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Biocultural Approaches: Opportunities for Building More Inclusive Environmental Governance

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Summary

A significant portion of the world's remaining biodiversity and agrobiodiversity is in the hands of local and indigenous communities who tend to be politically marginalised and thus excluded from formal environmental governance schemes. In spite of the growth of interactional approaches to environmental governance, experiences of indigenous and local communities suggest that challenges remain in shifting mindsets and practices away from structured and formal mechanisms to understand and support local environmental governance models that are already delivering significant global environmental outcomes.

This paper explores biocultural approaches to environmental governance and conservation through analysing two cases: (i) Indigenous Biocultural Territories and their emphasis on in-situ conservation of biocultural heritage; and (ii) Indigenous and Community Conserved Areas, based on community and activist work on biodiversity conservation across the world. They show that it is possible to create space for locally driven environmental governance while *at the same time* pursuing interactional and inclusive approaches within national contexts. This is achieved through beginning from what works locally and using that as the grounding for interacting across scales. This in turn requires that in situations where formal processes continue to marginalise some groups, we must reorient ourselves as governance scholars and practitioners to look beyond the formal to focus on what sits behind them. Finally, in situations where interactions between locally grounded models and formal models show promise for creating more inclusion, we must be cognisant that it is the quality of the interactions that in large part defines the quality of the outcome.

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Acronyms

ANDES	Asociación para la Naturaleza y el Desarrollo Sostenible
BCP	Biocultural community protocol
CBD	Convention on Biological Diversity
CEESP	Commission on Environmental, Economic and Social Policy
CIP	International Potato Center (Centro International de la Papa)
FAO	Food and Agriculture Organization of the United Nations
IBCH	Indigenous Biocultural Heritage
IBCHT	Indigenous Biocultural Heritage Territories
ICCA	Indigenous and community conserved area
IIED	International Institute for Environment and Development
IUCN	International Union for Conservation of Nature
ITPGRFA	International Treaty on Plant Genetic Resources for Food and Agriculture
M&E	Monitoring and evaluation
SIFOR	Smallholder Innovation for Resilience

Practice summary

A significant portion of the world's remaining biodiversity and agrobiodiversity is in the hands of local and indigenous communities who tend to be politically marginalised and are often excluded from formal environmental governance. Protecting this remaining biodiversity requires that we embrace use of interactional approaches to environmental governance, such as adaptive co-management and cross-scale governance. Given that environmental problems are often characterised by uncertainty and manifest across scales, affecting multiple stakeholders, interactional approaches to environmental governance are gaining ground. Their promise is that by creating opportunities for multi-stakeholder processes that are rooted in local realities, they can support local (and often informal) environmental governance models that are already delivering significant global environmental outcomes, while linking them to governance across scales and thereby engaging multiple stakeholders.

This paper reviews biocultural approaches to environmental governance and conservation that aim to do just that. These bottom-up interactional approaches are built through the recognition that there is an inextricable link between traditional knowledge, the cultural and linguistic systems they are embedded in, and conservation of biodiversity in situ, which requires governance models to conserve all the interconnected parts of people in ecosystems. Two case studies are used to explore existing practice: (i) Indigenous Biocultural Territories work that focuses on in situ territorial conservation of biocultural heritage, using the specific example of the Potato Park in the high Andes in Peru; and (ii) indigenous and community conserved areas (ICCAs) work, which is based on community and activist-led biodiversity conservation happening across the world.

Four lessons for those funding and supporting more inclusive governance can be drawn from this growing field of practice:

1. The case studies provide evidence that environmental and social outcomes may be enabled when existing ways of knowing, engaging with and nurturing biocultural diversity are respected. In the exploration of which governance models exist in context, it is important not to be limited to a thematic or sectoral lens (our expert lenses) but to start broad and build a picture of how the parts of the system (social, environmental, institutional, economic, etc.) are connected and interacting on the ground.
2. Once there is understanding of what exists both formally and informally in situ, it then becomes possible to engage with the space in between. Creating hybrid governance structures and identifying mechanisms to meaningfully mediate between local and other spaces (national or international) can help build cross-scale governance while nurturing local wellbeing.
3. What matters most for quality outcomes is how interactions are mediated between stakeholders. This calls for attention to facilitation skills, which are not always recognised as important in the environmental sector. Skilful mediation requires reflection on power dynamics and how they may need to be challenged or negotiated.
4. Experience shows that the complexity of working across scales to build interactions that can support meaningful inclusion and bridge local to global logics is not amenable to quick fixes. Successful biocultural approaches stem from long-term partnerships that build trust over time. Systemic approaches to planning, monitoring and evaluating interventions can help such interactional governance innovations to be adaptive and learn through time and can even become a powerful tool to build more inclusive interventions.

