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Adaptive governance:

Navigating shock and surprise in resource-dependent communities

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Marta Berbés-Blázquez
PhD Candidate
Faculty of Environmental Studies
York University
Toronto, Canada
mberbes@yorku.ca

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Environmental governance of resource-dependent communities poses distinct challenges. Similar to other social-ecological systems, these communities are characterized by irreducible uncertainty, multiple dynamic equilibria and complex behaviour. However, in addition, livelihoods in these communities depend on a single, or a reduced range, of ecosystem services thus making them more vulnerable to shock and surprise as they have a smaller buffer to absorb disturbances (Adger, 2000). This is why fostering adaptiveness – the capacity to adjust to unexpected change – becomes critical, especially in the context of sustainable development. In this paper, I reflect on the role that participatory processes can play in increasing the adaptiveness of environmental governance in resource-dependent communities using an example from rural Costa Rica. My observations are based on preliminary fieldwork carried out between June and September 2009 in the Volcán river watershed where I conducted a participatory assessment aimed at mapping the linkages between human well-being and ecosystem services. My work is anchored in resilience theory and participatory development theory, and I am currently evaluating the challenges and opportunities of participatory methods as I prepare to go back for more extensive work aimed at designing an adaptive environmental management framework.

Before proceeding, I want to clarify that I am using the term ‘environmental governance’ to refer to the processes and mechanisms by which social actors – including the state, communities, NGOs, businesses and a growing number of partnerships among these – influence environmental actions and outcomes. ‘Adaptiveness’ refers to the ability to adjust to new situations. Adaptive capacity is an element of ecological resilience (Gunderson, 2000), defined as the ability of a system to experience disturbance and still maintain its ongoing functions and controls (Gunderson & Holling, 2002). Last, participation in environmental management has to do with emphasizing the *process* by which decisions are taken,

so that instead of favouring efficiency as the overriding objective of management, as in many of the more conventional forms of resource management, the questions 'for whom' and 'according to whom' become more significant (Kapoor, 2001).

Context: The Volcán river watershed

The Volcán river watershed runs along the Pacific side of the Talamanca mountain range in Southern Costa Rica. This rural watershed has a population of 3,500 people, divided in 12 communities across an area of 230 km². In the past century, the watershed experienced two major social and ecological disturbances. First, around 1900s the first families of cattle-ranchers settled in the area, inhabited until then by sparse Native populations that had been relatively isolated from the booming cash crop economy that characterized the central valley (Hilje-Quiros, 1992). The newcomers transformed large tracts of forests to pastureland.

The second shock came in 1978 when a large multinational company moved into the area to develop it for mono-crop pineapple agriculture. The effects of this latest disturbance still reverberate today. Ecologically, there are concerns about the decline of water volume, the alteration of river flow in an area prone to annual flooding, ubiquitous pesticide use, loss of biodiversity and so on. Socially, the arrival of the company created a class of landless wageworkers made up of previous landowners who sold their lands and low- or semi- skill labour that has settled in the community over the years looking for work. The 1990s were a time of confrontation between the company and its workers who attempted organized labour action and were eventually dissuaded through a host of pressure tactics (Chapman, 2005). More recently, there has been a growing number of grassroots initiatives that try to deal with social disintegration and environmental concerns in non-confrontational ways, some led by foreigners, some led by locals.

Attributes of adaptive governance

Since adaptiveness is very much related to the reaction of a system to change, I have chosen to explore attributes of adaptiveness at three different stages: prior to

the onset of the disturbance, during and in its aftermath. It is understood that the list of attributes is not comprehensive and that there is overlap between these categories.

Prior to disturbance. Some of the governance attributes that permit a system to prepare and detect an upcoming shock are diversity, flexibility and monitoring. Diversity is welcome as an adaptive measure as it represents a reservoir of future options (Walker & Salt, 2006). There are two types of diversity considered relevant in adapting: functional diversity, which increases with expanding numbers of social actors, that is, the more kinds of stakeholders, the more functional roles that they can play; and response diversity, which relates to the variety of responses to disturbances available to a system (Walker *et al.*, 2006). Flexibility in governance can arise from encouraging a degree of modularity as well, where parts of the system can act with some autonomy from each other (Walker & Salt, 2006). This contrasts sharply with the centralized bureaucracies that have characterized Latin American countries in the past. Last, monitoring can give insights into the resilience of social-ecological systems. If monitoring is continuous and iterative, the feedback can provide information on the direction of change, which can be used to adjust course if there is an appropriate conduit to do so.

