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Agencies navigating the political at the science-to-policy interface for nature-based solutions

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ABSTRACT

There has been a great deal of interest in recent years in this journal and others in the emerging science and practice of nature-based solutions (NBS) to environmental and climate challenges. Whilst the policy dynamics of these interventions are starting to slowly emerge, less is known about the interface of policy-politics-evidence for NBS. This paper argues that there is a role that public environmental agencies acting as boundary actors can play in the successful brokering of knowledge about NBS into policy. Situated loosely within boundary conceptual approaches, it offers an empirical case study of a UK public boundary agency seeking to broker knowledge about NBS into national policy making forum, which are highly political. The results show that this agency utlises four key tools for navigating 'the political' in brokering evidence about NBS into policy: communications and framing, embedding, selectivity, and lobbying. These findings reveal new insights about how public agencies navigate the free market of knowledge production through a four-part tool kit. It concludes by offering suggestions for the wider applicability of the research to the still emerging field of policy for NBS.

1. Introduction

There has been a great deal written in recent years about nature-based solutions (NBS) to global climate and ecological crises (Raymond et al., 2017). Whilst definitions and characterizations vary (Cohen - Shacham et al., 2019), according to the International Union for the Conservation of nature they are the.

> *"actions to protect, sustainably manage, and restore natural or modified ecosystems, that address societal challenges effectively and adaptively, simultaneously providing human well-being and biodiversity benefits".*

NBS can be utilised in urban and rural settings and offer solutions to key societal challenges (Kabisch et al., 2017). The term NBS is often used synonymously and interchangeably with others, such as urban ecosystem services (Almensar et al., 2021), green infrastructure (Rolf et al., 2020) and urban greening (Baravikova, 2020); though as noted by Pauleit et al. (2017) the term NBS represents a distinctive type of management and governance intervention. The idea of NBS have been gaining international recognition over the last decade and are increasingly viewed as a critical factor in global efforts to address the climate crisis (Seddon et al., 2020). This is especially the case in the European Union (EU), as evidenced in their strategic focus on using NBS to address climate change (Pasimeni et al., 2019; Frantzeskaki et al., 2020; Baravikova, 2020). NBS increasingly form a cornerstone of European efforts for addressing climate change, and the last five years have seen a proliferation of NBS experiments in Germany (Frantzeskaki et al., 2017; Albert et al., 2017; Duskova and Haas, 2020) Sweden (Suleiman et al., 2020), Italy (Pasimeni et al., 2019), the Netherlands (Dunn et al., 2017), the UK (Connop et al., 2016; Frantzeskaki et al., 2020) and others besides (Camps-Calvert et al., 2016; Baravikova, 2020). NBS are increasingly promoted and lionised as offering lower cost alternatives to technological or engineered solutions (Droste, 2017). They are increasingly being valued in terms of their ability to deliver co-benefits (Raymond et al., 2017) such as citizen wellbeing (Frantzeskaki et al., 2020), biodiversity (Connop et al., 2016) or disaster risk management (Brillinger et al., 2020). Though they are, still, in some places (Baravikova, 2020), struggling to overcome institutional resistance and decision-making bias towards extant climate adaptation measures (Seddon et al., 2020).

The majority of studies in the burgeoning NBS literature have examined the implementation of NBS experiments as an issue for local-city governance and planning (see Davies and Lafortezza, 2017). Whilst there is a small and emerging literature exploring issues of power and justice in influencing the implementation of NBS experiments and policy

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(Woroniecki et al., 2020; Kirsop-Taylor et al., 2021; Kotsila et al., 2021) the dominant view remains that implementation of NBS schemes is an exercise in both technical apolitical planning inspectorates and bottom-up partnership approaches between civil society actors, citizens, and local government (van Ham and Klimmek, 2017; Frantzeskaki et al., 2020). For example, Davis and Naumann (2017) and Droste et al. (2017) note the importance of adequate municipal funding, Zwierzchowska et al. (2019) note the role of local-scale regulation, and Rolf et al. (2020) the need for clarity across multi-levels of governance. These apolitical perspectives are broadly congruent with the dominant orientation of the extant literatures in 'planning' (Albert et al., 2017; Raymond et al., 2017) or 'transitions' intellectual perspectives (Frantzeskaki et al., 2017). However, the public policy-orientated literature suggests that implementation is actually very political and far from being a technical planning exercise (see Nakamura and Smallwood, 1980; Matland, 1995).