1 Introduction

It is impossible to deny that humans are drastically altering conditions for all life on the planet. Living in the Anthropocene (Crutzen 2006) has heightened concern for environmental sustainability. Unprecedented species loss (Dirzo and Raven 2003) and related threats to crop genetic diversity (Esquinas-Alcázar 2005), the dual recognition of environmental crisis and rising inequality (ISSC, IDS and UNESCO 2016) and their links to other global crises such as migration (Greiner and Sakdapolrak 2016; Rice 2016) raise not just technical, but political and ethical challenges for environmental conservation today. Consequently, we are moving away from the discourse and practice of environmental management towards environmental governance (Borrini-Feyerabend and Hill 2015). Put simply, 'management is about what is done in pursuit of given objectives while governance is about who decides what is to be done and how those decisions are taken' (Borrini-Feyerabend *et al.* 2014: 3). Moving from management to governance means engaging beyond the instrumental and technical in relation to the natural environment, and grappling with decision-making processes, power relations that influence them, and issues around authority, accountability and rights.

A major challenge for global environmental governance is that a significant portion of the world's remaining biodiversity and agrobiodiversity is today in the hands of local communities and indigenous peoples who tend to be marginalised from environmental decision-making. Approximately 22 per cent of the world's land surface, and within that 11 per cent of the world's forests, are estimated to remain under customary ownership of indigenous peoples who account for just 5 per cent of the world's population (Maffi 2005; Maffi and Woodley 2012). Molnar, Scherr and Khare (2004) estimated that the 370 million hectares of global forest area that is under some form of community conservation is as significant as the area conserved through government-managed protected areas. Similarly, Kothari (2006) argued that areas conserved by communities may encompass as much land as government-managed protected areas in total. Additionally, much of the world's agrobiodiversity is in the hands of peasants who produce a large proportion of the world's food through agro-ecological practices that provide a broad array of social and environmental benefits (IAASTD 2009; Altieri and Toledo 2011). More inclusive approaches are needed to ensure that these dwindling global environmental resources are not protected at the expense of the livelihoods of some of the world's most marginalised people.

Recognition of the importance of indigenous and local communities to conservation of biodiversity is not new. Environmental anthropologists and activists supporting traditional knowledge and indigenous movements (e.g. Bryan 2009; Turnbull 2009) have highlighted the important role it plays historically. They have also shown that local and indigenous knowledge of biodiversity is embedded within institutions and social practices, is fluid, and constantly engaging with processes of representation and power (Raffles 2003; Agrawal 1995, 2002). This interactional view of local environmental knowledge and how it is marginalised has fuelled advocacy for the recognition of the value of indigenous and local knowledge in global environmental and agricultural policy. For example, article 8j of the Convention on Biological Diversity (CBD) calls for protection of the knowledge, innovations and practices of indigenous and local communities relevant for the conservation and sustainable use of biodiversity. The contribution made by local and indigenous communities to conservation and development of plant genetic resources is also recognised in the Food and Agriculture Organization of the United Nations (FAO)'s International Treaty on Plant Genetic Resources for Food and Agriculture (ITPGRFA).

Yet, in spite of an increasingly progressive international policy framework that supports rights of local communities and indigenous peoples over land and associated knowledge

and practices,[1] many remain politically marginalised within nation states (Coates 2003). Further, their territories are threatened by neoliberal extractive policies often supported by national governments in much of the world (Ulrich, Dietz and Lang 2016; Chomsky 2016). Within national contexts, their exclusion from environmental decision-making means that they struggle to legally defend and thus conserve their territories, exposing crucial biodiversity hotspots to further loss. The slow response of national policies to protect rights and knowledge remains a major barrier for supporting indigenous and local community governance mechanisms that we know deliver important global environmental outcomes.

One of the central challenges is the disconnect between state-led market-based approaches to land as a resource to be managed through individual titles, and the collective approaches to nurturing land commonly used by local and indigenous communities. As illustrated by Shankland *et al.* (2016) in the case of Brazil, the central logic of national property law often fails to provide space for collective ownership by communities. This is a common story across the world. Similarly, an impediment to agrobiodiversity regeneration is the common bias against in situ agricultural knowledge associated with distinct ontological relationships with land and plants. Many international agricultural policies and practices, therefore, remain rooted in Western scientific paradigms and ignore local knowledge (Graddy 2013). These subtle yet pervasive epistemological biases that underpin national policies stem from colonial interactions and continue to obscure and marginalise the epistemologies and ontologies that are the foundation of the way local communities and indigenous peoples govern their land and conserve biodiversity (Smith 1999).