Navigating turbulence. Once the system is experiencing a shock, the processes and feedbacks that maintained it in its previous domain of attraction become weakened or disappear altogether. Some attributes of environmental governance that can aid navigating the short-lived transition phase are networks, redundancy and leadership. Networks embody the relationships of trust and reciprocity that can be activated for a common good (Pretty & Ward, 2001). At times when uncertainty is high, people can benefit from having access to a wide net of resources, and from being able to organize quickly a coordinated response to an unforeseen event. Redundant, polycentric institutions also increase the capacity of a system to deal with shock (Ostrom, 1999). This principle runs contrary to ideas of efficiency passed on from the era of structural adjustment that recommended the thinning down of governments. However, while efficiency might be valuable in periods of stability,

polycentric, multilayered structures of governance with power distributed in separate clusters can be a source of resilience in times of crisis (Lebel et al., 2006). Last, leaders are key in navigating a transition because they can be the catalyst that stirs organizations in new directions and consolidates vision.

Disturbance aftermath. In the immediate aftermath following a disturbance, the system can go back to its previous domain of behaviour or it can transform itself in innovative ways. Some attributes of adaptive environmental governance useful at this stage are: memory, learning capacity and self-organization. Memory refers to the collective ways of knowing that are encoded in the customs and traditions passed on through generations. These shared norms can be used as guiding principles for the rebuilding that follows a disturbance. However, blindly going back to old ways without further examination might forego an opportunity to learn. Reflecting on past experience in relation to the future can build adaptiveness in governance. Last, self-organization aids adaptiveness because it captures the very processes that maintain a social-ecological system in a particular domain of attraction. Self-organizing behaviour will appear once some of the key relationships and feedback processes have been re-established, or new ones have been adopted.

Participatory processes

I return now to my original question: can participation be a vehicle to enhance adaptiveness in environmental governance? During my first field season in the Volcán watershed I adopted a participatory approach with two purposes: one was to begin to map the linkages between ecosystem services and human health and well-being; the second one was to tease out the dynamics of the current system of environmental governance in the watershed. My activities while in the watershed included formal and informal interviews, participant observation, modified transect walks through the watershed, photo-voice to capture digital images of key ecosystem services and accompanying narratives from volunteer participants, several community workshops, and an exploratory visioning exercise using scenario

planning. In addition, I was in contact with several local academics, company representatives and environmental NGOs.

When considering the attributes of adaptiveness prior to shock – diversity, flexibility and monitoring – these are broadly geared towards increasing the range of options available and towards the detection of change and surprise. Participation in the decision-making structures by a wider segment of the population can help with the first objective. Currently, the company is the single, most influential player and decisions affecting the environment are taken with little or no consultation from other stakeholders. Even at the community level, groups with the capacity to affect environmental outcomes, such as the Watershed Commission or the Committee on Development, tend to be plagued by a chronic shortage of funding and are dominated by a small group of concerned and well-intentioned, nevertheless, well-off elites. What this creates is a false sense of consensus and a potential disconnect, as decision-makers do not capture the true diversity of interests within the population. One of the consequences of having a homogenous group taking decisions for a larger, more heterogeneous collective is that this situation can become a mechanism to produce surprises as, decisions taken with a partial understanding of the issues, will translate in actual results that differ largely from anticipated results.

Monitoring and detection of environmental change are activities long thought compatible with enhanced community participation (e.g. Abbot & Guijt, 1998). However, two challenges need to be considered: First, there is ample evidence of situations in environmental management where advice from local resource users has gone unheeded, e.g. the collapse of the Atlantic Canada cod fishery was preceded by frequent warnings about resource depletion from the in-shore local fishermen that were ignored or confused by the powers that be. This circumstance bears some resemblance to the situation in Volcán, where business owners routinely downplay warnings from the municipality about the potential for river flooding and mudslides in the neighbourhood where their stores are located. The second challenge is that even in the absence of political interference,

monitoring resilience remains a tricky endeavour, particularly as thresholds are easiest to detect once they have been crossed, and surprises can arise from cross-scale interactions between slow and quick variables that can go unnoticed.