Throughout the last five years of EU NBS experimentation, a key lesson that has emerged is the criticality of NBS policy formulation and implementation (Droste et al., 2017; Frantzeskaki et al., 2020; Suleiman et al., 2020). Whilst our understandings about the importance of policy and politics to successful NBS schemes has been rising (see: Duskova and Haas, 2020; Suleiman et al., 2020), there has also been an increasing number of studies seeking to engage with policy processes (Raymond et al., 2017; Zwierzchowska et al., 2019) and theory (Droste et al., 2017; Papparlardo and La Rosa, 2020) for NBS. Some scholars have started to critically analyse NBS policy by utilising policy science perspectives, such as Droste et al. (2017) use of policy instruments approach, or Bush's (2020) use of policy narratives approach. Critically however, the majority of studies in this field still view the success of NBS schemes as resting on apolitical conditions and processes. The relative paucity of policy science perspectives on this subject offers an opportunity for policy scientists to apply theory to the challenges of NBS implementation and operationalization. Especially where there is an emerging awareness of the importance of having to act and influence across multi-level of governance (Rolf et al., 2020) and having to engage with powerful political and/or national policy and decision-makers (Droste et al., 2017). In this paper, we pay particular attention to how science-to-policy landscapes for NBS are navigated by third party actors on the boundary between the scientific and policy worlds. This builds on and complements previous research by Dunn et al. (2017) and Frantzeskaki et al. (2017) who have started a process of highlighting the importance of boundary actors to the success of NBS interventions. Taking these previous contributions further we utilise boundary theory to argue that other institutional actors in the science-to-policy interface have a role to play in the development and implementation of NBS schemes. In doing so, we address the mission set out by Albert et al. (2017) by describing and conceptualising the role of boundary agencies and offer the contribution of how they navigate the political.

This paper focuses on three key areas of inquiry 1) the role executive-environmental agencies play as boundary actors, 2) the tools and stratagems they employ in navigating the political in these endeavours, and 3) how they navigate the political in brokering evidence about NBS into policy. This paper seeks to address these research questions through an empirical case study. This case study agency and participants are presented with total anonymity due to their normative apoliticality, and the sensitivity of discussions about they navigate and employ politics-facing tools.

The reminder of the paper maps out as follows. Section Two discusses the concept of science-policy boundaries. Section Three introduces the case study and describes the empirical method before the findings are presented in Section Four and are discussed in light of the literature in Section Five. Section Six recaps the key conclusions before discussing their impact on academic understandings of science-policy boundaries and making suggestions for where this research agenda might develop in the future.

2. Conceptualizations of the science-policy boundary

It is well established in the academic literature that the relationship between science and policy is complex (see Weiss, 1979; Radaelli, 1999; Dunlop, 2014; Jordan and Russel, 2014) and far from a linear technical pattern where knowledge is produced and fed into the policy process to directly shape policy development and implementation. One body of work that seeks to understand the relationship between science and policy draws on the concepts of boundaries to acknowledge the fundamental ontological and epistemological differences between practitioners, policymakers and scientists (Guston, 2001) across boundaries of knowledge and ways of perceiving and accounting for natural and social phenomena. It seeks to explain how these boundaries are bridged and made porous by institutional actors acting between spheres of knowing (Gustafsson and Likskog, 2018). It offers a detailed conceptual and empirical body of work accounting for the roles, functions and activities of those actors working at boundaries (see Hoppe and Wesslink, 2014; Gustafsson and Likskog 2018; Cvitanovic et al., 2018). This conceptualisation is based upon a sociological and post-structural understanding of knowledge(s) as plastic and constructed by 'ongoing discursive and material processes' (Carlson, 2018). Whilst the translation aspect of boundary work is undoubtedly important, contemporary boundary work goes beyond simple translation and matchmaking, and increasingly includes network building across complex private-public partnerships (Stadtler and Probst, 2012). The role of effective boundary actors undertaking complex coalition building is increasingly legitimised as a critical and indispensable aspect of deriving policy impact from research and evidence (Knight and Lyall, 2013). This is especially the case with climate change (Miller 2001; Hoppe and Wesslink, 2014; Lee et al., 2014) where there is a need to foster the translation of complex scientifically constructed and articulated knowledge into the political considerations of policymakers (White and Christopolus, 2011). The actions, processes and stratagems that actors at the boundary employ can evidence similarities or differentiate based on the sphere of science-policy they operate in (Michaels 2009) with their own epistemological and cultural preferences.

