Chapter 13

Nurturing Adaptive Governance Through Environmental Monitoring: People, Practices, Politics in the Kruger to Canyons Biosphere Region, South Africa

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How can governance become more adaptive to rapidly evolving knowledge? How can it address problems spanning different sectors, scales, and interests in a holistic manner? And how can it navigate novel challenges where no obvious response exists? These are core questions of the literature on adaptive governance, which brings together studies on natural resource management, environmental governance, and collaborative governance, in pursuit of pathways to sustainability in the context of rapid social-ecological change. In this chapter, we briefly introduce the concept of adaptive governance to a broader audience, identify two key research frontiers in the literature, and address them through an empirical case study of the Environmental Monitors (EM) program in the Kruger to Canyons Biosphere Region (K2C) in South Africa—exploring the *people, practices, and politics* of adaptive governance.

What Is Adaptive Governance?

Adaptive governance refers to governance in the context of complexity and uncertainty (Dietz, Ostrom, & Stern, 2003). In adaptive governance, actors are linked across scales (local, regional, global) and sectors (state, private, civil society), in learning-based approaches that emphasize monitoring and experimentation, with the aim of responding to evolving challenges, issues, and threats (Schultz, Folke, Österblom, & Olsson, 2015). Although the concept of adaptive governance has been used in several fields, including political science and health research (see Chaffin, Gosnell, & Cosens, 2014), in this paper we refer to adaptive governance as applied to sustainability issues. In the field of sustainability science,

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adaptive governance emerged from social-ecological systems perspectives, where people are seen as *inextricably interwoven* with the natural environment (Folke, Hahn, Olsson, & Norberg, 2005). On the one hand, researchers have used adaptive governance as a descriptive concept to analyze how governance systems have responded (or not) to complex sustainability challenges, including wetland degradation (Olsson, Folke, Galaz, Hahn, & Schultz, 2007), climate change (Boyd & Juhola, 2014), deforestation (Boyd, 2008), and overfishing (Österblom & Sumaila, 2011; Valman, Österblom, & Olsson, 2015). On the other hand, they have utilized adaptive governance as a normative concept, to prescribe how governance *should* be structured in an *anthropocene era* where surprises, cascading effects, and tipping points will be the norm (Berkes, 2017; Duit & Galaz, 2008; Galaz, 2014). As we will show, the distinctions between descriptive and normative uses of adaptive governance are often blurred in practice.

Collaboration, learning, and bridging organizations are key features of adaptive governance (Karpouzoglou, Dewulf, & Clark, 2016). Collaboration draws attention to the formal and informal partnerships and networks that connect actors operating in different domains, and potentially work to enhance the *institutional fit* between governance systems and the problems they seek to address (Folke, Pritchard, Berkes, Colding, & Svedin, 2007). Learning captures the importance of monitoring, experimentation, and multiple sources of knowledge and *ways of knowing*, for developing more holistic understandings of sustainability challenges and for facilitating ongoing adaptation to changing contexts (Cundill, Leitch, Schultz, Armitage, & Peterson, 2015). Bridging organizations have been identified as central to initiating and sustaining adaptive governance over time (Folke et al., 2005; Hahn, Olsson, Folke, & Johansson, 2006; Schultz, 2009). Bridging organizations work to connect different actors, facilitate dialogue, share information, resolve conflict, and build trust, lowering the transaction costs of collaboration for participants. However, the characteristics that enable bridging organizations to play this role—such as their flexibility and lack of allegiance to one particular *type* of authority—mean that they are often ephemeral organizations that suffer from a lack of consistent funds and high turnover of staff (Moss, Medd, Guy, & Marvin, 2009), and experience tensions and challenges in their attempts to be “all things to all people” (Parker & Crona, 2012, p. 263).

Research Frontiers in Adaptive Governance Literature

Over the past 15 years, adaptive governance literature has evolved into a vibrant body of scholarship exploring governance in the context of rapid social-ecological change. More recently, researchers articulating new theoretical perspectives (Boyd, Ensor, Broto, & Juhola, 2014; Leach, Scoones, & Stirling, 2010; van Kerkhoff & Lebel, 2015) and attempting to review and synthesize the literature (Chaffin et al., 2014; Karpouzoglou et al., 2016) have identified a number of gaps, grey areas, and pressing questions for the next wave of adaptive governance scholarship to address. In this chapter, we address one empirical and one theoretical research frontier.

An empirical challenge concerns the emergence of adaptive governance—how does it ‘come about’ (Chaffin, Folke, & Hahn, 2014)? So far, researchers have pointed towards a range of factors, including the role of leadership (Olsson, Folke, & Hahn, 2004), the creation of “vertical” and “horizontal” networks (Österblom & Folke, 2013), and the building of trust between different actors including, for instance, scientists, policymakers, and citizens (Schultz et al., 2015). Moreover, analysts have focused on how *windows of opportunity* (produced by, e.g., a policy change, the creation of a new organization, or a biophysical perturbation) and *perceptions of crisis* may stimulate shifts to adaptive governance (Olsson et al., 2006). These factors are indicative, but raise a number of questions: What is perceived as a crisis, by whom? Whose interpretations “matter” and provide a sufficiently compelling vision to provoke change? What kinds of knowledge are important for the emergence of adaptive governance, and how is this knowledge produced, collected, and used? And how do practices associated with the emergence of adaptive governance, such as network-building and information-sharing, fit within, and connect to existing practices of governance? Moreover, the existing empirical literature is weighted to the Global North and implies that particular kinds of financial, human, and technological resources are necessary for the emergence of adaptive governance (e.g., Galaz, 2014). It is therefore important to empirically explore if and how adaptive governance might emerge with the different kinds of resources available in developing countries and the Global South (Karpouzoglou et al., 2016).

