CLIMATE POLICY
2019, VOL. 19, NO. 10, 1340–1350
https://doi.org/10.1080/14693062.2019.1652141

Taylor & Francis
Taylor & Francis Group

POLICY ANALYSIS ARTICLE

OPEN ACCESS Check for updates

Enhancing the value of adaptation reporting as a driver for action: lessons from the UK

Roger B. Street [a] and Simon Jude[b]

[a]Environmental Change Institute, Oxford University, Oxford, UK; [b]School of Water, Energy and Environment, Cranfield University, Cranfield, UK

ABSTRACT

As increasing evidence shows that the risks of climate change are mounting, there is a call for further climate action (both reducing global emissions, and adaptation to better manage the risks of climate change). To promote and enable adaptation, governments have introduced, or are considering introducing, reporting on climate risks and efforts being taken to address those risks. This paper reports on an analysis of the first two rounds of such reports submitted under the UK Climate Change Act (2008) Adaptation Reporting Power. It highlights benefits and challenges for reporting authorities and policymakers receiving the reports that could also inform other countries considering such reporting. For reporting authorities, benefits arise from the reporting process and resulting reports. These benefits include elevating climate risks and adaptation to the corporate level and with stakeholders, alongside facilitating alignment and integration of actions within existing risk management and governance structures. For policymakers, reporting provides enhanced understanding of climate risks and actions from a bottom-up perspective that can be integrated into national-level assessments and adaptation planning processes. The identified challenges are those related to capacity and process. These include limited risk and adaptation assessment capacities; relevance of climate change risks and adaptation in the context of other urgent risks and actions; reporting process effectiveness and robustness; and the provision of effective and sufficiently comprehensive support, including feedback.

Key policy insights

- Effective adaptation reporting needs to be designed and delivered so as to enhance the value of the reporting process and resulting reports both for those reporting and those receiving the reports, as well as from the broader policy perspective.
- Providing a positive and supportive reporting environment is critical to encourage participation and facilitating contiuous learning and improvement, while also facilitating delivery of policy-relevant adaptation reports.
- Contributions of adaptation reporting can be enhanced by an inclusive reporting requirement involving a broader organizational mix that enables more effective risk management and reporting that reflects associated (inter)dependencies and consistency with the more comprehensive post-2015 resilience agenda (Paris Agreement, Sendai Framework for DRR and UN Agenda 2030 SDGs).

ARTICLE HISTORY
Received 18 November 2018
Accepted 29 July 2019

KEYWORDS
Adaptation reporting; adaptation policy; climate risk management; climate change

Introduction

The United Kingdom Climate Change Act 2008 (CCA) (Great Britain, 2008) Adaptation Reporting Power (ARP) enables the government to direct organizations with functions of a public nature, known as reporting

CONTACT Roger B. Street roger.street@eci.ox.ac.uk Environmental Change Institute, Oxford University, Oxford OX13QY, UK

© 2019 The Author(s). Published by Informa UK Limited, trading as Taylor & Francis Group
This is an Open Access article distributed under the terms of the Creative Commons Attribution License (http://creativecommons.org/licenses/by/4.0/), which permits unrestricted use, distribution, and reproduction in any medium, provided the original work is properly cited.

authorities, to report on how they are addressing current and future climate impacts and their actions to adapt to climate change (Defra, 2013). The reports, which are publicly available, outline:

- The current and future predicted impacts of climate change on their organization.
- Proposals for adapting to climate change.
- An assessment of progress towards implementing the policies and proposals set out in previous reports.

In addition to providing a driver for action to address the implications of climate change through the mainstreaming of climate risk and adaptation in reporting authorities, the ARP also aims to raise awareness, drive capacity building, and provide examples of good practice (Defra, 2009). Evidence from the ARP process and associated reports has provided detailed insights regarding organizational and sectoral level maturity on climate risk and adaptation, and the challenges facing critical infrastructure sectors, including adaptation barriers, interdependencies and knowledge gaps (Defra, 2012; Jude et al., 2017). Such evidence has been used to support policy development in a range of areas (UK National Adaptation Programme (NAP) (Defra, 2018a)), as well as the provision of the UK climate projections (UKCP18).

The ARP forms part of the policy framework on climate change adaptation established under the CCA. It provides 'bottom up', organizational and sectoral level evidence spanning climate change risk, vulnerability, adaptation and adaptive capacity (Smit & Wandel, 2006). Together with the Climate Change Risk Assessment (CCRA), which provides a 'top down' national assessment of climate change risks and opportunities, the ARP supports the development of the NAP, which details the Government's strategy for responding to climate risks and opportunities facing the UK. Significantly, the CCA requires the ARP, CCRA and NAP to be repeated on a five yearly-cycle (Great Britain, 2008).

The CCA also established the Committee on Climate Change (CCC), an independent statutory body advising the Government on emissions targets, and reporting to Parliament on progress towards both preparing for climate change and on greenhouse gas emission reduction targets (CCC, 2019a). Within the CCC, the Adaptation Committee (previously the Adaptation Sub-Committee), comprised of independent experts, provides advice to Government on adaptation and preparedness for climate change (CCC, 2019b). The Adaptation Committee not only provides external review and scrutiny of the ARP process (CCC, 2017), but utilizes evidence from the ARP to inform its work, including its annual report on preparedness for climate change and its CCRA evidence reports.