In this paper we draw attention to the role and tools of arms-length agencies as boundary actors employed in 'navigating the political' (as per Cairney, 2016). This notion of 'navigating the political' is considered as 1) a general operational landscape and 2) a specific endeavour in the production and utilisation of knowledges. Firstly, as noted at length in the seminal 'Politics of the Bureaucracy' (Peters, 2018, but see also Pankhurst, 2017, and Peters, 2021:9–10), public arm's length agencies exist generally within a political reality. Public organisations are continually immersed in the distribution and wielding of power through the competition for scarce resources of policy-maker attention (Cairney, 2016), funding (Peters, 2018), and perceptions of legitimacy (Peters, 2021). Public organisations are also continually engaged in their own political activities of seeking to maximise autonomy and funding, whilst minimising political influence on their expert decision making (Peters, 2018), which represents a continual discursive power balance between autonomy and political control. Overlaid across all of this, are the ever-present forces seeking the politicisation of the bureaucracy, a challenge that advocates of agency autonomy seek to counter. Secondly, boundary agencies knowledge-to-evidence activities necessitate the production and utilisation of knowledge into policy that cross political considerations (see: Guston, 2001; Dunlop, 2014; Hoppe and Wesslink, 2014). As noted by Nowotny et al. (1997) among others, the production of knowledge has always been 'political' where it is concerned with consciously or unconsciously challenging extant power structures. In short, knowledge production and utilisation are always 'political' to a greater or lesser extent. As noted in summarising the political science literature on this subject, Cairney (2016) argues knowledge production and brokering always represents some form of challenge to the intellectual status quo, and encounters power and interest barriers. This perspective can be seen in this paper where knolwedges about NBS consciously and unconsciously challenge power-laden status quo assumptions about human-nature relationships, urban space and decision-making, and many other issues besides. Therefore, when and where this paper discusses the need to 'navigate the political' it refers to both the general political landscape that arms-length public organisations exist within and operate under, and also the specific political challenges that come from brokering knowledges about NBS into policy.

As noted by Elston (2012) and Ansell et al. (2017) the last four decades have witnessed a global proliferation of agencies as critical actors of government and governance – the so called 'agentification' agenda. These agencies normatively argued to offer good governance based on apolitical separation from politics and professional expertise-led endeavours. There are many forms of public agency characterised by variable degrees of executive autonomy and independence, as well as in the roles and duties that the agency can have responsibility for (Ansell et al., 2017). Though as noted by Wright (2000), recent decades have also witnessed an increased blurring between normative forms, functions and duties of executive agencies. Indeed, agencies can, and often do, have duties and interests in different, and at times competing, functions replete with their own knowledges and legitimacies. For example, an environmental non-departmental executive agency might have statutory duties to license the extraction of specific natural resources (e.g. forestry), whilst simultaneously another part of the agency has non-statutory interests in protecting woodland bird species, and yet another have been given responsibility to meet a non-statutory policy commitment for afforestation, and another part of the agency again having a statutory duty under EU law/directives for monitoring and enforcing cross compliance on forest payments schemes. In short: these agencies are multi-functional with crossing and competing interests to manage; they also play a critical role at the boundary between evidence-science and policy processes.

There has been a proliferation of scholarly interest in the past decade on the roles and nature of boundary organisations in evidence-to-policy processes (see: Franks, 2010; Hoppe and Wesslink, 2014; Gustafsson and Likskog 2018; Cvitanovic et al., 2018), though, as noted by Bach et al. (2017), it remains important to continue to offer more '*systematic and theoretically guided analyses of agencies role in policy making*'. The initial conceptualisation by Guston (2001) considered boundary organisations (see: agencies) as institutional actors that have sought to stabilise and mediate the boundary between science and policy. Since then there has been an increasing conceptual sophistication that broadly consider boundary agencies as the formal actors, jointly generated by the scientific and political communities, to coordinate different purposes and promote consistent boundaries and mutually incomprehensible interactions. Cvitanovic et al. (2018) articulated a three-part typology of positionalities that agencies can occupy at the boundary – one of these was that of 'knowledge broker' who acts as intermediaries between the spheres of practice and policy (Ward et al., 2009). Similarly the 'boundary spanner' literature considers knowledge brokerage as the:

> *"communication and coordination activities performed by individuals within an organisation and between organisations to integrate activities across multiple cultural, institutional and organisational contexts"* (Schotter et al., 2017).

Similarly, there has been an increasing interest in recent years in the influence of politics and political actors on boundary agencies (Gustafsson, 2018; Sørensen et al., 2020). These studies have focused on the role of politicians in boundary settings in aligning science and policy interests (ibid.) or acting as bureaucratic 'silo busters' deploying power to over-ride administrative barriers at the boundary between science and policy (Frantzeskaki et al., 2017). In contrast others have noted the limitations of politicians acting in boundary settings due to their limited bandwidth (or bounded rationality as Cairney, 2016 describes) and their intrinsic personal, constituency or technical bias (Pankhurst, 2017: 41–64).