A theoretical challenge is to develop accounts that are grounded in the experiences and practices of the people “doing” adaptive governance in messy, real-world contexts (e.g., van Kerkhoff & Lebel, 2015; Wyborn, 2015). The *first wave* of adaptive governance scholars highlighted the value of individual leadership and interpersonal networking, and emphasized the importance of establishing “the right links, at the right time, around the right issues” (Westley, 2002, p. 357; Folke et al., 2005; Olsson et al., 2006). These studies move towards more *agential* accounts of adaptive governance, as compared to purely *structural* accounts whose authors focus on network patterns and information flows (for a combination of these approaches, see Berdej & Armitage, 2016). But they provide rather functional explanations of adaptive governance, where individual action is motivated by the pursuit of self-evidently “better-functioning” governance systems, and potentially idealistic accounts of individual “heroes” (Leach et al., 2010; Stirling, 2016). These functional explanations do not enable us to explain *how* workable solutions are arrived at by actors who—like all of us—bring many different meanings, preferences, and interests to their activities, and whose everyday work is guided by multiple responsibilities, rationales, and imperatives. For instance, what constitutes the “right” issue, link, or time is a fundamentally interpretive question that depends on the meanings ascribed to particular situations (and desirable means and ends) by those involved. Therefore, if the literature is to account for how adaptive governance is enacted—and how it helps practitioners to navigate complexity (if indeed it does)—it will be necessary to develop theoretical understandings that can account for the everyday experiential contexts in which adaptive governance takes shape. In these situations, the ‘best’ way forwards is always to some extent unclear and undecided, and all kinds of

decisions need to be made about, for example, the kinds of knowledge to produce, the types of interpersonal and inter-organizational connections to establish, and the sorts of information to share (e.g., West, Schultz, & Bekessy, 2016). In developing such approaches, researchers will explore how adaptive governance emerges through the daily decisions and practices of imperfect people, struggling to get work done in confusing and demanding situations.

Towards a People, Practices, and Politics Perspective on Adaptive Governance

In this paper, we address these research frontiers by sketching out an analytical lens centered around *people, practices, and politics* (3P) and applying it to an empirical case of the potential emergence of adaptive governance. We intend *people, practices and politics* to be useful primarily as broad “sensitizing concepts,” providing a general sense of guidance and “directions along which to look” rather than strictly applicable definitive concepts (Blumer, 1954, p. 7). Indeed, the broad nature of the 3P scheme means that it will probably be of most use in the interdisciplinary context of sustainability science rather than, perhaps, governance studies or political science, where these concepts may be taken for granted. In developing our 3P lens, we draw on theoretical approaches in deliberative and decentered governance. Deliberative governance emerged as a way of capturing the shift from ideas of *government* to *governance* in the 1990s and the accompanying focus on deliberation through distributed decision-making, citizen participation, informal social networks, and cross-scale connections between agencies and organizations (Hajer & Wagenaar, 2003). Researchers have recently articulated decentered governance as a more critical perspective on these shifts, noting that ideas of ‘governance’ have become a new orthodoxy and emphasizing more radical democratic possibilities (Griggs, Norval, & Wagenaar, 2014). What both share, and what distinguishes theories of deliberative and decentered governance from adaptive governance (apart from the focus in AG on complex social-ecological change), is their rootedness in interpretive theories that situate accounts of governance in terms of the production of meaning through, for example, experience, discourse, and practice.

By prioritizing “people” in our 3P scheme, we wish to highlight that the rather abstract-seeming qualities of adaptive governance—including scientific monitoring, information-sharing, and network building—are enacted by people, with their particular (and unique) capabilities, experiences, emotions, hopes, and desires. In more theoretical terms, here we aim to draw out the *agential* nature of governance work, which entails the creative, contingent construction of meaning by those involved (Griggs et al., 2014; Westley et al., 2013). With the term *practice* we seek to emphasize the active nature of “doing” adaptive governance and draw attention to the way that adaptive governance emerges through acting on the situation at hand, which involves physical engagement with, for instance, tools and artefacts, material

environments, and colleagues. More theoretically, we seek to make clear that people involved in adaptive governance are not free to simply construct their own meanings, but that these meanings are enabled and constrained within collective fields of activity including, for example, organizational routines, policies and imperatives, social habits, and technologies (Hajer & Wagenaar, 2003). Finally, through the emphasis on *politics* we aim to nurture greater sensitivity to the plurality of beliefs, allegiances and values that, as Griggs et al., (2014, p. 9) put it, actors bring to “the spaces in which collective problem solving takes place.” This means that enactments of adaptive governance are always political, in the sense that they involve the articulation of, and deliberation between, different interests, identities, intentions, and visions. This first attempt at articulating a 3P lens inevitably requires more work and we invite others to build on and critique this approach. In the rest of this chapter, we develop this broad lens through a case study of the K2C Biosphere Region in South Africa.

Methods

Previous researchers have suggested that UNESCO Biosphere Reserves (BRs) are particularly well placed to play a bridging role within adaptive governance (Hahn et al., 2006; Schultz et al., 2018). We identified the K2C as a particularly interesting site in this regard because participants are actively working with concepts of adaptive management and governance as means to address pressing sustainability issues in a highly contested social-ecological context. Within the K2C we focused particularly on the implementation of the Environmental Monitors (EM) program. The EM program is a national governmental initiative that seeks to enhance governance responses to rhino poaching and also address high unemployment rates around Protected Areas (PAs). To enact the EM program the K2C has employed local people within *Host Institutions* (HIs) that are part of the K2C partnership network—including local government, Non-Governmental Organizations (NGOs), research organizations, and private game reserves—to conduct environmental monitoring, protected area patrols, environmental education, and generally help HIs to fulfill their organizational mandates. To develop our 3P lens, we adopted a qualitative, broadly interpretive research approach. Interpretive approaches are considered particularly appropriate for exploring the experiences of people in enacting policies, projects, and programs, and how these experiences shape their practices.