Increasing interest in the ARP process is now emerging from academia, policymakers and practitioners in the UK, as well as internationally from countries considering the use of policy instruments to promote organizational adaptation as a means of providing evidence to inform, evaluate and support national and local climate change policy development (BM&F Bovespa, 2018; C40 Cities, 2018; Ernst and Young, 2015; Jude et al., 2017; Street & Hayman, 2017; Street, Hayman, & Wilkins, 2017; Sun, He, Rummy, & Lauzon, 2015). In addition to research discussing and investigating the ARP process (Jude et al., 2017; Street et al., 2017; Street & Hayman, 2017; Tangney, 2017), ARP reports have provided supporting evidence for, and been referenced in, numerous reports investigating climate risks to infrastructure (Ferranti et al., 2017; Murrant, Quinn, & Chapman, 2015; Murrant, Quinn, Chapman, & Heaton, 2017; Palin et al., 2013), complex infrastructure risks (Farewell, Jude, & Pritchard, 2018), and evidence needs supporting adaptation policy-making and planning (Kelly, 2013; Tang & Dessai, 2012; Tangney, 2017). Reporting authorities have also actively participated in research investigating the reporting process (Street et al., 2017; Street & Hayman, 2017) and the use of climate projections in adaptation planning (Tang & Dessai, 2012). We believe this interest will increase still further with the implementation of the 2015 Paris Agreement (UNFCCC, 2015) and publication of the Intergovernmental Panel on Climate Change (IPCC) Special Report on Global Warming of 1.5°C (IPCC, 2018), and following related activities within the global financial community (notably the Financial Stability Board Task Force on Climate-related Financial Disclosure report (Financial Stability Board, 2016) and the first progress report of the Network for Greening the Financial System (NGFS, 2018)).

Building on the authors' analysis of the first two rounds of reports submitted under the ARP, and engagement in the ARP process, this paper reviews the potential benefits and challenges that this adaptation reporting process has highlighted both for reporting authorities and for policymakers receiving the reports. In addition, we highlight outstanding research questions in this emerging field of research.

Materials and methods

The analysis presented here is based on the authors' unique roles following the first two rounds of the ARP (2010-2012 and 2013-2016). This involved supporting the UK Government's Adapting to Climate Change Programme during the implementation and subsequent evolution of the ARP process, but also, in the case of the research after the second round, the members of the UK Environment Agency's Infrastructure Operators Adaptation Forum.

During the first round of the ARP (2010-2012), 91 organizations, primarily from the energy, transport and water sectors, provided reports on a mandatory basis, with a further 13 organizations invited to report on a voluntary basis. An independent evaluation of the risk assessments contained in the reports was conducted by Cranfield University to provide advice to the Department for the Environment, Food and Rural Affairs (Defra) and other government departments. The same team also provided an analysis of sector level climate risks and adaptation strategies, which formed the basis of Defra's report on the first round (Defra, 2012), and an analysis of the process from their perspective, including some thoughts regarding how the second round might be undertaken (Defra, 2013). The team engaged extensively with reporting authorities, government departments and agencies, regulators, industry associations and consultants engaged in the ARP process through activities ranging from webinars to sector level meetings, and workshops to detailed discussions. In addition, the analysis of first round reports (Jude et al., 2017; Defra, 2012, Centre for Environmental Risks and Futures (CERF), 2012) also identified a range of research gaps and knowledge exchange challenges encountered by reporting authorities.

The government's strategy for the second round of the ARP (2013-2016) resulted in the adoption of a voluntary approach (Defra, 2013), with first round reporting authorities being invited to provide progress updates, whilst a small number of additional organizations were invited to report for the first time. In total, 86 organizations reported voluntarily. Unlike the first round, the reports were not subject to independent evaluation.

To assist in evaluating the second round process, the Adaptation and Resilience in the Context of Change (ARCC) knowledge exchange network, led by a group within Oxford University was interested in exploring with reporting authorities in the infrastructure sector (involving 57 reporting authorities) the effectiveness and value of the reporting experience to the organizations themselves. In addition, through discussions with reporting authorities, this second round analysis also identified research and knowledge exchange requirements that could support those reporting in future rounds.

Towards informing Defra's consideration of the proposed third round of reporting (2019-2021; Defra, 2018a, 2018b), the ARCC network conducted semi-structured, qualitative interviews with 18 reporting authorities (including two representative bodies) representing a range of infrastructure operators and regulators spanning the communications ($n = 1$), water ($n = 5$), regulatory ($n = 1$), electricity generation ($n = 1$, representative body) and transmission ($n = 1$, representative body), gas transporter ($n = 1$), road and rail ($n = 3$), strategic airport operators ($n = 2$) and port ($n = 3$) sectors. The group was self-selected; all reporting authorities in the infrastructure sector were invited to participate (Defra, 2013).