There is a growing literature showing boundary agencies as the critical actors in translating environmental (Franks, 2010; Cairney, 2016: 85–119; Gustafsson and Likskog, 2018) and climate (Miller 2001; Hoppe and Wesslink, 2014) evidence into policy. These agencies can perform solo (Gustafsson and Likskog 2018) or conduct collaborative (Kirchoff et al., 2015) boundary work. They often operate in complex 'knowledge-markets' (Caswell and Lyall, 2013) using sophisticated tools and stratagems (Asperteg and Bergek, 2020) where they compete for policy-maker attention, and evidence impact (Caswell and Lyall, 2013). As noted by Cvitanovic (2018) institutional and expert boundary agencies can have particular relevance and impact in wicked policy areas characterised by deeply complex, interdisciplinary and evolving evidence-bases (e.g. Delozier and Burback, 2020) as can be seen with NBSs. Frantzeskaki et al. (2017) consider boundary agencies as the critical, if not poorly understood, actors in transforming NBS experiments into policy. Whilst others have explored the role of NGOs (Gustafsson and Likskog, 2018) and policy officers as boundary actors in turning NBS evidence and experiments into policy, no one has as yet explored public environmental agencies in this regard. This is an important area for consideration, as in other fields and studies public agencies have been found to act as the decisive intermediary and broker for translating new evidence about experimental approaches into policy and the mainstream. As NBS experiments scale-up in response to the global climate crisis (Seddon et al., 2020) there will be an increasing imperative for the key evidence and learnings about them to be translated into policy; and so an increasing need to understand the mechanisms for turning evidence about what works into policy, and executive agencies will likely have a key role to play in this. Furthermore, as argued by Frantzeskaki et al. (2017), 2020) and Albert et al. (2017) there is an imperative for the NBS literature to better engage with policy sciences to understand how NBS transform from ideas into policy through the prism of politics – this paper aims to meet these needs.

3. Methods

The focus of this research was on the role of public natural environment agencies at the boundary between the science and policy of NBS. Similar research within large public agencies has highlighted the value of the elite interview method for understanding complex organisational settings (e.g. politicised, multi-actor) (Odendahl and Shaw, 2001). Hochschild (2009) notes that fewer focussed interviews with respondents chosen for their detailed knowledge of a subject are likely to yield richer data than other sampling approaches. Kirsop-Taylor et al. (2000) have highlighted the utility of elite research designs for capturing hidden and deeply contextual knowledge's, such as navigating the 'political' in avowedly apolitical boundary agencies. The drawbacks of elite interviewing in terms of accessibility, positionality, and small n sample sizes (Odendahl and Shaw, 2001) were offset by the benefits of gaining first-hand accounts that were highly detailed and nuanced. To truly capture the rich and contextual knowledge's pertaining to this subject qualitative semi-structured interview method was employed.

A case study of an arms-length natural environment agency was selected based upon its expressed interests in NBS. This case study is one of a small group of environmental regulatory agencies operating in the United Kingdom (UK). Due to the extreme sensitivity of the subject matter this agency, and all the participants, have been treated to total anonymity. All participants were senior members of the agency, with membership of the senior board, no other identifying information about them is disclosed in this paper. Eleven interviews were conducted with senior managers within the case study agency. The initial contact was established through an existing organisational gatekeeper, which led to opportunity and snowball sampling. The interview sample comprised members of the executive board ($n = 10$) and Directors ($n = 1$). This small sample of organisational elites were, in all probability, the only interviewees who could offer such detailed insights into the phenomena under investigation (Luton, 2010: 26–28). They were the senior representatives with strategic interests in the boundary work between evidence, policy and politics. Understanding the highly detailed and nuanced dynamics of these boundaries necessitated a small *n* sample qualitative research design (ibid.).

A semi-structured interview method was employed. This method raised specific issues (derived from literature) whilst giving flexibility for elite-led dialogue (see Supporting information). Empirical data was collected between May and July 2020 through a combination of Skype-based and Microsoft Teams-based interviews and telephone calls (see Supporting information). Interviews were conducted at the height of the Covid-19 pandemic in the UK, and as such were all conducted remotely with no opportunity for face-to-face interview. The remote interviews were recorded using the *italk* application and produced over ten hours of data for transcription and analysis. After digital transcription the data was analysed in *NVivo 11* against a partially pre-set, but emergent and iterative node framework based on parent nodes such as 'Politics' and child nodes such as 'Strategy' and 'Approach' (see Supporting information).