In total, we conducted 40 semi-structured qualitative interviews. Twenty-four of these were conducted in 2013 (13 with EM participants and 11 with participants in the broader K2C stakeholder network), and 16 were conducted as follow-up interviews in 2015/2016. This longitudinal approach enabled us to capture experiences from the first 3-year phase of the project. We selected respondents to ensure coverage of the range of HIs participating, as well as the range of roles within the project, including HI managers, data collators, and the EMs themselves, and transcribed the interviews verbatim. Although we did not develop a formal thematic analysis for

this chapter, we adopted a broadly thematic approach to derive insights from our interview data, employing primarily deductive strategies (Braun & Clarke, 2006). Firstly, we focused on the aspects of the EM project most relevant to features of adaptive governance—knowledge generation, information-sharing, networking and collaborating, and responding to change. Secondly, we employed our 3P lens to enhance our sensitivity to particular aspects of our interviewees' accounts of their work relating to these features, including experiences, emotions, and meanings (people); routines, technologies and patterns of activity (practices); and interests, visions and values (politics). To reflect the holistic nature of interviewee experiences, we have chosen to interweave people, practices, and politics throughout our presentation of the case material, rather than address them separately for each adaptive governance feature. The 3P lens therefore flows through our analysis, rather than being rigidly applied in each section.

The Case: Towards Adaptive Governance in the K2C Region

The Central Lowveld and Escarpment region lies in South Africa's northeastern corner, stretching from the savannah ecosystems of the iconic Kruger National Park (KNP) in the East to the afro-montane forest of the Blyde River Canyon and Drakensberg Escarpment in the West. The landscape is strikingly demarcated along biophysical, jurisdictional, socio-economic, and ethnic lines. The KNP and the many private nature reserves that border it form a large network of PAs—initially created by white Afrikaans and British settlers in the nineteenth and twentieth centuries by forcibly evicting black African communities—that cater to a wealthy national and international tourist market (Carruthers, 1995). During the apartheid era (1948–1994), black communities of various tribal and geographic origins were forced into “homelands” bordering the PA network, which effectively functioned as ghettos and suffered from chronic state neglect, lack of economic opportunity, and high levels of poverty (Pollard, Shackleton, & Carruthers, 2003). The homelands were abolished with the advent of democracy in 1994, but their legacy remains imprinted on the landscape. The population in the former homeland areas in the region is circa 1.5 million and rising, with a density sometimes exceeding 300 people per km² (Pollard et al., 2003; Pool-Stanvliet, 2013) and a landscape consisting of settlements (including the towns of Bushbuckridge and Acornhoek) set amongst communal rangelands (Coetzer, Erasmus, Witkowski, & Reyers, 2013). The broader region also contains wealthier settlements, such as Hoedspruit, that cater to the PA-related tourist industry, as well as commercial agriculture, mining, and—towards the Drakensberg escarpment—areas of plantation forestry (Coetzer et al., 2013).

The democratic transition in the early 1990s prompted a profound shift in the governance of the region. Single-party rule and the homelands system made way for a new system of provinces and municipalities, and dominant political rhetoric shifted towards reconciliation, equity, and broad-based economic empowerment

(Ramutsindela & Simon, 1999). Reflecting international shifts in environmental policy, the natural resources sector adopted a suite of policies and legislation emphasizing integrated catchment and ecosystem-level management, cooperative governance, and equitable distribution of resources (Colvin et al., 2008). At the same time, the KNP began to recognize the importance of the wider landscape to the integrity and sustainability of park ecosystems, and shifted from an “inward-looking, isolationist” management approach to a complexity-oriented, social-ecological perspective emphasizing learning and collaboration between the broad range of stakeholders in the region (Pollard, du Toit, & Biggs, 2011; Venter, Naiman, Biggs, & Pienaar, 2008). In practical terms, this shift in philosophy has led to the dropping of fences between the KNP and the neighboring private nature reserves, and to the creation of a number of social projects that seek to engage the former homelands communities.

In this context, various conservation and development actors began to support the idea of a Biosphere Reserve (BR) in the region as a means for, as one respondent put it, “different communities to reach out over borders,” and ensure a future for biodiversity conservation in the region while also making sure that conservation contributed to equitable and sustainable socio-economic development. BRs are intended to function as *learning sites for sustainable development*, with three types of zoning that correspond with three thematic functions: *core zones* that emphasize nature conservation, *buffer zones* of limited human use that support scientific research, monitoring and education, and *transition areas* with larger human populations that foster sustainable development (Fig. 13.1; UNESCO, 1996). Designated in 2001, the K2C Biosphere Region—named *region* to avoid the *guns and guards* connotation of *reserves*—bridges the provinces of Limpopo and Mpumalanga, and spans two district municipalities and four local municipalities (covering approx. 2.6 million hectares in total). In the K2C, the BR zones were not applied in the stylized sense of model BRs but according to the existing landscape mosaic (Coetzer et al., 2013). The KNP and the Blyde River Nature Reserves form the core areas, the private nature reserves the buffer zones, and the areas of rangeland, settlements, agriculture, and mining the transition zones (Fig. 13.2).

Fig. 13.1 A stylized representation of the Biosphere Reserve zonation. Source: Design by authors

Fig. 13.2 The BR zonation as applied to the K2C. Copyright 2018 by Wehncke van der Merwe. Reprinted with permission

