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Much ado about nothing? Why adaptation measurement matters
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Abstract

Measuring the effectiveness of adaptation action and tracking collective progress towards achieving adaptation goals has received increasing attention across the domains of policy, finance and research. This is linked to the need to monitor and evaluate bilateral and multilateral adaptation finance as well as a commitment in the Paris Agreement to a collective global goal on adaptation and assessing the adequacy and effectiveness of adaptation and adaptation support in the global stocktake. In this viewpoint I argue that this focus on defining and measuring adaptation progress has underplayed the importance of how these processes of measurement might influence action. Engaging with diverse scholarship from the social sciences on knowledge practices and measurement opens up new perspectives on how measurement might play a role in governing adaptation across scales and the role of experts and forms of knowledge in shaping implementation. These also open up new policy-relevant questions around how metrics can best be designed to support transformative adaptation action through mechanisms such as incentives, norms and framing. This viewpoint outlines the empirical context and policy space of internationally-financed adaptation efforts, drawing in relevant scholarship applied in similar domains to define an emerging research agenda on the measurement of adaptation as a social and political process that shapes policy, finance and implementation across multiple scales.

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In the Glasgow Climate Pact agreed at the UN climate negotiations in 2021, governments made a significant commitment to doubling funding for adaptation to around \$40 billion a year by 2025. The commitment to doubling resources will require a massive effort in rapidly scaling up and deploying adaptation finance to reach marginalised groups in ways that address long-term causes of vulnerability and exposure. Alongside the urgency to distribute these increased funds, it will be critical that adaptation programmes are effective, equitable and efficient, and contribute to reducing vulnerability rather than just redistributing it, or even worsening the vulnerability of certain groups (Eriksen et al, 2021; Atteridge and Remling, 2017; Dilling et al., 2019). As financial resources and global attention on adaptation increase there has been a parallel and deepening policy and research focus on understanding and measuring the effectiveness of these efforts at national and international scales (Adaptation Committee, 2021; Beauchamp et al., 2019; Craft and Fisher, 2018; Leiter, 2021).

In this viewpoint I briefly review the empirical context and policy developments around adaptation measurement funded through multilateral and bilateral finance and relate this to theoretical developments across scholarship in similar domains. I argue that the dominant focus so far on defining and measuring effectiveness has underplayed the importance of how these processes of measurement might influence adaptation action. I outline a new research agenda on the measurement of adaptation as a social and political process that shapes policy, finance and implementation across multiple scales. More sustained engagement with the wide-ranging scholarship on quantification and knowledge production and the anthropology of development would enrich and develop our practical and theoretical understanding of how and why adaptation measurement matters, a critical component to improving the impact of adaptation efforts in the long term.

Measuring adaptation success: early efforts and debate

Many adaptation programmes in the Global South have been financially supported by overseas development aid or international climate finance. These programmes and approaches have emerged within the results-based paradigm of international development and wider audit cultures (Power, 1999; Yanguas, 2018). They have been subject to pressures to demonstrate accountability for funds through techniques such as indicators, logical frameworks and theories of change (Eyben et al. 2015). However, early attempts to design monitoring and evaluation (M&E) frameworks for adaptation programmes highlighted the challenges in such an endeavour, and the difference between a traditional development programme and one that seeks to adapt to future uncertain risks. Fisher et al. (2015) highlight the particular challenges of measuring results on adaptation: the lack of consensus as to what success might look like, the long-time frames of understanding impact, attributing any change to the intervention, and changes in hazard severity and frequency over the project. There was a sustained early effort across the development partners, research and practitioner communities to map the challenges, design frameworks and learn early lessons from fast start efforts such as the Pilot Programme for Climate Resilience (PPCR), a flagship resilience programme implemented in 28 countries as

part of the Climate Investment Funds (CIF) (Bours et al. 2015; McGray and Spearman, 2011; Christiansen et al., 2018).