The semi-structured interviews focussed on eight key areas:

(1) How those reporting would define the value added by the report and reporting process,
(2) Goals and expectations when preparing and publishing their report,
(3) Fit of the reporting within organizational planning and operational processes,
(4) Uses of the report within the organization, including ancillary benefits,
(5) Suggestions as to how the impacts/value of the process and report could be enhanced,
(6) Gaps or shortfalls in knowledge, evidence or guidance available that limited impacts/value,
(7) Lessons learnt from preparing the report, especially in the context of enhancing value to the organization,
(8) Perspectives on the overall experience of the reporting process.

The first four areas were intended to explore the value of the second ARP process and included reflections on changes from the first round. The remaining areas sought to elicit views and learning that could help inform future ARP processes from the perspective of enhancing value to the reporting authority.

Additional information was also extracted from the second round adaptation reports submitted by those reporting authorities interviewed.

In addition, a number of organizations decided not to report in the second, voluntary, round. To explore the reasons for this, two non-reporting authorities (a strategic airport operator and a regulator) agreed to be interviewed. Again, discussions focussed on the reasons not to report from the perspective of the value to the organization and included factors that were considered in making the decision and how those factors might be addressed in the future to enhance the overall value of the ARP.

Each of the interviews was recorded and transcribed, allowing the use of content analysis to identify recurrent themes and patterns in the data based on the interview questions (Silverman, 2004). This allowed the differing perspectives of reporting authorities, including areas of convergent and divergent opinions, to be explored in detail.

Results

Our analysis of the first two reporting rounds has highlighted that the reports, and associated engagement activities, have the potential to substantially enhance national understanding of climate risks, the scope, effectiveness and efficiency of adaptation actions, and adaptive capacity from a bottom-up organizational perspective (CERF, 2012; Defra, 2012; Jude et al., 2017; Street et al., 2017; Street & Hayman, 2017). Even within our relatively narrow focus of exploring the value of such reports to those reporting, our results suggest that there are multiple perspectives as to what constitutes value; as such, actions to enhance value will need to consider how best to address these different perspectives. Doing so is not without challenges, especially considering the evolving understanding of climate risk, adaptation and adaptive capacity, and the supporting policy context (Jude et al., 2017; Street et al., 2017; Street & Hayman, 2017). This includes concerns regarding the transparency of the reports, and their potential focus on plausibility and legitimacy, which have previously been highlighted in the fields of infrastructure resilience planning and auditing (Clarke, 2008; Elliott & Macpherson, 2010; Power, 2003; Sage, Sircar, Dainty, Fussey, & Goodier, 2014), and the political and value-laden nature of the supporting policy domain (Head, 2008). Adding to these challenges is enhancing their value when the reporting is embedded within adaptation planning at multiple levels (e.g. national, subnational, local and multiple organizations) with differentiated or non-existing reporting requirements.

We believe that the following insights, drawing on the interviews and subsequent analysis, although directed at further informing the UK ARP process from the perspectives of those reporting, also sheds some light on a number of challenges across the different value perspectives, including those beyond the reporting authorities.

With respect to the value of reporting, our analysis indicates that benefits from reporting include informing actions within: (1) reporting authorities, (2) subsequent ARP reports and activities, (3) other reporting authorities through supporting learning and action, for example on interdependencies, and (4) national-level policies and programmes (Jude et al., 2017; Street et al., 2017). Evidence suggests that the ARP process provides an opportunity for reporting authorities to focus on climate change risks and adaptation activities, including the development of pre-emptive adaptation actions and adaptive capacity (Smit & Wandel, 2006), with report preparation and submission elevating climate risk and adaptation onto senior management agendas. This was reflected in interview responses such as '*The ARP process has significantly changed the perspective on what the key climate change adaptation issues are, broadening our consideration to include other climate risks*' (Port operator); and '*Climate risks and adaptation actions are fully embedded with business-as-usual corporate risk management processes. The ARP process is useful in continuing to raise the profile and understanding of climate change adaptation within the organisation and as an opportunity to demonstrate progress' (Airport operator)*.

Reporting has provided opportunities to identify critical risks, adaptation options and investment priorities; aligning and integrating action with existing corporate risk management and governance structures. The reports are also perceived as providing a valuable single point of reference for both internal and external engagement, particularly with customers and external stakeholders, including shareholders as suggested by the pointed made by an interviewee: '[*We*] *decided on a high-level process for the report as a deliberate strategy to raise the profile of climate change across the organisation, and to inform external stakeholders and customers'* (Water utility).

Through appropriate engagement and communication, reporting authorities highlighted the value of opportunities afforded by reporting to demonstrate corporate social responsibility, leadership and business sustainability, alongside supporting discussions with regulatory bodies and demonstrating compliance with statutory requirements (Table 1) (Jude et al., 2017; Street et al., 2017).

Whilst reporting authorities view such benefits and opportunities as contributing to the ARP's value, opportunities exist to further develop the reporting process and resulting reports to optimize value, including the role in promoting and delivering adaptation and resilience. For example, during the interviews, the value of the process and resulting reports was primarily seen from instrumental and tactical perspectives (Deren Van HetHof & Hoştut, 2017); improving understanding of climate risks and the actions required, and demonstrating that actions are being taken as suggested by the statement made by one interviewee: '*Value arose in using the draft report to engage across members and to facilitate understanding as to what we are trying to achieve and thereby be in a better position for subsequent reporting rounds*' (Industry body).