Although the K2C represents geographic space, it is also a non-profit company tasked with pursuing actions to fulfill the BR mandate. As an organization, the K2C's attempts to nurture partnerships and collaboration, and implement and support projects, with a view to reconciling biodiversity conservation and sustainable development. In particular, the K2C seeks to address a range of interlinked sustainability challenges in the region, including lack of economic opportunity, severe inequality, poaching (especially of rhino), high levels of poverty and HIV/AIDS, droughts, habitat degradation (Coetzee, Biggs, & Malan, 2012), and an influx of refugees (Coetzer, Erasmus, Witkowski, & Bachoo, 2010). However, as with the BR network more generally, the K2C has—until recently—received relatively little legislative or financial backing. Interviewees recalled that in the first decade of operation, the K2C largely consisted of several committed individuals attempting to attract funding and generate activity to fulfill the designation. In the late 2000s, however, the so-called 'Anyway Group', a "long-standing informal stakeholder network" of conservation, government, and community actors (many of whom were influential in the original biosphere designation process), re-mobilized under the auspices of the K2C (Coetzee et al., 2012, p. 4). Their intention was to simultaneously ensure the alignment of a number of incoming sustainability initiatives to the region—including USAID's RESILIM program, and the national government's EM program and *Wildlife Economy* concept—while also attracting further international funding through the Global Environment Facility (GEC). In the words of one

interviewee, the K2C label was used to “[form] networks in order to obtain collective outcomes.” This led in turn to the reinvigoration and formalization of the K2C stakeholder network involving many government, NGO, business and community actors in the region, the creation of forums convening actors under the themes of *Environmental Education*, *Natural Resource Management Projects*, *Lowveld Protected Areas*, and *GEF Small Grants* (GEF, Global Environment Facility), and the inauguration of the *K2C Network Coordination Unit* intended to align all of these initiatives. This institutional work has been heavily informed by complex social-ecological systems thinking, including strategic adaptive management and adaptive governance (Coetzee et al., 2012).

This brief overview, although inevitably simplified and incomplete, suggests that the K2C is becoming an increasingly important bridging actor and governance hub in the region. Although we do not aim to evaluate in this chapter whether adaptive governance *is* or *is not* happening in the K2C region, the interplay between formal and informal institutions—see, for instance, Volume 13 on institutions in this series (Glückler, Suddaby, & Lenz, 2018), emphasis on learning and collaboration, and response to complex social-ecological issues—certainly reflect key adaptive governance principles and create fertile ground for more adaptive forms of governance to emerge. In the remainder of this chapter, we “zoom in” to explore how one aspect of the K2C nexus of activity, the EM program, may be supporting key aspects of adaptive governance in the region, and highlight the challenges faced by participants in their everyday work enacting the program.

Results: Nurturing Adaptive Governance Through the Environmental Monitors Program

The South African Department of Environmental Affairs (DEA) designed the EM program in response to two crises: an explosion in rhino poaching from 2010 onwards, and a widespread lack of employment opportunities in areas adjacent to PAs (DEA, 2014). The program, initiated in 2012, is part of the Expanded Public Works Programme’s (EPWP) suite of projects, including Working for Water, Working for Wetlands, and Working for the Coast, where the aim is to alleviate poverty by providing temporary work and skills development for the unemployed. The specific aim of the EM program is to enhance the integrity of PAs by combating poaching through monitoring programs, patrols, and environmental education (DEA, 2014). The Biodiversity Social Projects (BSP) wing of South African National Parks (SANParks) was designated as the implementing authority, and the initial intention was to roll out the program within national parks and private nature reserves. The Kruger region inevitably became a primary focus, with the KNP being the most concentrated site of rhino poaching in the world (Lunstrum, 2014), and the K2C—despite, as a sustainability organization outside the PA network, constituting something of an anomaly in the program as a whole—was consequently selected to participate. The implementation manager at the time recalled that because of

... the strategic placement of the K2C, and the upcoming GEF funding, we zoomed in on the K2C itself and then decided we wanted to—because it is such a huge knowledge hub, and there is so much pressure on this whole Bushbuckridge area as well, we decided we [would] establish a program there.

In turn, the coordinator of the K2C saw the EM program as a way to strengthen the recently re-mobilized K2C stakeholder network, and to fulfill the K2C goal of reconciling biodiversity conservation with socio-economic development:

[T]he catalyst for the Anyway Group*, or the groupings of the K2C Biosphere network, was about preparing for GEF [funding], but it is also a method of linking to one another and [creating] the synergy where it is more effective than the sum of its parts.... The EM program was the practical way for us to do both these things: the network and to empower people.

Indeed, in its enactment through partnerships and networks of diverse actors, the EM program at the K2C has taken on much more significance—for adaptive governance in particular—than EPWP-type projects in general and has become a nationally recognized “flagship” site in the EM program as a whole.

The K2C EM program is managed by the K2C coordinator from the K2C offices in Hoedspruit, supported by four “data collators” responsible for training and supporting EMs, collating the data produced and conducting administrative tasks. The EMs themselves are placed within Host Institutes (HIs) participating in the K2C stakeholder network, including public and private nature reserves, NGOs, community-based organizations, and research organizations. The Maeba Group, a leadership group of 12 EMs and the data collectors, functions as a link between the data collators and the wider EM group, and devises a monthly learning framework for all EMs (consisting of Health and Safety, Vocational, and Life Skill themes). At the end of the program’s first stage in March 2016, the K2C was employing 265 people, which constitutes 19.5% of those employed in the EM program across South Africa (SANParks BSP & K2C, 2016). The program has subsequently been extended for another 3 years. The K2C EM program has exceeded participant expectations of what can be achieved through public works style programs, despite—or perhaps because of—the fact that its parameters were not strictly delineated beforehand. As a SANParks-BSP manager notes,

I think that probably the biggest challenge was when we started [in 2012] there wasn’t really any clear direction from [the DEA] as to what they wanted to do with the program. For example, the concept document around the program was only developed in 2014. And that was a year later, so that was a struggle to clearly outline how the program should be implemented.

Indeed, the precise form that the EM program has taken at the K2C—and its contribution to adaptive governance in the region—has emerged largely through day-to-day negotiation between the actors involved. In the following sections, we employ our 3P lens to explore how the challenges of enacting the EM program at the K2C can shed light on key aspects of adaptive governance: generating knowledge, sharing information, networking and collaborating, and responding to change (see Table 13.1).