Building on these debates a set of indicators and measurement practices were integrated into the results systems of bilateral and multilateral finance institutions. The PPCR, a US\$1.2 billion fund set up in 2008, was initially the largest operational source of climate resilience and adaptation financing and was implemented through Multilateral Development Banks. The programme admin unit developed a series of results frameworks from 2009, seeking to develop something practical for national governments that still met the needs of aggregation at the programme level. In 2012, the revised framework proposed a set of 11 core and voluntary indicators as part of the reporting commitments of national governments, and the use of scorecards and self-reporting (Roehrer and Kaudio, 2015). Examples of core indicators are the number of people supported to cope with climate change (aligned to an outcome of increased resilience) and strengthened government capacity to address climate change. The International Climate Fund (ICF) of the UK government was set up in 2010 as a joint initiative between the Department for International Development (DFID), the Department of Energy and Climate Change and the Department for Environment, Food and Rural Affairs to fund programmes supporting developing countries reduce emissions and adapt to climate change with £3.87 billion allocated between 2011 and 2016 (ICAI, 2019). Substantial amounts of this fund were allocated through multilateral sources such as the CIF and other UN Funds and the large contributions of the UK government to the multilateral funds allowed it to have greater impact and influence on how climate finance was implemented (ICAI, 2019). The ICF developed a set of Key Performance Indicators (KPIs) to aggregate impact at the Fund-level and their indicators on number of people with increased resilience, institutional capacity and integration of climate issues overlap with several of the PPCR core indicators as well as those used by other Funds within the UN system such as the Adaptation Fund and the Least Developed Countries Fund (Moehner, 2018).

There are now a wide range of frameworks in use by bilateral and multilateral donors as well as international and non-governmental organisations to assess progress on adaptation objectives although significant overlaps remain (see Adaptation Committee, 2021; 2022 for a review). For example, the UN non-state actor initiative the Race to Resilience - a complementary campaign to the Race to Net Zero – pledges to increase the resilience of 4 billion people, a similar metric to the early frameworks developed for the PPCR and ICF (UNFCCC, 2021). Governments have also developed M&E systems around their national adaptation plans (Craft and Fisher, 2015). These are not necessarily independent from the concepts and expertise behind the multilateral and bilateral frameworks as practically all developing countries received financial or capacity-related support from development partners to develop their M&E approach and programmes such as through Germany's International Development Agency, the NAP Global Network and the programme activities of the PPCR (Leiter, 2021). Despite these efforts, Leiter (2021) shows that very few national M&E systems are actually operational: "less than 40% of the 70 countries that adopted a NAP report on progress or evaluate it" (p187), and very little is known about the quality of these planning efforts or how they are implemented (Woodruff and Regan, 2019).

Beyond the use of indicators within climate finance and national plans, in 2015 two elements of the Paris Agreement took the focus on adaptation measurement into the explicitly political sphere of the international negotiations. Firstly, Article 7 committed to a global goal on adaptation with the aim of "enhancing adaptive capacity, strengthening resilience and reducing vulnerability to climate change". Secondly and relatedly, Article 14 sets out the global stocktake – a five-year review and ambition mechanism that includes adaptation - including a commitment to review the

adequacy and effectiveness of adaptation, and adaptation support. These elements in the Paris Agreement have catalysed a focus on measuring the effectiveness of adaptation actions amongst UN bodies and other international agencies (Adaptation Committee, 2021; Beauchamp and Motaroki, 2022).

Amongst this activity around measurement within climate finance institutions, national governments and the UN negotiations, there has been a related rise in research interest. Scholars have developed and analysed metrics that seek to capture adaptation processes and used systematic review techniques to conduct stocktakes of adaptation action (Ford et al., 2015; Berrang-Ford et al. 2019; Clare et al. 2017; Jones et al. 2019) and stress the need to clarify the purpose of any measurement and design a system suitable for that primary purpose be it learning, accountability, finance allocation or assessing global progress (Leiter et al. 2019). Local and national monitoring, evaluation and learning systems are understood as a key part of the adaptation planning cycle. Within these debates, metrics are often framed normatively as an essential part of improving adaptation finance and implementation and there have been frequent calls for further work on metric design and support for measurement systems. An emerging body of complementary work has started to open up some of these assumptions, questioning the nature of what constitutes adaptation success (Dilling et al., 2019), the role of frames, narratives and heuristics in defining how adaptation is implemented (Singh et al. 2021; Nalau et al., 2021; Orlove, 2022), and trade-offs in aggregating global progress (Leiter, 2022) as well as critiquing the implementation of adaptation finance and the impact it is having on reducing vulnerability (Eriksen et al. 2021). This is supported by wider ongoing critiques on the implementation of adaptation that highlight how the global policy agenda of adaptation travels into local spaces depoliticizing local agendas (Weisser et al., 2014), the entanglements of local adaptation action within national and international politics (Mikulewicz, 2020), the challenges of learning in the adaptation cycle (Fisher and Dodman, 2019), and the incremental and reductionist nature of many responses that have lacked attention to the structural factors and politics that underpin vulnerability (Pelling, 2011; Nightingale, 2016). This work provides a crucial starting point, but there has been little attention on adaptation measurement as an object of study in itself – as a social and political process that shapes adaptation action in multiple ways. I now go on to consider how theoretical engagement with related scholarship on measurement practices may open up new analytical entrypoints and research questions to theorise adaptation processes.