The interviews led to a number of important insights in response to the research questions. However, these insights were not openly and easily raised in discourse, but instead were drawn out over protracted interviews which sought to allow elites to lead discussions where they wanted, to build interviewer-interviewee rapport, and build the credibility and legitimacy of the interviewer and the robustness of anonymity protocol. In near every case, discussions about navigating the political were awkward conversations in which these ethical, evidence-led experts appeared to feel a degree of compromise. There was a pervasive sense that evidence-based policymaking shouldn't be about the political, but about the best evidence; but in reality, there was always a 'political' to navigate.

4. Findings

The findings of the interviews and subsequent analyses section are divided into two halves. The fist accounts for the agency's general role in navigating the political as a boundary actor, and the second accounts for the agency's specific stratagems are approaches to navigating the political for translating knowledges about NBS for the policy process. Where individual qualitative participant comments are referenced a unique identifier is utilised, from participant one (P1) to participant eleven (P11).

4.1. Navigating the political as a boundary actor

There was a universal level of agreement from participants that the agency collected a significant volume and spread of data about the natural and increasingly the social environment. They all agreed that they are an agency of experts and professionals populated in the majority by values-led individuals that seek to improve and conserve the natural environment, as noted by P6:

> *"Part of what we do is try to look after the organisation, not for personal gain or anything like that, but because we actually believe in what we're doing."*

Knowledge was collected by them to fulfil their broad range of statutory and regulatory functions in addition to informing national policymaking. Their abilities to influence the policy process were both direct and indirect, as P4 commented:

> *"It's probably quite hard to draw a line between the two really recognizing that some of it is quite directly fed in, and some of it is more contextual and shaping the overall discussion and perception of subjects."*

Five participants commented on how despite their ministerial department being influenced by a free market of knowledge brokers, special interests and policy entrepreneurs, their agency held a 'special' position. Which, in this regard, meant a degree of preferential access and legitimacy in presenting evidence to executive ministerial colleagues. As noted by P6:

> *"We are the statutory advisors, so we definitely have a special place. It doesn't necessarily mean the government will take any more notice of us necessarily"*.

The second part of P6′s comment in critical; just because these agencies enjoy a preferential positionality and legitimacy of evidence, it does not automatically mean that central Government will use their advice to directly inform policy. P9 reiterated a famous adage on this point: "*advisors advise, and Ministers decide*". They did however consider themselves an institutional part of the national knowledge-to-policy continuum, because Ministers (and executive departmental colleagues) only have bandwidth for a certain level and breadth of evidence, and so had to have preferential sources to help them sift the free market of evidence providers. Certainly, this preferential positionality waxes and wanes through time, and they enjoyed different levels of preferentiality in different knowledge areas, but overall participants suggested they occupied a preferential evidence and knowledge positionality to Government. One of the strongest sentiments that came across in interviews was that agency members did not want to have to engage with the political to effectively carry out their duties, but, the contested and power-dynamics that permeate all levels of policy making force them to have to navigate the political. And this means devising tools and stratagems to do so. It is important to note that not all interviewees agreed with this sentiment at all, and two demurred entirely, such as P4:

> *"We don't tailor to the political. What we do is we make the best judgments that we can based on the science and evidence and then we will work with policymakers to turn into that things that they can action and work with. Absolutely, we do not get involved in the politics"*.

This was a minority view however, with the majority lamentably accepting that their position was inextricably entwined in politics and policy. That is not to suggest that they actively and purposely sought political outcomes, or to influence politics per se. But to ensure that what they considered important evidence and knowledge maximised impact in policy it was important to have tools and stratagems to navigate the political as one of the gateways to the policy process. The interviews led to three key stratagems for navigating the political being elucidated.

4.2. Strategies for navigating the political

Before presenting the findings on these it was also noted by many that meta-level political considerations influenced agency proximity to departmental government policy processes. Four participants described this a cyclical ebbing and flowing in proximity to central power and policy making based on political agenda for agency control. This often manifested in political dissatisfaction with agencies autonomy and perception of their freedom to, and proclivity for, speaking truth to power (Haas 2004). This was especially the case when high-autonomy agencies were perceived by government officials-ministers to advocate against official policy. So, the over-arching environment framing discussions about the strategies used to navigate 'the political' was of the larger meta-political currents that the agency had to navigate; such as the austerity agenda, the food security agenda, the post-EU policy agenda etc. Moreover, what constituted 'the political' was individually constructed and conceived with minor differences between participants. There was a broad consensus around the political, at its heart, being orientated around the constitutional and legislative processes through which policy was made and implemented and power exercised. However, on the subject of the stratagems employed, there are five main considerations which we now go on to discuss.

