly, it published a series of eight evidence-based reports in 2006. Those reports covered a broad range of nuclear issues including the basics of this energy technology, technological alternatives, economics, environmental and social impacts such as the disposal of nuclear waste, decommissioning, safety and security issues and public perceptions (*Box 1*).

Box 1: The 8 "Evidence-based reports" published by SDC (2006)

1. "An introduction to nuclear power – science, technology and UK policy context"
2. "Reducing CO_2 emissions – nuclear and the alternatives"
3. " Landscape, environment and community impacts of nuclear power"
4. " The economics of nuclear power"
5. " Waste and decommissioning "
6. " Safety and security"
7. " Public perceptions and community issues"
8. " Uranium resource availability"

The SDC also functioned as a watchdog of the Government's pro-nuclear claims. The SDC created and provided new knowledge that empowered not only itself but also green NGOs to challenge the Government's views. These eight reports formed the basis for the Sustainable Development Commission (SDC)'s position paper on the role of nuclear power, titled *The Role of Nuclear Power in a Low Carbon Economy* (SDC, 2006). The position paper concluded that nuclear energy "would do little before 2020, was a choice rather than an absolute necessity". It also concluded nuclear energy "would be the wrong choice" which

would be "incompatible with the Government's own Sustainable Development Strategy" (SDC, 2006). After the 2007 consultation ended, two commissioners of the SDC openly criticised the Government in the media for ignoring its own advisors' advice in relation to this consultation. On the other hand, findings of the SDC's position paper were frequently cited by green NGOs to substantiate their claims. One of the frequently cited findings was that the rebuilding of the UK's nuclear capacity would mitigate only 4% of the country's CO_2 emissions.

Another major contribution of the SDC was the publication of a briefing paper titled 'Public Engagement and Nuclear Power' in 2007. This paper provided recommendations for effective public engagement for nuclear decision-making (SDC, 2007a). This paper is of significance in setting up an authoritative, credible benchmark for effective public engagement on nuclear decision-making. The five principles laid out in the document have become the benchmark frequently referred to by green NGOs when they have criticised the engagement process for nuclear decision-making. For example, in May 2007 Greenpeace referred to the SDC recommendations and warned that "anything less and the Government will again be guilty of running an inadequate and flawed consultation" (Greenpeace UK, 2007a). WWF-UK withdrew from the consultation process and stated that it would re-engage in the public consultation if it could be up to the standard set out by the SDC (WWF, 2007). In this regard, by setting up a high benchmark that has been perceived by major stakeholders as authoritative and credible, the SDC empowered the green NGOs to act as a powerful gate-keeper for the engagement process.

(d) The tensions between the traditional decision-making system and the new requirements that emerged from a more participatory approach as an explanatory factor

Our analysis suggests that the traditional decision-making system was not able to respond to the new requirements that emerged from a more participatory approach. The tensions that emerged appeared to be an explanatory factor contributing to the limitations of the 2007 consultation. There were three major limitations of the traditional top-down decision-making system. These were the limits of structural openness of engagement, the lack of responsiveness, and the conflicts of rationales regarding engagement.

The 2007 consultation was inclusive structurally in a sense that it provided a variety of engagement formats including stakeholder meetings, citizen advisory board meetings and deliberative events (*Figure 2*). But our analysis suggests that there is an important distinction between structural openness and process openness. While the layered approach to engaging, as noted, had its strengths in inclusiveness, it displayed limitations in nurturing respectful and

collaborative relationships between the government and the stakeholders. This observation is in line with the literature which argues that the mere existence of consultation documents and engagement events cannot guarantee effective public engagement, unless positive dynamics also exist (Aegerter and Bucher, 1993; Rowe and Frewer, 2000).

In addition, the traditional decision-making style of the UK government was not responsive to the new demands for transparency and accountability that emerged from a more participatory governance system. As noted, the engagement process of this consultation had empowered civil society, particularly by enhancing its capacity to deliberate through greater accessibility and transparency of information. Green NGOs, for example, utilised the information from SDC to counter-check the pro-nuclear claims of the Government. They raised concerns over radioactive waste disposal and alternative scenarios. They also demanded the Government to explain why their views were not accepted.

However, public trust appeared to be further eroded when the Government failed to explain why the views from the NGOs and the public were not accepted. A commissioner of the SDC openly criticised the engagement process in the media, condemning the Government for not answering some of the most crucial questions around nuclear energy raised by the public in the consultation (Warburton, 2009).

The Government was criticised for adopted a pre-emptive decision-making style in which public engagement was a means to legitimise a pre-determined government decision on nuclear. One example to illustrate this pre-emptive style is that following the judicial review ruling in 2006, the then Prime Minister Tony Blair responded: "This will change the consultation; this won't affect the policy at all" (Dorfman, 2008: 12). The impression of the Government's decide-announce-defend approach was reinforced when another then Prime Minister Gordon Brown told members of Parliament in July 2007 – when the consultation had run half its course – that "we have made the decision to continue with nuclear power" (Dorfman, 2008: 12).

Furthermore, our analysis found that the Government and green NGOs had conflicting rationales for public engagement. The literature suggests that there are three major rationales of public engagement. These are normative, instrumental and substantive (Stirling, 2006; Wesselink et al., 2011; Wilsdon and Willis, 2004).