Widening the conceptual lens

Scholarship drawing on global governance theories, the sociology of quantification, Science and Technology Studies (STS) and the anthropology of development show the potential importance of indicators and knowledge practices within adaptation processes. Scholars of quantification show that social processes of categorization, auditing and accountability within quantification make visible (or invisible) certain populations, problems and solutions (Shore and Wright, 2015; Espeland and Sauder, 2007; Tichenor, 2022). For example, global human rights indicators, the Millennium Development Goals and forms of carbon accounting have shaped the policy question at hand, embedded certain social values, and promoted visions of the future (Gupta et al. 2012; Merry, 2016; Fukuda-Parr and McNeill, 2019). Practices of measurement can also shape relationships between transnational actors (Grek, 2020). Scholarship in STS has focused on knowledge production and practices and offers an important lens to theorise adaptation measurement, although it has rarely been applied in this context (Mahoney and Hulme, 2018; McGowran and Donovan, 2021). This lens opens up analysis of the social nature of knowledge production, how types of knowledge and expertise are judged as authoritative and co-produce political ideas and institutions, and how forms of knowledge construct and embed different

visions of the future. Engaging with these related debates opens up several new perspectives on adaptation measurement that have implications for research and practice. I go on to discuss these below.

Global measurement practices not only aggregate and describe a global picture, they also play a role in *governing* how adaptation is enacted (Merry, 2016; Bandola Gill et al. 2022). The global adaptation agenda has been shaped by complex international politics including the relationship of the agenda to a UN process initially built for mitigating greenhouse gas emissions, and the political debates over adaptation finance: the amount, the distribution, and the institutional architecture (Schipper, 2006; Khan and Roberts, 2013; Leiter, 2022). The global finance architecture is fragmented with multiple multilateral channels set up through the United Nations Framework Convention on Climate Change (UNFCCC) for governments to access with differing priorities and procedures, as well as bilateral and multilateral programmes targeted at adapting to climate impacts outside the formal UN regime. Given this fragmentation and lack of political agreement on defining a global adaptation agenda, adaptation is governed through a variety of mechanisms working across different groupings of actors and institutions. The global governance of adaptation refers to intentional actions “when state and non-state actors in the global (including transnational) sphere authoritatively and intentionally shape the actions of constituents towards climate change adaptation as a public goal” (Persson, 2019).

Hall and Persson (2018) categorise the UNFCCC rules and commitments around adaptation into the governance functions they play. They describe the collective commitments to: advance adaptation, facilitate access and allocation of multilateral and finance, and sharing of best practice.. For individual countries they also note the substantive commitments to undertake adaptation, the procedural commitments to plan and report adaptation for example in the National Adaptation Plans, and the commitment to provide finance. Measurement efforts are embedded in several of these collective and individual modes for example in the UNFCCC negotiations on the global goal on adaptation and the global stocktake, and the results frameworks and evaluative assessments in the global climate finance architecture and NAP process. The intention of these frameworks and global processes are to raise ambition around adaptation action and to influence the type of adaptation that is funded and how those activities are implemented. There has been limited research so far on how adaptation is governed in this complex and messy landscape (see review in Persson, 2019). Areas of work are emerging around adaptation finance and the different roles of international organisations and other intermediaries in implementation (Hall, 2017; Dellmuth and Gustaffson, 2021; Fisher et al., 2018), but there remains limited understanding around how knowledge practices in the global and transnational sphere are shaping adaptation action towards a public goal.