Firstly, four participants discussed how the agency was becoming increasingly proficient in how it framed and communicated the evidence it was brokering to national policy makers and politicians. Discussions of framing meant aligning the presentation of evidence to politicians and policy makers in ways that match political agenda and meta-policy imperatives. The logic being that where evidence was framed to meet and support a wider agenda, it would be more likely to be favourably received, especially where it was seen to help deliver political co-benefits. This often-meant associating evidence to other politically salient agenda, for example, P7 suggested:

> *"XXXXX is a potential political opportunity because of the desire for the XXXX government to still be seen as a global leader on these issues."*

Or selectively choosing the most appropriate person (and time) to present evidence to, as noted by P8:

> *"It will vary, we see that within the department itself as well, of course, with a different policy remit, a different policy officials will have very different angles on that and different takes on that."*

In the case of NBS, this first tool was found to be particularly salient. Seven participants discussed how NBS were best promoted to policy makers when framed in terms of their co-benefits and multi-benefits to political meta-agenda. Embedding core messages and evidence in the political and electoral languages and terminology of ruling administrations were seen as key to maximising the evidence's likelihood to becoming policy (see Turnpenny and Russel, 2017), or as noted by P2: "*I think that the language that is being adopted by widespread constituencies is restoration and recovery.*"

Secondly, seven participants discussed how the agency in recent years had purposively adopted a strategy of embedding members of their organisation into centralised policy making organisations and departments. In part this was driven by pull factors from their host department seeking additional expertise to fill gaps in the own expertise, and in part it was pushed by the senior management team at the agency as a way of softly institutionalising their experts and a perception of their centrality and expertise into the policy making process.

In the case of NBS these participants commented on how the agency utilised the embedded experts to help shape opinions inside Government towards NBS approaches to policy problems in general, and towards those aspects of it that they had regard for and expertise in. For example, P2 commented on an upcoming Government report about biodiversity:

> *"We have senior scientists seconded into the government group that are working with on this report. There is a recognition through all of this. Actually, there is a recognition by [ministerial department] and other parts of the government that we have retained specialists that they need to bring into the space in order to strengthen the quality of the evidence that is being discussed and thought about."*

Thirdly, three participants noted how the agency could selectively decide which aspects of evidence to present to policy makers to try and ensure a more effective outcome within a specific setting. This was similar to the tool of utilising framing and communication but appeared a step more political where the agency was actively making decisions about which parts of evidence to present and when. A good example of this was given by P2 who noted how, when the agency was delivering the conclusions of a large and politically sensitive land management review whose prime conclusions were to undertake a management approach that would be politically difficult, that:

> *"We decided, because they knew [the findings] would be controversial, not to publish that evidence review, but to take that evidence review, craft a series of messages which were more palatable to partners that we would need to discuss with and go ahead on that basis."*

It was also found to be the case that the agency selectively released or engaged in different evidence gathering about NBS. Perhaps the best example offered by four different participants related to their selective presentation of evidence about upland management which was a known political issue. Participants continued to stress their evidence-led values, but in seeking to maximise the impact of evidence about the consequences on natural flood management of upland management decisions, the agency perceived that there were specific times and frames for the evidence to be released to maximise impact, an approach commonly coined as the political or strategic use of knowledge (see Weiss, 1979; Jordan and Russel, 2014).

Fourthly, three other participants discussed how the agency selectively utilises both internal and external lobbying to promote those good ideas it thinks should be prioritised or critically considered. Two participants talked on the conundrum they faced as an expert agency with expert opinions about the effectiveness of different ideas. However, as an ostensibly apolitical entity they often might see good policy ideas not come to fruition due to the political, and in response to this some senior staff undertook internal lobbying for their preferred good ideas, and even in some cases external lobbying of policy makers. This was described by P6 where:

> *"You even find non-executive directors of [the ministerial department] will lobby within their department. In fact, [named executive board member] is signatory on a letter only this weekend or last weekend about [an issue of land management]. He's a non-executive director of [department] but that's not even their policy!"*

In the case of NBS, it was noted (P9) that the agency feels compelled to lobby the Government, internally and externally, about the specific and evidence-led form of natural flood management through tree planting they should adopt in policy. They noted that other quasi-governmental institutional actors have a different (and at time competing) visions for the form and approaches to afforestation as an NBS and feel compelled to lobby their opinions on this.