Table 13.1 Using the 3P lens to explore aspects of adaptive governance supported by the Environmental Monitors program at the K2C

	Generating knowledge	Sharing information	Networking and collaborating	Responding to change
People				
Experiences, meanings, capabilities, hopes, desires	Enthusiasm and willingness to learn new techniques Boredom in the field	Mutual respect, trust and friendship important for information sharing Creation of communication channels Fear and reluctance to share data	Weariness of meetings, meetings ‘such a ball’ Celebrations to maintain morale	Self-confidence to facilitate discussions, suggest ideas, pursue self-defined goals Belief in ideals of programme
Practices				
Routines, patterns of activity and communication, technologies	Collecting data on e.g. sand mining, invasive alien species, water quality, animal species (e.g. cattle and game counts), family planning and firewood collection Standardizing data, maintaining flexibility Patrolling Training to use technical equipment, learn scientific techniques Synchronizing data collection in smaller collaborations	Preparation and ‘cleaning’ of data Creation of common database Spontaneous sharing of data Maintaining the integrity of data to avoid inappropriate use	K2C facilitating discussions between different actors Administration routines (time sheets, contracts, application forms)	Shifting work patterns of HIs (capacity freed up among permanent staff to address emerging issues) Revised management strategies of HIs (invasive species) Shifting patterns of employment and hiring (e.g. treating all employees professionally), promoting capacity building
Politics				
Plural interests, values, imperatives, identities and visions	Different expectations among HIs about how to use EMs (common data collection vs other tasks specific to the HIs) Different research interests among scientific HIs	Contrasting visions of a ‘successful’ project (e.g. shaping ideas about database) Various perspectives on appropriate land management (limiting willingness to share information)	Worries that government might use strong networks to roll out projects without consultation Fears of government relying on partners to do their work for them	Different imperatives and interests (person-days worked, data collection, skills development) K2C as more prominent political ‘actor’ in the region

Note. Abbreviations in Table 13.1: K2C Kruger to Canyons Biosphere Region, HI Host institution, EM Environmental Monitor
Source: Design by authors

Generating Knowledge

In the early days of setting up the EM program, managers from the HIs met several times to sketch out its parameters. A key concern was what the EMs would be required to do—particularly in terms of data collection. The more scientifically-oriented HIs suggested that there should be a core set of indicators that all EMs should monitor, whereas others—particularly community-based organizations—argued for more flexibility. A scientific HI representative remembers, “there were some that felt that they must contribute to a broader program, and others that said, ‘no we are employing them and we can use them for what we like.’” In the end, flexibility won out. The DEA assesses SANParks’ implementation of the program primarily on person-days worked, so SANParks did not have a strong incentive to ensure common data collection requirements in the program. This left it up to the scientific HIs to advocate for and nurture practices of data standardization in the program, and they have not done so systematically given their limited human and financial resources. Currently, some EMs do not collect data at all, but carry out various tasks related to the mandate of the HI such as environmental and health education and patrols (this flexibility is considered a strength of the EM program by the community-based organizations). Those that collect data do so under five themes: PAs; rangelands; fresh water (Fig. 13.3); health; and socio-economic trends in rural communities. There are no standardized indicators or variables within or across the entirety of these five themes. Rather, the EMs collect data according to the interests and needs of their HIs—for instance, the locations of snares and holes

Fig. 13.3 Monitoring rainfall. Source: Photography by Cláudia Florêncio

in the fences of game reserves—and on emerging issues or perceived potential threats in the region (e.g. sand mining, invasive alien species, family planning and firewood collection). Nevertheless, pockets of collaboration in data collection have emerged informally. For instance, one research-based HI is collaborating with several game reserves to synchronize variables monitored. One researcher noted that such collaboration was—perhaps counter-intuitively—easier with non-research-based organizations:

... the most collaborative ones have been the least scientific ones! The guys running nature reserves, they are quite open to us coming with a predefined list of [variables and] data collection methods. But the [other research organizations] have their own research ideas and so they are not so open to some other researcher coming in.

Ensuring the standards of the data collected has also been a key concern for the research-based HIs. As the EM program is primarily a poverty relief program, ensuring data standards is directly connected with the skills development component. The hired EMs have had relatively little formal education (they are not trained scientists) and may not necessarily have been particularly interested in environmental data collection prior to employment in the program. Training is therefore essential. This has been relatively extensive, with training conducted by the HIs and by partners in the network—for instance in the identification of species (Fig. 13.4) and the use of new monitoring technology such as CyberTracker software. Nevertheless, the EM program does not expressly provide funding for training and equipment. Although in theory money for training could be included in the budget, this would mean reducing funding to actually employ EMs (and as a poverty relief program,

Fig. 13.4 Learning to identify species at a scientific HI. Source: Photography by Cláudia Florêncio

employment is inevitably the priority). This means that training is unevenly distributed among the HIs. As one scientific HI participant noted, “I think that’s where the whole idea has slacked a little bit—there’s some strong host institutions and then there’s some slack ones, and it’s not necessarily the institution’s fault, but it’s more the resources.” The use of CyberTracker technology is accordingly limited, with clipboards also used (partly due to skepticism of the technology by some HIs), and there is no funding available to employ a data manager to train EMs and “clean” the data collected.

Almost all HIs expressed regret that they could not spend more time training and supervising their EMs during their long hours in the field. The lack of supervision and low pay of some of the EMs has posed challenges of motivation and discipline, with HIs reporting that the boredom some EMs experience sometimes prompts them to “spend a lot of time on Facebook.” For several of the data collators, this is a problem because it “demotivates other EMs” who are working hard. Nevertheless, despite these challenges, a significant amount of data has been collected, and many HIs expressed astonishment at the EMs’ commitment and willingness to learn, and mastery of scientific data collection in a relatively short time span. Overall then, data collection is not the only objective of the program, which also includes patrols, environmental and health education, and generally helping the HIs to fulfill their mandates—under the overarching goals of job creation and skills development. Therefore, the type and quality of the data produced is affected by the other imperatives operating in the program, and the practical trade-offs imposed by time and resources. Although these are familiar issues for practitioners working in such programs, these issues have yet to be worked into the adaptive governance literature, and used to develop theoretical and practical understanding of what it takes to nurture adaptive governance and what it might achieve.