A burgeoning literature on climate governance - usually with a focus on mitigation - has identified the role of non-state actors such as cities and regions, transnational networks and NGOs in governing towards public climate goals (Andonova, 2010; Bulkeley and Newell, 2015). This body of work has led to a recognition of the polycentric nature of climate governance, and the variety of ways that climate action can be governed with intention and authority within and beyond the UNFCCC processes. This opens up questions for the adaptation agenda on the relationships between state and non-state actors, the intentional mechanisms for steering action, how authority is built and conceived across the landscape, and how policy diffuses or travels across space and time. It also opens up questions about whose knowledge is included in adaptation governance and the potential for epistemic injustice. The role of experts is an area that has received little attention so far in research on adaptation processes. Taking the lens of Haas’s epistemic communities for example – defined as a network of knowledge-based experts working closely

around a policy area – shifts the analytical lens to understanding who is supporting and developing adaptation policy areas with knowledge claims and what constitutes authoritative expertise (Haas, 1992). Stone (2009) emphasises the importance of transnational policy networks in shaping policy areas such as international consultants in tightknit knowledge networks working within a framing of technocratic decision-making. Kuus (2015) argues that to understand how institutions such as the World Bank shape transnational policy areas “we must understand how knowledge claims are made and circulated inside these bodies: through what kinds of committee meetings, workshops, and training exercises. The question is not only what claims circulate or whether they have merit but also how this happens” (p443). Taking the analytical lens beyond individuals within bureaucracies and networks, we can also examine epistemic cultures, and research on the global environmental assessments that shape adaptation policy shows how they have their own institutionalised cultures of knowledge that define how the problem is framed and what knowledge is deemed relevant (Beck and Mahoney 2017; Borie et al. 2021).

Literature on global public policy drawing on theories of governmentality highlight the role of spreading norms, practices and ideas in shaping action (Dean, 1999; Rose, 1999; Fletcher, 2017). Indicators are theorised as technologies that exert knowledge and governance effects and through these ‘technologies of governance’ forms of knowledge, expertise and power are performed and legitimised. This approach has been applied in critical work on quantification within Anthropology and International Relations and has elucidated in particular how international indices act as global governance mechanisms (Merry et al, 2015; Fukuda Parr et al, 2014). In a study of the Millennium Development Goals (MDGs), scholars showed how: “the MDGs had two types of distorting effects: on policy priorities (governance effect), and on norms (knowledge effect). The translation of norms from words to numbers involved simplification, reification and abstraction of social conditions that are complex, intangible and location specific ... The effect was not only to narrow the range of priorities but to transport into the framework particular theories of development and exclude others” (cited in Fukuda-Parr and McNeill, 2019). Developing indicators is often a controversial and contested process where differences are framed as technical issues hiding the political dimensions, and disputes reflect wider and ongoing contestations about the nature of development agendas. This could be seen for example in the shift in process from a donor-led MDG agenda to a participatory post-2015 agenda for the Sustainable Development Goals (SDGs), reflecting a wider turn to Southern ownership and participation around the development agenda (Fukuda-Parr, 2019).

Global indicators and accountability frameworks may also rework national development agendas. Bandola Gill and colleagues argue from their research on the SDGs that: “they enter national agendas by being re-contextualised within national priorities and plans ... [with] a measurement infrastructure that matches as closely as possible to the global SDG framework” (p160). But the experience of the MDGs shows that the impact of global goals relies on the capacity of governments and external support, and “prevailing historical political orientations and traditions, cannot easily be altered through global policy goals” (Hickmann et al. 2022 p8). This is important in the context of adaptation planning where significant policy shifts will be necessary if the global average temperature rises above two degrees. A growing area of work within accounting has explored performance management tools in development projects and how these practices influence the actions of NGOs or social movements (see for example Martinez and Cooper, 2017). Qureshi (2022) analyses the engagement of community workers with the HIV sector in Pakistan and describes how “regimes of quantification and bureaucratization of development change the social lives of these intermediaries when – for example – loose networks of care and support are forced to turn into report-writing bureaus” (p41). This literature has much to offer the role of measurement systems in adaptation where a similar critique of the depoliticised local agenda has often been made.