We found that the Government's rationale was instrumental while that of the green NGOs was substantive. To the Government, the consultation was a procedural requirement that it had to meet. This observation is supported by the fact that after the consultation was completed, the Government stated in its white paper on nuclear power that the consultation process had enabled it to 'discharge the commitments' that they made in 2003 to the fullest

public consultation (BERR, 2008b: 38). The Government committed to this consultation to a large extent to ensure smooth implementation of its nuclear plans. Professor Tim Jackson, the then Economics Commissioner of SDC openly criticised that the consultation was a disguised justification for a decision that has already been made (Jackson, 208).

In contrast, green NGOs held a substantive rationale for the consultation. It is evident that they seriously attempted to take the consultation as an opportunity to improve the quality of nuclear decisions. They requested the Government to explore and assess alternatives or "what if" scenarios. However, the green NGOs appeared to be frustrated when they perceived the Government was not intended to explore alternatives. They noted that "the consultation did not provide fair or balanced information" and "failed to properly consider the alternatives to nuclear power" (Dorfman, 2008). The differences in the rationales created an expectation gap between the Government and the green NGOs, that became a barrier to restoring public trust.

4. CONCLUSIONS AND POLICY IMPLICATIONS

This paper set out to explain how and to what extent public engagement may improve nuclear power decision-making, with an analytical focus on trust. We have three major findings. Firstly, we applied our three-dimensional content-process-outcome model to the UK case study, and shed light on the importance of a systemic approach to engagement. Public engagement has been regarded as an important means to overcome the limits of top-down, technocratic style of decision-making systems (Pretre, 2004; Valentine and Sovacool, 2010). However, how to facilitate effective engagement is an area that has remained under-explored. We contribute to the literature by highlighting the complexity of engagement. Being able to meet certain dimensions or parameters of effective engagement cannot guarantee a successful consultation. A systemic approach to engagement that place emphases not only on the outcomes, but also the process- and content-dimensions of engagement is needed, and is critical to the advancement to the higher orders of the engagement stated in Arnstein's "ladder of citizen participation" .

Secondly, we explained how and to what extent public engagement may improve nuclear power decision-making, with an analytical focus on trust. Work by Petts (2008) has identified representation, collaborative framework and decision impact as some key elements of trust building. We shed light on the mechanisms of trust building by highlighting *when* and *how* trust mattered in the process of engagement. Trust matters both before, in the course of, and after a consultation. We identify three trust-destroying processes that appeared to be critical to reinforce the pre-existing public distrust. These were pre-empting the engagement outcomes, presenting biased or impartial information, and ignoring (or not adequately

integrating) feedback.

Thirdly, tensions between the traditional top-down decision-making system and the new requirements that emerged from a more participatory governing system are found to be a major factor contribution to the limitations of the UK consultation. This observation has contributed to the ongoing debate on the changing role of the state in effective governance (Kooiman, 1993; Sbragia, 2000; Tao and Mah, 2009).

Our findings have a number of policy implications. Firstly, a set of principles (check-list) and an inventory (a tool-box) of effective nuclear decision-making for policy-makers, power companies, NGOs and other stakeholders can be developed. Our content-process-outcome three-dimensional evaluation model (*Table 2*) has been tested in the UK case. Our findings suggest that public engagement which performs well only in certain dimensions, or which can meet certain criteria cannot guarantee good outcomes. A set of principles for effective public engagement, which emphases the integral nature of content-, process- and outcome-criteria, can therefore be developed for policy-makers, power companies and NGOs to guide their decision-making.

Secondly, policies to address nuclear challenges might be made more effective if we can better understand the pathways by which public trust can affect the effectiveness of public engagement, and under which circumstances that trust can be nurtured or eroded. Our analysis suggests that public trust matters in each and every stage of nuclear-decision-making – both before, in the course of, and after. In addition, if engagement is not properly conducted, trust can be easily eroded through the trust-destroying processes that we identified. These observations imply that policy-makers need to give their utmost attention to the importance, complexity and challenges of engaging the public and restoring public trust in nuclear decision-making.

Thirdly, the role of independent think-tanks also requires more attention. Our findings shed light on who can make a difference in improving engagement. We found that the SDC - an independent advisory body – appeared to play a pivotal play in the UK 2007 nuclear consultation. The SDC played multiple roles, acting as knowledge broker, watchdog, and policy advocate (policy entrepreneur) (Owen, 2010: 399). It has been regarded as a knowledgeable and independent body. Despite of the context of public distrust, the SDC remained as a trusted source of information. This finding suggests that independent think-tanks could have much greater potential to contribute to effective public engagement.

The UK case in public engagement is atypical in some aspects. It is unique in terms of its sophisticated design and its scale. However, our analysis has relevance beyond the UK. The challenges of engaging the public in nuclear decision-making share many similarities across countries and cities in the general context of a higher level of public distrust, a more dynamic stakeholder landscape and a growing need for policy legitimacy. We therefore expect our findings may be generalisable to other countries and cities to a certain extent. This case study relied on documentary data. A more robust analysis could be made if multiple sources of information, such as data derived from face-to-face interview and public opinion survey, could be used. In addition, this study used the data of a single country, and did not examine national differences in nuclear decision-making. This has limited our understanding of the factors affective the effectiveness of public engagement. Cross-country comparative studies would generate some fruitful results.

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