Information-Sharing

The intricacies of sharing information have been a recurring theme in the EM program. As one participant notes,

The biggest challenge is, we have got all this data, we need to [collate] all this data, we need to utilize this data, and it has to be distributed. So we have had it on the agenda for quite some time, [and] we actually need to find a proper way forward.

Throughout the lifespan of the project so far, scientific participants in particular have raised the idea of constructing a common database to share data and information between participating HIs (and amongst the K2C stakeholder network more broadly) with the aim of coordinating activities and making data available for broader use and analysis. However, this has taken several years to materialize, with work starting on the database in 2017. In the meantime, data sharing has been ad hoc: “No formal sharing is happening. It is more spontaneous, like ‘by the way, do you have this?’ And then the person shares it or not.” Participants offered different

and sometimes contradictory explanations for the challenges in constructing a database, which speak to broader tensions about the utility of knowledge for governance and the practicalities and politics of “real-world” adaptive governance.

Participating HIs have been reluctant to, in the words of one participant, “just start handing the data out,” for various reasons. Scientific institutions have been wary of relinquishing intellectual property rights: “many of them are like, ‘you are going to collect this data and then you will go and publish it and we will get nothing.’” Meanwhile, representatives of private game reserves are wary of data on, for example, rhino movements falling into the hands of poachers, or worried that data will be used to critically scrutinize their land management practices. Moreover, the sharing of information by participating health institutions is regulated by legal frameworks safeguarding patient confidentiality. There are also a number of practical issues in constructing a database. There are very different kinds of data being collected by the different HIs, on different topics and variables, with different protocols, and of varying quality. There would therefore be a significant amount of work needed to prepare and “clean” data, as well as providing detailed information on the methods and assumptions used to collect each type of data:

...because just columns of numbers are pretty useless ... if people don't understand what those variables mean, how they were collected, what the limitations of the data are ... If people don't have a deep understanding of the actual data, the quality of the data, [then] the data can be used in ways that are inappropriate.

There is no money provided within the EM program to employ a trained consultant, or train the data collators or EMs to conduct these technical and time-intensive tasks.

These complex considerations have led to a range of perspectives on the issue. For some, a database is unnecessary, and peripheral to the overall value of the EM program. As one participant argues, “you just can't really collect it in one interface. Maybe for me it's about respect you know. So if somebody wants these data that you are collecting now, then they need to go to you.”

Some participants add that the degree of collaboration renders the database pointless: “... we know where [the data] is, and we can ask for it [if we need it].” Indeed, there has been informal sharing throughout the first program cycle, and as another participant describes, “99.99% of the time they are willing to share, no problem. Because you are friends with them, and you know each other professionally from the area.” Nevertheless, for others, the idea of a shared database of some kind is an important criterion for the program's worth and success—to ensure that partners coordinate actions, avoid duplication of work, and maximize the use and value of the data collected. Indeed, one actor's description of current practice serves as an illustration of why some participants continue to advocate for the database:

So all of that data is basically sitting on my computer at the moment, it's not on a common server. I think I emailed some of the data, just the spreadsheets to K2C, for the data collators, but I don't know what they have done with it.

Through the initiative of one HI that has sourced additional external funding, work started in 2017 on a “meta-database” with a provisional understanding that it will identify what kind of data is being collected and stored by whom, rather than

providing immediate access to the data itself. Whatever the shape and form of the database that eventually emerges, it will be conditioned by all of these considerations, and likely coexist with all sorts of informal and issue-driven data sharing. All this is to show that the precise forms of AG that emerge in particular places arise through the intricate, often messy negotiation of people, practices, and politics.

Networking and Collaborating

Although formal mechanisms of information sharing have been slow to materialize, the EM program has significantly strengthened networking and collaboration among the K2C stakeholder network in a more general sense. The multi-sectoral partnership approach to program implementation adopted by the K2C was novel for national SANParks BSP staff with long experience of working with EPWP programs: “[W]hen we started the Working for Water program, networking was important, but it was different government departments that needed to be involved. It wasn’t like a partnership program which the K2C is very effective in.” This has resulted in new connections established between actors across scales, with one national actor noting that, “I would never have spoken to Balule or Timbavati [private nature reserves] before, but now I do and because of the EM program we created a platform.” The program has also stimulated new connections across domains. In particular, participants from private game reserves reported that they had established new lines of communication and trust building with communities “beyond the fences” by employing local people as EMs, and by collaborating with community-based HIs in the program. Many of these connections have been established through everyday work on the program, and through informal and chance meetings—although the data collators and the Maeba group hold monthly meetings to share experiences, there are no formal meetings between HI representatives. This lack of formal meetings among HI representatives was experienced by participants both as a positive and a negative. Although many HIs expressed a desire to initiate such meetings—particularly in order to, for example, share experiences and coordinate and standardize the data collection (see above)—they were also aware that they were already overstretched with attending meetings across a huge geographic region. As one interviewee observed, meetings are “such a ball.” Indeed, K2C staff have explicitly tried to avoid creating meeting fatigue, and participants often take the chance to discuss EM-related issues at other K2C events. There is also an annual “EM day” that functions as a celebration and an update on work within the EM program, and a “K2C Partners’ Day” that situates the EM program within the K2C network more broadly (Fig. 13.5).

Many participants perceived the distinct role and broad mandate of the K2C as essential to fostering engagement and collaboration in the EM program. Indeed, the K2C’s “intermediary” status, linking the KNP with the broader landscape, enabled

Fig. 13.5 Participants at the K2C Partners' Day. Source: Photography by Cláudia Florêncio

K2C representatives to capture the funding for the EM program in the first place, and through its broad mandate the K2C has the ability to connect very different organizations. As one participant notes,

... the K2C is like a net thrown on the entire area ... they go from helping local communities with the tribal authorities, to the traditional healers, to the schools, to waste management, to the game reserves, to education, health. I mean it is a very broad spectrum and that is what makes it so good.