5. Boundary agencies and policy making

In trying to better understand the relationship between boundary agencies and policy making (Bach et al., 2017) the first major result from these interviews was that interviewees self-identified as reluctant actors in the political realm. All the interviews confirmed that the agency considers itself an institutional actor operating at the boundary between science and policy (Guston 2001; Gustafsson et al., 2019). The broad consensus was that the agency *should be* an apolitical and evidence-led acto based on its statutory purposes (see Elston, 2012) and inherent in its organisational culture. This characterisation is broadly congruent with the normative purposes of agentification agenda: to inculcate independence of expertise and professionalism yet yoked to the meta-agenda and priorities of the state, and the current political administration (Ibid.). Despite this normative characterisation, there was an implicit understanding across participants (n-10) of the political-ness of the 'setting' that they existed within (as per Caswell and Lyall, 2013) and of producing and translating evidence into the policy arena – an arena in which they were to a greater or lesser extent in competition in a free-market of ideas (Knight and Lyall, 2013). Some perceived that their statutory purposes offered them an enhanced legitimacy of knowledge production in some of their areas of responsibility and/or interest, though in many other fields of knowledge they enjoyed a parity of knowledge legitimacy with other actors. For example, in areas where they had statutory purposes the legitimacy of their voice and evidence was greater than in those areas where they an interest in meeting wider policy objectives but no statutory-regulatory purposes. This was an issue exacerbated by the over-politicisation of certain knowledge fields (Cairney, 2016) and the bounded rationality of policymakers with limited bandwidths (ibid.: 15–19). The combination of this politicisation of certain knowledge fields, with the need to be competitive with other actors in some fields, meant that there was a broadly considered sense of having, in some cases, to be competitive in seeking to maximise the impact of their knowledge and evidence

(Caswell and Lyall, 2013; Cummings et al., 2018). And this led to the real politik of having to sometimes having to navigate ‘the political’ (congruent with the definition in section two) when trying to maximise the impact of their evidence into policy. And in so doing, also secure the future of their agency through maximising their relevance to current national policy agenda.

In part, the agency’s institutional setting in their national governance architecture led to a conundrum that they had to constantly seek to reconcile. As an ‘expert’ organisation populated by experts, in their specific areas of specialism, participants expressed a sense of superior technical and scientific expertise compared to policy makers; but that they had to reconcile this with in-expert political decisions on policy making (as per Elston, 2012). This was a sense that evidence-based good governance should-could normatively be achieved through experts and expert-led processes (the technocratic governance modality – see Antonello and Howkins, 2020); balanced against the politics and interest-based governance decision-making that is the hall mark of liberal democracies. Many participants expressed internal conflicts over the best route to good governance of the natural environment: through evidence-based expert decision-making and empirical processes, or though democratic political processes and decision-making. P7 argued that this was, in fact, a false choice, as their desire for greater technocracy in environmental governance and decision-making was not anti-democratic, but sceptical about the representative form of democracy as the best mechanism for delivering evidence-based decision-making.

The interviews revealed that in response to these challenges, and conundrum, the agency adopted a series of tools for best navigating and sheparding their evidence for maximum impact on policy making. Whilst there were crossovers and a degree of blurring between these four tools each offered, to the perspective of participants, discrete methods that can be differentiated from the others. These tools are introduced, contextualised in associated literatures and differentiated in Sections 5.2–5.5 below.

5.1. ‘Communicating and framing’ NBS

The use of effective and targeted communications was the most widely discussed approach to working effectively with politicians and policymakers in evidencing and influencing towards NBS. Participants noted that agency communications had to have persuasive force to challenge different (and at times competitive) political-policy interests to those being presented in their evidence, no matter their scientific rigour and robustness. Thus, the first tool in their box for mediating across the evidence-to-policy boundary was communicating the framing of evidence to align with, supplement, or co-deliver political-policy-maker salient agenda (as per: Metze, 2015; Phillips, 2018). Such framing was often co-constructed with policy makers in discursive engagements with negotiated terms and agenda that sought to maximise scientific and policy co-benefits (Asperteg and Bergek, 2020). For example, when seeking to maximise the impact of their evidence about the biodiversity benefits of national peatland restoration practices, participants expressed how they sought to frame it in terms of its co-benefits and co-contributions to the separate national Climate Change (in terms of carbon sequestration), rural livelihoods agenda (jobs and culture); and in terms of its economics for natural flood alleviation (see: Renou-Wilson et al., 2019). An issue that initially was about the benefits to biodiversity from peatland restoration became framed in terms of its co-benefits to wider meta political agenda of jobs, rural livelihoods, communities and even place-identities. And at the heart of this was their ability and proclivity to shape the framing of evidence through effective and targeted communications across multiple media formats and platforms.