These values were seen as being realized through the ARP process and reports, and stem from improved engagement and communications targeting the wider organization and its shareholders, the sector and broader infrastructure community, along with Defra and other government departments (Table 1).

Delving more deeply during the interviews also brought forward political and strategic perspectives on value. The identified political value (Scherer, Palazzo, & Matten, 2014, p. 148) reflects the emerging role of these organizations in contributing to both private and public interests (e.g. contributing to public and community needs) as demonstrated through the value seen in using the reporting process and reports to engage with the surrounding communities on issues of dependencies and interdependencies (Table 1). Strategic value (Deren Van HetHof & Hoştut, 2017) is seen as coming from integration of the risks and actions into those needed to achieve the overall vision (i.e. mainstreaming adaptation actions). However, for many authorities, addressing operational and immediate strategic issues, notably those affected by extreme weather events, rather than broader long-term climate change vulnerabilities, are the key drivers for action. Here, the ARP can lead to organizational challenges surrounding the need to integrate actions addressing both urgent risks and longer-term climate change adaptation needs.

Critically, many reporting authorities noted a lack of operational capacity, with those tasked with report preparation having multiple responsibilities beyond a remit for climate change risk and adaptation. Furthermore, the nature of the reporting guidance challenged some reporting authorities, especially those with more limited adaptation capacity. Thus, a positive reporting environment is needed which recognizes and accommodates the differentiated capacities of those reporting and the maturities of their risk management processes, yet also leads to reports that deliver the desired benefits. Achieving this balance begins by understanding the different benefits resulting from the reports and accepting that adaptation is a learning process of continuous improvement. Making progress on finding such a balance is a significant challenge that warrants further investigation, especially when considered alongside the preference by some reporting authorities for a level of uniformity in the reporting (see quotations in Table 1).

A positive reporting environment is also critical in gaining buy-in and support from reporting authorities. Efforts are required to design the reporting process to support learning, to enhance report quality, relevance and effectiveness, and to help drive organizational maturity. These are vital given the lack of capacity within many reporting authorities and the importance of facilitating learning on climate risks, adaptation planning and implementation. Feedback on the scope and quality of the reports can help support organizational learning and continuous improvement. Comprehensive and constructive two-way feedback on the reporting process is also important, with reporting authorities seeking reaction from the policy and research communities to better understand the overall value of the ARP process and their input to national policy development. This point was made by a number of interviewees including: '[*There is a*] *need for assurance that the report is useful/valuable to inform policy*' (Water utility); and '[*We*] *need to know how government is using the information provided and what they are doing to help infrastructure to respond to climate change risks – a true dialogue*' (Port operator).

Providing a flexible and positive reporting environment for a broad range of reporting authorities requires acceptance by all parties that adaptation is a process of continuous improvement and thus can also be used to build adaptive capacity (Table 1). In this context, the ARP process and reports have value in providing the means for and demonstrating systemic progress around institutional and organizational maturity in risk

Table 1. Key themes and illustrative responses from the interviews.

Theme	Illustrative example quotes
How those reporting would define the value adding by the reporting process	*'Raised awareness of climate change adaptation and requirements within the organisation and provided an additional thread to engagement within customers and stakeholders'* (Airport authority). *'Raised profile internally as climate change is identified as a key risk, but operational issues dominate on a day-to-day basis'* (Water utility). *'Reporting process has provided the impetus, time and space to consider how to make evidence-informed decisions at the right time (and allowing for evidence collection which takes time)'* (Water utility). *'Fundamental benefit was changing the mindset on climate change adaptation. The process strengthened partnership work and provided a lever for inclusion of adaptation in strategic planning'* (Port authority).
Goals and expectation when preparing and publishing the report	'*To be compliant with the reporting directions and to provide a comprehensive report'* (Water utility). *'To include climate risks in the corporate risk register, embedding it in existing business processes used agreed and credible methodologies'* (Airport authority). *'Process was used to get people in the organisation to seriously consider adaptation and to review and update risk management strategies'* (Transport authority).
Fit of reporting within the organization's planning and operational processes	*'Climate change adaptation is not currently included in the risk register at the corporate level'* (Transport authority). *'Entirely embedded in the internal reporting process and fully integrated into business decisions'* (Airport authority). *'Climate change adaptation is well-integrated into risk management framework and both short- and long-term planning'* (Water utility). *'There is an existing risk management process, but the emphasis is on daily weather (discussed at the board level)'* (Port authority). *'Fits with corporate risk register (includes some risks related to climate and weather) – top-down approach and linked to various plans using a bottom-up approach'* (Water utility).
Uses of the report within the organization, including ancillary benefits	*'Using the report to demonstrate achievements to community, staff and stakeholders'* (Airport authority). *'Elements from the report are used in discussions with local stakeholders'* (Water utility). *'Helped inform future investment planning and to motivate operational teams'* (Water utility). *'Provides documented evidence to inform customers and regulators, including demonstrating the need for investments'* (Water utility).
Suggestions as to how the impacts / value of the process and report could be enhanced	*'Consider a more common format to help link between and across sectors'* (Transport authority). *'Would welcome early feedback on the draft report as well as feedback on how the reports informed the CCRA and NAP'* (Water utility). *'Need to provide flexibility through the guidance – potentially different versions of the guidance for different types of organisations'* (Regulator). '*Sharing of the information among those reporting'* (Water utility) and *'Mechanism for sharing information across sector and reporting organisations'* (Airport authority)
Gaps or shortfalls in the knowledge, evidence or guidance available that limited impacts / value	*'Need for further information on specific climate risks and associated thresholds, but also other related drivers of change (behavioural changes)'* (Water utility). Supported by similar statements by a number of other reporters. *'Dependencies within the sector and interdependencies across sectors – need for a cross-sector forum to make this happen'* (Water utility). *'Need for more knowledge exchange between research, consultancies and practitioners to avoid duplication and integrate work – publishing research in accessible formats'* (Port authority). '*Synthesis and translation of research is required'* (Transport authority). *'How is best practice shared across the sector and regulatory landscape'* (Regulator). *'How to measure resilience'* (Water utility).
Lessons learnt from preparing the report, especially in the context of enhancing value to those reporting	*'Process was useful in peer-reviewing actions and progress'* (Transport authority). *'Process was important to highlight gaps in internal processes'* (Water utility).