Although the K2C has had this mandate for some time, the EM program has provided a tangible, concrete initiative to incentivize collaboration. In this sense, the K2C coordinator notes that the program has “galvanized networking because there was a central pivot point ... with this common program.” In particular, by taking responsibility for the administration of the program, the K2C substantially lowered transaction costs for organizations to participate. As one HI participant explains,

... the time sheets and all of that, you know? The fact is that if I had to do that, I wouldn't have taken on EMs because I don't have an administrator. It [would be] taking time away from writing papers, doing funding grants, writing reports. If I had to do all of that admin, there is no way I could have taken on the EMs.

Nevertheless, participants also situated their involvement in the program within a broader political context. Some interviewees raised the concern that the strong networks in the K2C region meant that it was increasingly seen as an attractive place for the national government to roll out projects, without necessarily undergoing the

degree of public scrutiny that would happen elsewhere. Others noted that the emergence of collaboration in the region was occurring in the context of weak government presence and capacity (that they were “stepping in” to fulfill roles that could potentially be done by government).

Responding to Change

Revision of management actions and strategies

The use of monitoring data to revise and inform management actions and governance strategies is a key element of adaptive governance. In some cases of adaptive governance, members of a central node collect and analyze data, and then use the data to inform formal decision-making at a broad regional or (inter-)national scale (e.g., Österblom & Folke, 2013). This is not, at the moment, the case within the South African EM program as a whole. The national manager explains that

... from an implementation perspective [SANParks is] more interested just in, ‘are people being employed?’ ‘what are they doing?’ and ‘what is the ratio?’ because these are our objectives and deliverables linked to the program. The K2C would be more interested in the data.

Although the K2C functions as a central node in the K2C EM program, it does not yet have the capacity to process and analyze the data collected across all participating HIs (see discussion above), or the mandate to use the data to inform or revise formal decision-making in local, regional, or national government. Rather, the data use in the K2C network has so far been uneven and distributed, with the HIs using the data in different ways. In the private nature reserves, the EMs have collected data on snares and holes in the game fences, which have been used to inform anti-poaching strategies, as well as participating in regular monitoring activities such as game counts and vegetation surveys, which inform ongoing management activities. EMs have also collected data on invasive species in the K2C region, which has been used to inform the Working for Water “bush clearing” teams:

So if it is for the bush clearing team, as soon as we collect the data, we give it to the people in charge of the bush clearing and then they will have to see what action needs to be planned, if the place is big we will need a month to go there, this is the type of herbicides that we will need, we need how many workers, how many days...

In addition, data collected by EMs on soil erosion spurred the creation of a Rehabilitation Project to address the problem. The data collected on socio-economic trends in local communities have not yet been used to inform management activities but have provided a better understanding of potential emerging issues: “[F]rom what we collected we learned a lot from it and now we have an understanding of what is going on in our villages, what are the social problems or the economic problems in our villages.” Nevertheless, the lack of capacity, time, and resources to analyze much of the data collected has proved a persistent challenge. As one

research-based HI explains, some data collected by EMs has been used in Masters projects, but “to be honest, some of the other data hasn’t necessarily been kind of used or analyzed.”

Fulfilling organizational mandates

The EM program has provided HIs with the resources to better achieve their individual mandates. For instance, participating environmental education organizations noted that the manpower provided by the EMs enabled them to reach a much bigger audience:

... nine schools is huge learning that would not have taken place without [the EM program]. I would still be going to one school once every two weeks... [Our] impact would be a couple of hundred kids rather than 1200 kids.

This increased organizational capacity has enabled HIs to better respond to emerging threats—not only through the EMs themselves, but also by allocating EMs to tasks that will “free up” other staff. For instance, the recent explosion in rhino poaching prompted many national parks and game reserves to redirect resources from traditional conservation management activities to anti-poaching. Although the EMs do conduct some anti-poaching activities (and indeed there is an armed EM unit), they have also provided the KNP and some private nature reserves with the manpower to continue to perform their more traditional land management activities. Likewise, research organizations have used EMs to collect data and support research into emerging environmental threats: “We are using the EMs to collect data for certain research questions that otherwise we wouldn’t have the resources to collect the data ourselves.” Perhaps most strikingly, the EM program has enabled the K2C itself to fulfill its own mandate of pursuing activities that reconcile conservation and development through partnerships. Many interviewees reported learning about the K2C—and appreciating its value—for the first time through the EM program: “[F]or me, the environmental monitors program has actually opened my eyes [to the fact that there] is a biosphere reserve, basically.” Indeed, interviewees felt that the EM program had enhanced the K2C’s reputation as a trustworthy “broker” linking different actors in the region.

Human development and capacity building

Participants reported that the EM program has been particularly successful in developing the skills and enhancing the capacity of those participating (Fig. 13.6). Many EMs reported having developed self-confidence through their work on the program:

... the confidence to stand in front of people and talk, I think that is the biggest impact. Because before I didn’t have that confidence to stand, I was shaking, nervous. But now yeah, I think I have more self-confidence to stand in front of people and facilitate talks.

Fig. 13.6 Collecting data on cattle health in the rangelands. Source: Photography by Cláudia Florêncio

Skills development is a stated aim of all EPWP projects, but they have also been frequently criticized for their limited success in this regard (e.g., Mccord, 2005). Indeed, it is arguably the enactment of the EM program through the networks (and with the coordination of) the K2C that has strengthened the skills development and training component in this case. This has occurred through, for example, mobilizing the network to provide training to EMs, exchange visits to other EM sites, and initiatives like the Maeba Group, where particular committed EMs gather to pursue self-defined learning goals:

... the people that were actually selected to be Maebas because of their potential, their willingness, and their commitment to the program. So they were chosen to be Maebas to supervise and support the EMs and train them and build capacity among the EMs.