5.2. ‘Embedding for’ NBS

Recent years have witnessed a growing literature detailing public sector hybridity (with shared roles and duties between voluntary, arms-length, and public departmental actors (Haigh et al., 2015). In most cases increasing hybridity was a consequence of reduced budgets (Pill and Guarneros-Meza, 2018). In this study participants considered how an increased embedding of colleagues within ministerial executive departments could act as a purposeful tool for targeting evidence through proximity to policymakers and policy processes. Having their staff seconded and embedded in such positions brought advantages in terms of increased efficiency in transforming specific evidences into policy, and reducing financial overheads (Elston, 2012). Though it also brought potential risks to agency independence, impartiality and capture. There was a general perception that (especially in the post-Brexit environment) embedding agency colleagues closer to central loci of policy making facilitated increased the legitimacy of their evidences in specific knowledge areas. And that this tool was particularly salient in knowledge areas in which they perceived themselves to be in competition with other sources of knowledge/evidence. For example, participants considered how in brokering evidence about afforestation as an NBS with multiple co-benefits based on forms of mixed broadleaf woodland (e.g. for biodiversity, carbon sequestration, amenity values) they were contrasted against other national agencies who framed afforestation through mono-cropping as a national strategic issue and sought to make a strong financial case for their vision. In this case it was reported that having embedded staff in the decision-making executive department helped tilt arguments towards their evidence and vision for national afforestation as an NBS.

5.3. ‘Selectivity’ for NBS

Participants also discussed the agency’s ability to selectively publish evidence, or aspects of evidence, to bolster the impact of their agenda on policy making; as a form of strategic knowledge use. Whilst selectivity has much in common with the tool of ‘communications’ it differed in terms of the framing-focus of communications. The discussed ‘selectivity’ was less about how evidence was framed, as about the strategic timing of releasing (or not releasing) evidence to maximise its ability to navigate the underlying political landscape and specific political ‘moments’. Most agreed that this did not contravene their evidence-led remit and purposes (see: Elston, 2012). Their arms-length status endowed them with an autonomy to seek to discretionarily maximise the impact of their evidence. That way, evidence could be timed to maximise impact. An excellent example of this for NBS was where they exercised discretion in selectively publishing elements of evidence about regional upland management for NBS co-benefits to mitigate against entrenched political interests at local-scales. This allowed them to navigate challenges of local politics whilst continuing to eventually continue to broker evidence of national importance into national policy making processes.

5.4. External and internal lobbying for NBS

Interviewees identified ‘lobbying’ as a fourth tool available to boundary agencies seeking to navigate the background and specific political. Though they were clear that lobbying of this nature was predominately an elite, board-level activity. It required a degree of personal brand and intellectual and/or political capital to have credibility in decision making fora. Internal lobbying was the more common of these, with senior members of the agency lobbying politicians and senior policy makers (across multi-level governance scales) on issues such as natural flood management, marine rewilding and others. Though on issues that the agency senior team felt strongly about they could externally lobby Government and policy makers. It was noted that external lobbying tended to occur after internal lobbying, and that the preference was for lobbying to stay as an internal activity. Often this would take the form of newspaper articles or opinion pieces highlighting their position and lobbying for change. However, external lobbying from an internal positionality was a fraught activity. It was noted that any external lobbying had to be thoughtfully undertaken to not appear confrontational or overly critical of Government policy, and instead framed in such a way as to suggest a lack of common unity and purpose within state agencies.

6. Conclusion

The field of NBS research has thus far offered a sporadic engagement with the politics of policy making as a way to engaging with questions of translating evidence into policy. The process by which good ideas get transformed into policy is rarely apolitical, and requires a different series of languages, concepts and approaches to bridge evidence to policy. This paper has met this gap by exploring how boundary agencies that sit between the evidence of NBS and the politics of making policy about NBS, navigate the free market of knowledge politics through four distinct yet related tools. As evidence-led and values-orientated arms-length agencies this case highlighted how in the main they did not want to have to navigate the political, but the realities of the free market of knowledge and ideas meant it was something they had to do. Moreover, it should be noted that these kinds of boundary activities are not the main body of with the agency undertook. The vast majority of agency staff worked on environmental management activities and not navigating the political. It is very much as elite and strategic activity undertaken by the senior management. However, the crowded knowledge space in which legitimacy means survival means they are forced to play politics, to a degree.

Declaration of Competing Interest

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

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Appendix A. Supporting information

Supplementary data associated with this article can be found in the online version at doi:10.1016/j.envsci.2021.10.029.

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