(*Continued*)

Table 1. Continued.

Theme	Illustrative example quotes
Perspectives on the overall experience of the reporting process	*'Flexible approach for ARP was helpful in allowing organisation to use its own methodologies'* (Airport authority). *'Warning that a statutory 'tick-box' reporting requirement can lead to a false sense of security'* (Water utility). *'What does the government and others want from these reports?'* (Regulator). *'ARPs provide a prompt to start looking at climate change risks and adaptation'* (Port authority). *'Has helped initiate relationships with other infrastructure sector operators in the region'* (Water utility). *'The flexible approach was very beneficial. Message to government: do not be too prescriptive'* (Water utility). *'The narrative is more important than the numbers – it shows reality and puts decision into context'* (Water utility). *'Can the wealth of information contained in the ARPs be mined to provide guidance on best practices, innovation, etc.'* (Transport authority).

assessment and adaptation actions (Ensor & Harvey, 2015). Although, in the short-term, this flexible reporting environment could lead to reports that vary in quality and scope, there are considerable potential benefits in the medium to long-term from the increased institutional and organizational maturity that would be reflected during subsequent reporting cycles. With the aim of building this maturity, reporting authorities are seeking credible fora and mechanisms to enable sharing and learning at the organizational and broader reporting community perspectives, and to support capacity building.

Similarly, reporting authorities emphasize the potential additional value from enhanced report sharing and dialogue, facilitating synergistic actions and benefits (and conflict resolution) both between organizations and across sectors as suggested by the interviewee who indicated that: *'Increasing recognition of the importance of interdependencies suggests that there is a need for a cross-sector forum to take these forward, especially in the context of ARP reporting'* (Water utility).

Given increasingly complex and interdependent infrastructure systems and supply chains, with associated risks and responsibilities that can be difficult to identify, assess and respond to, this represents a critical component in increasing the potential effectiveness and value of the ARP process. Thus, more inclusive reporting, involving a broader organizational mix, is desired to effectively address risks and, crucially, to facilitate more informed consideration of dependencies and interdependencies, which can significantly affect adaptation options. Opportunities for reporting authorities to share information and lessons learnt at sector and regional levels would improve the overall quality of reports and associated action. Regional dialogue was perceived as being particularly valuable in enhancing knowledge and experiences of cross-sector dependencies and interdependencies.

Evidence of increasingly mature adaptation planning is apparent from the ARP process and is reflected in the specific evidence and support requirements from reporting authorities. Notably, reporters seek guidance on addressing adaptation within cross-cutting corporate structures, including aspects such as the timing of decisions and when to implement actions. This reflects concerns regarding decision-making under uncertainty across timescales, the desire to track and evaluate adaptation measures and to identify and use metrics of success. Furthermore, reporters highlight a disparity between academic outputs and industry research and innovation requirements. Research outputs are frequently too generic, based at the national level and/or not translated for use which is hampering their practical application (Table 1).

Integrating evidence from the ARP reports into the NAP and the CCRA is expected. Enabling this more effectively requires greater consideration of the guidance, structure and timing of the reports and closer alignment with national climate change policy processes (Jude et al., 2017; Street et al., 2017). In parallel, comprehensive and constructive feedback from policymakers is required (Table 1). This could include a synthesis of the reports incorporating feedback on overall risks, adaptation actions and challenges across sectors and their relationships with those identified in the CCRA. Such feedback would support the production of more focused information in future reports, enhancing their value to policymakers and strengthening corporate-level support for involvement in the ARP process – a critical requirement identified by many reporters, particularly with regard to possible future voluntary reporting cycles.

Discussion

As the results from the interviews and analysis suggest, the ARP reports and associated reporting process have value to the reporting authorities. Enhancing this value is not without challenges, especially if the basis for reporting is seen by both reporters and those requesting the reports as a statutory requirement only (i.e. under the CCA). Maintaining and enhancing the value from the perspective of both the reporters and those requesting and using the reports must be seen as an effective way forward and, we suggest, warrants further attention. Our analysis suggests that particular attention is needed to: better understand the different perspectives on value; improve and maintain an effective reporting process design or framing; and enhance the role of the ARPs in climate change policy. These needs overlap; we recognize that efforts in one aspect will impact on the others.