Much of this literature has tended to take a ‘top-down’ lens, analysing how governments, non-state actors and beneficiaries are governed through the practices ‘from above’, through bilateral donors, NGOs or multilateral organisations. However, engaging with development and anthropology research on measurement shows how civil servants and practitioners also engage with measurement practices in innovative ways that give them agency to shape implementation for their own purposes. Mosse (2004) outlines the importance of “the social life of projects, organizations and professionals and the diversity of interests behind policy models and the perspective of actors themselves” (p644). This perspective puts the agency back with local and national government officials working with models and frameworks, with the ability to shape and contest them as “street-level bureaucrats” (Lipsky, 1980). An example which sheds some light on adaptation processes is recent anthropological work with civil servants administering disaster relief in Malawi that showed how filling in forms to quantify losses and estimate the need for aid led to officials using emotion and a “feeling” to fill the required fields (Hendricks, 2022). Hendricks describes how in building a database of affected citizens, the local administrator had to verify and negotiate with other local stakeholders to give an account that he felt comfortable with: “negotiations surrounding the numbers that made it into the database show that these are products of relations and encounters between people, shaped by affects, and emotional on-the-spot decisions” (p26). Jerven (2013) unpicks how statistics were constructed across several countries in Africa showing how reporting from several countries had large inaccuracies that were often well-known about amongst national officials and were used strategically to further policy aims. These examples highlight how the measurement of adaptation activities at local and national scales is part of a social process. What is reported on paper or in a digital file is a function both of the templates and databases to hand, as well as wider relationships and politics, and this influences what is known about adaptation, by whom, and at what point in time.

Outlining a research agenda

Through a review of the empirical context, policy space and wider conceptual lens’, I have defined the contours of an emerging research agenda on the role of measurement systems in shaping how adaptation is designed, enacted and understood. This is an important area of future study as the IPCC Working Group II report concluded that “most observed adaptation is fragmented, small in scale, incremental, sector-specific, designed to respond to current impacts or near-term risks” (IPCC, 2022 p20). This agenda explores one aspect of the processes behind these challenges, the role of measurement systems.

Taking the conceptual lens’ discussed above, I argue that using measurement systems as an entrypoint into the social and political processes of adapting to climate change facilitates a new perspective on governance and inclusion across the fragmented landscape of adaptation policy, practice and finance. It raises questions on the roles of experts, epistemic cultures and infrastructures in defining what knowledge is salient, whose expertise carries authority in defining success, and could improve understanding of the depoliticised and often reductionist nature of the agenda. Related work on global metrics opens up analysis of the potential effects of indicators in shaping the global policy discourse and national planning processes in ways that may enable or constrain effective action. Lastly anthropological work opens up an analysis of how these frameworks and systems are embedded in local cultures and politics, and how they are shaped by these interactions in ways that may serve multiple agendas. Taking these perspectives together also emphasises the multi-scalar nature of adaptation governance and the importance of understanding the interactions between institutional cultures, values and tools at different scales and the effects of these interactions on governance and inclusion.

From a policy perspective these questions could have significant implications (see Fisher, 2023 for more detailed discussion) and as evidence emerges this contribution will develop. Firstly, there is a need to (re-)consider in what contexts processes of adaptation measurement support achieving adaptation outcomes given the investments of time and resources that are required. This includes being explicit about whose accountability or knowledge needs they meet, the wider implications and trade-offs of these choices, and the potential for shaping the agenda in ways that may not support necessary adaptation responses. When metrics are deemed to be useful, they need to be understood as part of a political process and deliberately designed to incentivise action at the scale and urgency needed. The underlying frames of adaptation and assumptions around success embedded in metrics need to be made explicit so the discussion about measurement follows the political debate on policy, rather than vice versa. Finally, there is an opportunity in conceptualising measurement as a process that can be reshaped through local action. This offers a cautionary tale in terms of how much credence and attention should be given to globally aggregated numbers but also offers a potential space to build agency and explore new forms of accountability across multiple scales; as local actors adapt and rework national and international measurement systems for their own purposes they demonstrate how and why measurement matters to them.

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