Nevertheless, many respondents expressed concern that the EM program did not offer permanent positions, or sufficient opportunities for job progression within the program—both wider problems characteristic of EPWP programs in general (McConnachie, Cowling, Shackleton, & Knight, 2013). However, the training, skills, and experience acquired had enabled some EMs to find better job opportunities outside the program. The K2C EM program has also built capacity among HIs, especially the community-based organizations with little previous experience of participating in government-run programs:

... out here in the rural areas previously if you needed someone to work, you drove past, you picked them up and off you went. This project has made the Host Institutions realize that you have to, regardless of the status of the job and the salary, you need to treat that person as an employee that you would treat like any other employee.

Although human development and capacity-building are not necessarily classic aspects of adaptive governance as referred to in the literature so far, they appear

absolutely essential for scientific forms of adaptive governance to emerge at a grass-roots level in the context of a developing country. The data gathered may not necessarily always be of the highest scientific quality, but this may not be the main point of the exercise. Rather, the process of gathering the data is immensely valuable in itself, as participants learn to navigate the people, practices, and politics that the pursuit of sustainability entails.

Concluding Discussion

Early articulations of adaptive governance emerged through researchers' attempts to describe what they were observing in the evolving management and governance of complex sustainability issues. Nowadays, adaptive governance, and related ideas of complex social-ecological systems, have entered into the conceptual vocabulary of governance practitioners and are being actively used in attempts to mold and shape governance practices. In this paper, we have presented an empirical case study of the K2C Biosphere Region, where ideas of strategic adaptive management and adaptive and multi-level governance are being actively used to shape governance and program implementation. In an attempt to ground our analysis in the everyday experiential environment of practitioners, we have developed an analytical lens based around 3Ps—people, practices, and politics—and used it to explore the ongoing implementation of the EM program. This has enabled us to portray adaptive governance as it is “in the making” (rather than a retrospective account of a particular outcome), thus highlighting the everyday decisions and choices that bring life to abstract ideas such as “networking” and “information-sharing.” This shift in perspective enables us to provide a number of useful contributions to the adaptive governance literature.

First, our study supports previous findings of the importance of bridging organizations and their networks to initiate and sustain adaptive governance over time, while adding details from real-world accounts. Importantly, the experience of the K2C indicates the need for bridging organizations to provide a specific reason or incentive for other actors to engage with them (thus enabling them to “bridge”). In the K2C's case, the implementation manager at the BSP wing of SANParks and the K2C coordinator identified a window of opportunity to situate EMs within the K2C stakeholder network. The flexible, partnership-based approach taken by the K2C in enacting an initially rather traditional “public works” style program constitutes an innovative approach to nurturing more adaptive and collaborative governance in the region. Through the EM program, the K2C has initiated connections and facilitated discussions between many actors who had not previously worked together, and has nurtured these connections by, for example, attempting to avoid meeting fatigue and organizing celebrations to motivate engagement. Our study also reveals the centrality and importance of everyday administrative tasks to successful “bridging,” including, in the EM program's case, taking responsibility for time-sheets, employment contracts, and so on across many different kinds of Host Institution.

Second, our findings problematize and add detail to the idea that adaptive governance is formed by coordinating actors around a shared vision, prompted by a perception of crisis. The creation of the EM program as a whole was prompted by a perception within the conservation sector and the national government of rhino poaching as a “crisis.” However, although rhino poaching is certainly a major issue within the K2C region and the K2C BR stakeholder network, it is only one of a range of pressing, interlinked sustainability issues. Indeed, the EM program at the K2C was conceived as a means of addressing a much broader suite of issues, captured under the broad K2C vision of reconciling biodiversity conservation and sustainable development through partnerships. And although the vast majority of participating HIs in the EM program would agree with this broad vision, our results highlight the innumerable perspectives among participants on what this vision means for their work, how they might help to fulfill that vision, and what it is possible and/or desirable to do given practical possibilities and constraints. Within attempts at coordination around a broadly shared vision, then, our study highlights the many different kinds of negotiation around particulars. For instance, activity within the program was shaped by negotiation between different versions of success, including person-days worked (SANParks), scientific data and a shared database (some scientific HIs), and training, capacity-building, and skills development (K2C). More generally, our results highlight the interplay of meaning and action—within innumerable everyday decisions—that shape the way adaptive governance emerges in practice.

Third, by focusing on adaptive governance in the making we emphasize that adaptive governance does not simply emerge in a particular place and replace all other kinds of governance, but rather that adaptive practices may evolve within and infuse a governance landscape that carries many influences. Moreover, it is not necessarily immediately apparent what practices are useful and will enhance adaptiveness in a particular context—indeed, “adaptive” is not a universal criterion, certain practices are more or less adaptive *in relation* to existing arrangements. A good example of this lies in the discussions around the proposed common database within the EM program. Although a shared database to synthesize information and use it to inform relevant decision-making would perhaps be considered more quintessentially adaptive in the literature, not all participants in the EM program necessarily saw it as desirable. Even if the resources were there to create and maintain a database, the K2C does not have formal decision-making authority in the sense of a government authority to act upon the data gathered. In this context, the networking and collaboration between the diverse set of HIs in the region—initiated by the K2C—might be considered even more valuable, by nurturing a web of formal and informal information sharing and enhancing “adaptiveness” more generally across the landscape.

Finally, our study provides a valuable complement to an adaptive governance literature weighted to “high-level” governance contexts in the Global North, including multinational corporations, international institutions, and so on (Galaz, 2014; Österblom, Jouffray, Folke, & Rockström, 2017). In focusing on how adaptive governance might be nurtured and strengthened through a poverty alleviation program

in the Global South, we suggest that the developing the capacity and skills to perform the “knowledge work” required for adaptive governance (gathering, synthesizing, and using information) may potentially be an appropriate development strategy in certain contexts. Indeed, interviewees noted that human development and capacity-building have been key outcomes of the program.

To conclude, adaptive governance is no longer just a descriptive academic concept, but also a normative goal and a lived experience of an increasing number of people across the globe. Continuously bringing this lived experience into the evolution of the concept is crucial for making ideas of adaptive governance meaningful and useful, for practitioners and academics alike.

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