Towards better understanding value, we suggest that there is a need for qualitative assessment across the value perspectives – policymakers, reporting authorities and other users (including organizations with a scrutiny mandate such as the UK Adaptation Committee). These assessments should draw on broader social science insights to better understand the evolving perceptions on value, including more research drawing on transdisciplinary science, (e.g ethnography, evaluation, policy and practice (Bowen & Zwi, 2005; Head, 2008; Taylor, Pollard, Rocks, & Angus, 2012; Weiss, 1979; 1998)) to understand who values what and how. Assessments should also explore how best to enhance those values across the different perspectives, as well as considering this within the mixed and multi-scales of the broader scope of existing adaptation planning and implementation.

The challenge of establishing and maintaining an optimal design or framing for the reports is complicated by a number of factors: balance between standardized or uniform reporting, and accepting and allowing for different approaches in preparing the reports; different capacities and cultures across the reporting authorites; and enabling reporting that recognizes that adaptation is a continuous learning and improvement process. We suggest that there is a need for research investigating the design or framing of reports to enable the delivery of reports that add value across the different perspectives.

A point raised by most interviewees called for greater understanding and transparency of the role of the ARP reports in the adaptation policy cycle. These calls appear to stem from a lack of clarity and feedback as to the relative prominence and use of reports within the policy cycle and for supporting evidence-based policy development. Efforts are needed to demonstrate the current roles and to explore means of increasing transparency and recognition of the contributions of ARP reports. A post-reporting analysis, such as that provided by this paper, can provide a unique opportunity to address this gap, building on experiences from both reporting authorities and policymakers.

A further dimension requiring attention is the potential and associated challenges for ARP reports to provide a strategically-timed, continuous assessment of risks and action. In doing so, it is recognized that there needs to be clearer articulation regarding their contribution to policy development, including transparent, critical paths to informing national policy (Jude et al., 2017; Street et al., 2017).

As suggested by a number of interviewees, fundamental to enhancing the value is enhancing the quality (relevance and usability) and credibility of the reports. On this latter point, three aspects have been identified. The first is the need for continued investment in climate change research, including that related to climate projections of phenomena of particular interest (e.g. extreme weather), understanding impacts, vulnerabilities, risks and interdependencies; and the assessment of adaptation actions. Associated with this is the need for more effective methods, potentially building on approaches adopted within UK research council funding programmes, for reporters to influence and inform the relevant research agenda and also for more effective means of signposting users to new research results.

Conclusions

As governments develop their respective approaches for subsequent reporting rounds, it is crucial that the policy-driven requirements are aligned with the diverse and evolving risk management activities within reporting authorities. This alignment, along with on-going efforts by research funding bodies to support the research and innovation needed to inform the assessment and subsequent actions, will enhance the potential for future reports to effectively contribute to addressing climate change challenges.

It is apparent that emergent international climate change risk and reporting initiatives, including those driven by the Task Force on Climate-related Financial Disclosure (TCFD, 2017) and illustrated by reporting within the EU (Makinen et al., 2018) tend to focus upon the utility of the process for those receiving the reports, with reporting often concentrating on standardized processes and scoreboard indicators. Our research suggests that such approaches will only provide partial insights into adaptation and adaptive capacity, and that reporting initiatives would benefit from positive and supportive reporting processes, greater consideration of the broader value of the process both to reportees, policymakers and wider users of the reports, and enhancing such value. This is particularly important given the international proliferation reporting initiatives, which will need to demonstrate value, including clear, and potentially differentiating, value propositions, if they are to avoid being viewed as being 'top down', fragmented, a burden, or lacking value by reporting organizations.

A recent communication from the European Commission (EC, 2019), which provides guidelines on corporate climate-related reporting, does recognize that companies will benefit from better disclosure of climate-related information: increased awareness and understanding of climate-related risks and opportunities; improved risk management; more informed decision-making and strategic planning; more constructive dialogue with stakeholders (particularly investors and shareholders); an enhanced corporate reputation; and a more diverse investor base.

Considering this broader value perspective poses a number of challenges. In particular, policymakers and those developing reporting initiatives will require improved understanding of the complex nature of 'value' to all involved in reporting processes. Achieving this understanding will require consideration of how value varies across scales (e.g. organization, sector, country, region, and policy) and of influencing factors including norms, current levels of adaptation preparedness/stage in adaptation path, geographic location, and prior experience of climate risks, amongst others.

An additional challenge is designing and enabling supportive monitoring and evaluation processes that go beyond traditional scorecards and benchmarking approaches, to reflect and deliver the different value propositions. This challenge will require buy-in by all those involved in the reporting process and a focus on enabling and building the necessary capacities to deliver such a supportive reporting process. The evidence from the UK experience suggests that this can be done when the approach is cooperative and based on continuous learning and improvement.

It is worth noting that Defra (2018a) has released its strategy for the third round of climate adaptation reporting. It is encouraging that this strategy reflects many of the findings from the above analysis, including recognizing the need for the reporting to add value to those organizations reporting and to the government. As of December 2018, 88 (75 infrastructure) organizations had signed up to this voluntary round.