During a disturbance the qualities of environmental governance that enhance adaptiveness – trust and leadership, networks, and redundancy – can be related to social capital. Social capital refers to the “features of social organization such as networks, norms and social trust that facilitate coordination and cooperation for mutual benefit” (Putnam, 1993) and it is generally regarded as having a positive influence in promoting sustainable development. Participatory processes can play a role in building up networks and promoting trust among stakeholders. However, the structure of the network has significant impact on its effectiveness in environmental governance (Bodin & Crona, 2009). One important characteristic of networks is the degree of bonding occurring within a group, versus the degree of bridging between groups (Ali-Khan & Mulvihill, 2008). While bonding can help to promote trust and common understandings, in classist societies, it can also result in homogenization and even a certain reticence towards new ideas. On the other hand, bridging serves to connect across traditional divides and it can foster innovation (Folke, Hahn, Olsson, & Norberg, 2005). It was observed that while bonding occurs quite naturally among different collectives in Volcán, e.g. through social gatherings, household proximity and religious events, bridging between the groups tends to be encouraged by foreigners, such as volunteers or researchers, whose presence is usually perceived as neutral or positive.

Leadership in environmental governance in the watershed faces some challenges. There are some instrumental persons in the community but, with few exceptions, these tend to be older men, wealthier and from families who came with the first wave of cattle-ranchers. This profile implies that leaders often do not depend on the company for their livelihoods, which gives them the freedom to critique more openly company actions that adversely impact the environment, but it also takes away from their legitimacy in the eyes of company workers whose

livelihoods have come to depend on the profitability of the business defined in an exclusively economic sense.

Horizontal networks are positive in enhancing adaptiveness but there is a ceiling on how much power these networks can exercise on environmental outcomes if they do not have access to connections with other levels of governance, municipally, nationally or internationally (Classen *et al.*, 2008). The Costa Rican context presents a challenging situation in this respect because power has traditionally concentrated at the national government level or at the household level, with much less clout in the intermediate levels that are essential in creating an adequate support network for environmental initiatives (Schelhas, 2001). It is therefore an asymmetrical power structure that does not have much redundancy to absorb shock. Participation, especially facilitated by foreigners seems to be able to attract a wider variety of stakeholders, however, it is unclear if the interest will be sustained after the volunteers leave.

Last, during the aftermath, the attributes of adaptive environmental governance – learning, memory and self-organization – relate to the capacity of the system to recreate an identity incorporating elements of the previous one and some innovative components. Participatory processes, especially if they are designed to be truly inclusive, can increase community engagement in social rituals, which serves to boost collective memory. The time in Volcán seems critical as many of the cultural events from the past are disappearing, e.g. dances, shows, even some religious celebrations. Also, the identity of the watershed is slowly changing as young locals migrate to larger population centres in search of more opportunities and there is a continuous influx of low-skill labourers who are new to the area.

Collective learning depends on having the appropriate conditions for learning and experimentation; chief among them is developing an organizational culture that embraces error (Korten, 1980) and having adequate mechanisms to incorporate the appropriate changes of behaviour. Communities dependent on a limited range of ecosystem services for their livelihoods have less room for

experimentation as risk and uncertainty act as effective deterrents. This reflects the situation in Volcán where not only the majority of the families depend on pineapple mono-crop agriculture for their livelihoods, but also there is (literally) little land left for experimentation, as most of the terrain is occupied by plantations. While the conditions are challenging, Classen *et al.* (2008) report that participatory processes helped creating farmer research teams in some of the poorest, most remote villages of the Honduran hillside. Farmers in these groups were able to act as collateral of one another, which allowed them to experiment with crops and farming techniques. Similar to the Honduran situation, participatory processes might be key to develop conditions conducive of social learning in Volcán.

Conclusion

Briefly, participation has the potential to promote adaptiveness in environmental governance by increasing the points of view represented, building up critical social relationships and reducing the risk of experimentation and learning in resource-dependent communities. Furthermore, nowadays is rare the environmental project that does not acknowledge some role for participatory processes. However, the fact that participation has become a standard ingredient in environmental governance is also troublesome. Kapoor (2001) warns about favouring quantity rather than quality in participatory environmental management. In essence, he warns that by making participatory process a knee-jerk reaction in environmental management, the essence of participation, that is, the power reversal that is intended to be (Chambers, 1983; Freire, 1996), becomes meaningless and the very idea of participating in the realities of a variety of stakeholders is denuded from its complexity. Hence while the value of participatory processes might be theoretically proven, its implementation cannot be assumed and it requires careful examination in a case-by-case basis.

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