Disclosure statement

No potential conflict of interest was reported by the authors.

Funding

This work was supported by Engineering and Physical Sciences Research Council: [grant number EP/L005700/1]; UK Department for Environment, Food and Rural Affairs (Defra): [grant number GA0405].

ORCID

Roger B. Street http://orcid.org/0000-0003-1760-4639

References

BM&F Bovespa. (2018). *Business sustainability index*. Retrieved from http://www.bmfbovespa.com.br/pt_br/produtos/indices/indices-de-sustentabilidade/indice-de-sustentabilidade-empresarial-ise.htm

Bowen, S., & Zwi, A. B. (2005). Pathways to "evidence-informed" policy and practice: A framework for action. *PLoS Medicine*, *2*(7), e166.

C40 Cities. (2018). *CRAFT – climate risk and adaptation framework and taxonomy*. Retrieved from http://www.c40.org/programmes/climate-risk-adaptation-framework-and-taxonomy

Centre for Environmental Risks and Futures. (2012). *Evaluating the risk assessments of adaptation reports under the Adaptation Reporting Power – final summary. Report for Defra's adapting to climate change programme*. Cranfield: Centre for Environmental Risks and Futures, Cranfield University.
Clarke, L. (2008). Thinking about worst-case thinking. *Sociological Inquiry*, *78*(2), 154–161.
Committee on Climate Change. (2017, March). *Adaptation Reporting Power: Second round review*. London: Committee on Climate Change.
Committee on Climate Change. (2019a). UK adaptation policy – committee on climate change. Retrieved from https://www.theccc.org.uk/tackling-climate-change/preparing-for-climate-change/uk-adaptation-policy/
Committee on Climate Change. (2019b). Members of the adaptation committee – committee on climate change. Retrieved from https://www.theccc.org.uk/tackling-climate-change/preparing-for-climate-change/uk-adaptation-policy/
Defra. (2009, June). *Adapting to climate change: Ensuring progress in key sectors: Consultation on the Adaptation Reporting Power in the climate change Act 2008*. London: Defra.
Defra. (2012). *Adapting to climate change: Helping key sectors to adapt to climate change. Government report for the Adaptation Reporting Power. March 2012*. London: Defra.
Defra. (2013, July). *Adapting to climate change: Ensuring progress in key sectors. 2013 strategy for exercising the Adaptation Reporting Power and list of priority reporting authorities*. London: Defra.
Defra. (2018a). The national adaptation programme and the third strategy for climate adaptation reporting. Retrieved from http://www.gov.uk/government/publications
Defra. (2018b). *A consultation on the government's proposed strategy for the third round of the climate change Adaptation Reporting Power*. London: Defra. Retrieved from http://www.gov.uk/government/publications
Deren Van HetHof, S., & Hoştut, S. (2017). Instrumental, strategic and political conception of corporate social responsibility. *Journal of Communication and Media Technologies*, *7*(1). https://www.academia.edu/30681466/Instrumental_Strategic_and_Political_Conception_of_CSR
Elliott, D., & Macpherson, A. (2010). Policy and practice: Recursive learning from crisis. *Group & Organization Management*, *35*(5), 572–605.
Ensor, J., & Harvey, B. (2015). Social learning and climate change adaptation: Evidence for international development practice. *WIRES Clim Change*, *6*, 509–522. doi:10.1002/wcc.34
Ernst and Young. (2015). An assessment of the transferability of the UK's approach to monitoring and evaluating climate adaptation progress to the Canadian context. Prepared in collaboration with the adaptation platform's measuring progress working group, with the support of Natural Resources Canada. Retrieved from http://www.ey.com/Publication/vwLUAssets/EY-Research-Study_UK-approach-to-adaptation-measurement-May2015/$FILE/EY-Research-Study_UK-approach-to-adaptation-measurement-May2015.pdf
European Commission. (2019, June). *Guidelinse on reporting climate-related information*. Retreived from http://ec.europa.eu/finance/docs/policy/190618-climate-related-information-reporting-guidelines_en.pdf
Farewell, T. S., Jude, S., & Pritchard, O. (2018). How the impacts of burst water mains are influenced by soil sand content. *Natural Hazards and Earth System Sciences*, *18*, 2951–2968.
Ferranti, E., Chapman, L., Lee, S., Jaroszweski, D., Lowe, C., McCulloch, S., & Quinn, A. (2017). The hottest July day on the railway network: Insights and thoughts for the future. *Meteorological Applications*, *25*, 195–208.
Financial Stability Board. (2016). *Recommendations of the task force on climate-related financial disclosures*. Retrieved from https://www.fsb-tcfd.org/wp-content/uploads/2016/12/16_1221_TCFD_Report_Letter.pdf
Great Britain. (2008). *Climate change act 2008 chapter 27*. London: The Stationery Office.
Head, B. W. (2008). Three lenses of evidence-based policy. *Australian Journal of Public Administration*, *67*(1), 1–11.
Intergovernmental Panel on Climate Change. (2018). Special report on global warming of 1.5°C (SR15). Retrieved from http://www.ipcc.ch/report/sr15/
Jude, S. R., Drew, G. H., Pollard, S. J. T., Rocks, S. A., Jenkinson, K., & Lamb, R. (2017). Delivering organisational adaptation through legislative mechanisms: Evidence from the Adaptation Reporting Power (climate change act 2008). *Science of the Total Environment*, *574*, 858–871.
Kelly, N. M. S. (2013). The scientific and political legacy of the UK climate projections (UKCP09): an undergraduate perspective. *Area*, *46*(1), 111–113.
Makinen, K., Prutsch, A., Karali, E., Leitner, M., Voller, S., Lyytimaki, J., … Vanneuville, W. (2018). *Indicators for adaptation to climate change at national level - lessons from emerging practice in Europe*. European Topic Centre on Climate Change impacts, Vulnerability and Adaptation (ETC/CCA) Technical paper 2018/3. doi:10.25424/CMCC/CLIMATE_CHANGE_ADAPTATION_INDICATORS_2018
Murrant, D., Quinn, A., & Chapman, L. (2015). The water-energy nexus: Future water resource availability and its implications on UK thermal power generation. *Water and Environment Journal*, *29*, 307–319.
Murrant, D., Quinn, A., Chapman, L., & Heaton, C. (2017). Water use of the UK thermal electricity generation fleet by 2050: Part 1 identifying the problem. *Energy Policy*, *108*, 844–858.
Network for Greening the Financial System. (2018). First progress report. Retreived from https://www.banque-france.fr/sites/default/files/media/2018/10/11/818366-ngfs-first-progress-report-20181011.pdf
Palin, E. J., Thornton, H. E., Mathison, C. T., McCarthy, R. E., Clark, R. T., & Dora, J. (2013). Future projections of temperature-related climate change impacts on the railway network of Great Britain. *Climatic Change*, *120*, 71–93.
Power, M. (2003). Evaluating the audit explosion. *Law & Policy*, *25*(3), 185–202.
Sage, D., Sircar, I., Dainty, A., Fussey, P., & Goodier, C. (2014). Understanding and enhancing future infrastructure resiliency: A socio-ecological approach. *Disasters*, *39*(3), 407–426.

Scherer, A. G., Palazzo, G., & Matten, D. (2014). The business firm as a political actor. *Business & Society*, *53*(2), 143–156. doi:10.1177/0007650313511778

Silverman, D. (2004). *Qualitative research: Theory, method and practice*. London: Sage.

Smit, B., & Wandel, J. (2006). Adaptation, adaptive capacity and vulnerability. *Global Environmental Change*, *16*, 282–292.

Street, R. B., & Hayman, V. (2017). *Knowledge and evidence gaps limiting the value of the Adaptation Reporting Power process to the organisations involved*. Oxford: University of Oxford. Retrieved from http://www.arcc-network.org.uk/wp-content/pdfs/ARP-gaps-report-06-2017.pdf

Street, R. B., Hayman, V., & Wilkins, T. M. (2017). *Understanding the value of the Adaptation Reporting Power process to the reporting organisations involved*. Oxford: University of Oxford. Retrieved from http://www.arcc-network.org.uk/wp-content/pdfs/ARP-report-for-Defra-04-2017.pdf

Sun, F., He, X., Rummy, P., & Lauzon, K. (2015). Global progress in climate change adaptation policies and its implication for China. *Chinese Journal of Population Resources and Environment*, *13*(1), 21–31.

Tang, S., & Dessai, S. (2012). Usable science? The U.K. climate projections 2009 and decision support for adaptation planning. *Weather, Climate, and Society*, *4*, 300–313.

Tangney, P. (2017). Evidence needs for adaptation policymaking. Chapter 2. In P. Tangney (Ed.), *Climate adaptation policy and evidence: Understatnding the tensions between politics and expertise in public policy* (pp. 219–242). London: Routledge.

Taylor, C., Pollard, S., Rocks, S., & Angus, A. (2012). Selecting policy instruments for better environmental regulation: A critique and future research agenda. *Environmental Policy and Governance*, *22*, 268–292.

TCFD. (2017, June). *Recommendations of the task force on climate-related financial disclosure*. Retrieved from https://www.fsb-tcfd.org/publications/final-recommendations-report/

UKCP18 Government and Non-Government User groups. Retrieved from https://www.metoffice.gov.uk/binaries/content/assets/metofficegovuk/pdf/research/ukcp/user-group-description.pdf

United Nations Framework Convention on Climate Change. (2015). *Adoption of the Paris agreement*, FCCC/CP/2015/L.9/Rev.1. Retrieved from https://unfccc.int/resource/docs/2015/cop21/eng/l09r01.pdf

Weiss, C. H. (1979). The many meanings of research utilization. *Public Administration Review*, *39*(5), 426–431.

Weiss, C. H. (1998). Have we learned anything new about the use of evaluation? *American Journal of Evaluation*, *19*(1), 21–33.

https://dspace.org/

Enhancing the value of adaptation reporting as a driver for action: lessons from the UK

Street, Roger B.; Jude, Simon

2019-08-30
Taylor and Francis
https://doi.org/10.1080/14693062.2019.1652141
Street RB, Jude S. (2019) Enhancing the value of adaptation reporting as a driver for action: lessons from the UK. Climate Policy, Volume 19, Issue 10, 2019, pp. 1340-1350

Downloaded from a DSpace repository. https://dspace.org/