The challenge also stems from the way governance is conceptualised and pursued by most scholars. In spite of increased recognition that formal institutional structures in practice coexist and work with informal governance processes (e.g. Clunan and Trinkunas 2010; Hooghe and Marks 2003), most research still remains focused on the formal (Khan Mohmand 2016). 'Good' and 'inclusive governance' scholars continue, in the main, to focus on legitimacy in the way formal governance structures are created and leaders are chosen, the confidence people have in them and how accountable they are (e.g. Plumptre and Graham 1999; Westbury 2002). Inclusivity, therefore, tends to be framed as a process of creating space for the informal to be recognised by the formal. This bias towards the formal implicitly delegitimises and renders invisible other existing governance systems.

Environmental governance has more readily embraced interactive approaches given that environmental problems are often characterised by uncertainty and manifest across scales, affecting multiple stakeholders. Proponents argue that addressing multiple knowledge systems through participatory approaches should improve transparency and equity in decision-making (Reed 2008; de Vente *et al.* 2016). Yet, these seemingly participatory interactions continue to be framed as starting from the formal (and powerful) entities of governance which are responsible for making an effort to reach out to 'other' (less powerful) stakeholders. Without being cognisant of the power imbalances and engaging directly with them, this form of participation may, in fact, be subversive rather than empowering for local peoples.

The starting premise for this paper is that protecting the critical global biodiversity that remains in the hands of local and indigenous communities across the world requires that we first overcome the bias of governance scholarship to the formal in order to create opportunities to include existent local environmental governance approaches that are delivering global environmental outcomes. In this paper, I aim to contribute to this endeavour through engaging with the field and practice of biocultural approaches to territorial and environmental governance. Developed through a combination of research and activism with

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[1]   For example, the United Nations Declaration on the Rights of Indigenous Peoples and the FAO Voluntary Guidelines on the Responsible Tenure of Land, Fisheries and Forests in the Context of National Food Security, among others.

strong indigenous leadership, these approaches take as their point of departure the in situ lived experience of local, traditional and indigenous communities and their relationship to the natural environment. I situate the review of biocultural approaches by first identifying the broad trends in the literature on environmental management, governance and conservation to illustrate the theoretical space for alternative approaches that could embrace in situ conservation models. I then provide an overview of the emergent field of 'biocultural approaches' before focusing on two case studies to understand if and how they provide opportunity for more inclusive environmental governance.

2 Creating space for interactional environmental governance

In the post-colonial era of the 1980s and 1990s, the development industry embraced more democratic approaches to government, and within them, environmental governance began its journey towards decentralisation (e.g. Wunsch and Olowu 1997; Weber 2000; Johnson and Forsyth 2002). Supported by international donors, it was underpinned by three main arguments: (i) that higher efficiency would result from greater competition at sub-national levels; (ii) that it would lead to greater inclusivity of and accountability to local stakeholders in decision-making; and (iii) that greater effectiveness would be achieved through working directly with local environmental knowledge. While some reforms did lead to improved interaction between central and local government, decentralisation has also been critiqued as leading simply to powerful state actors enhancing their own political positions. Evidence exists that in the worst cases, decentralisation led to measures that proved even more suffocating than previous centralised and top-down environmental governance (Lemos and de Oliveira 2004; Prud'homme 1995).

Within this overarching trend of moving away from centralised models, Lemos and Agrawal (2006) describe 'hybrid' environmental governance models. They include interactions between, states, markets and communities creating three potential forms: co-management is governance that comes from interaction between states and communities; public-private partnerships emerge through states engaging with the private sector; and, private-social partnerships are the result of communitiies sharing governance with private entities. Such hybrid forms of environmental governance are based largely on the recognition that no single agent possesses the capabilities to address the multiple facets, interdependencies and scales of environmental problems. They are, therefore, recognised as inherently cross-scalar and complex, and requiring greater interaction between multiple actors.

The theoretical and practical space for moving towards what Lemos and Agrawal call co-management between community and state actors came from a strong rejection of the centralised approaches of the 1970s and 1980s. In particular, Ostrom (1990) inspired many with her advocacy for self-governing approaches to collectively owned resources based on local institutions and practices that use place-specific knowledge embodied in communities. This first generation of 'collaborative environmental governance' approaches were both normative and descriptive (e.g. Brunner *et al.* 2002; Weber 2000). A number of scholars examining lessons learned from these early experiences note the importance of the organisational, institutional and social dimensions – such as trust between different stakeholders – to achieving desirable environmental outcomes (e.g. Born and Genskow 2000; Chess, Hance and Gibson 2000; Mullen and Allison 1999; Leach and Sabatier 2005; Leach and Pelkey 2001). Thus, even after just the early years of collaborative environmental governance, there was already recognition that implementation challenges lay less in the technical aspects of managing resources and more in the social realms of collaboration, power and equity.

More recently, environmental governance has been influenced by dynamic approaches focused on 'social-ecological systems' (Berkes 2012), in which the social and cultural dynamics are seen as linked with environmental dynamics, creating complex interacting wholes. From the interactional emphasis inherent in these systems approaches came greater recognition of the important role played by those who rely on and are embedded within them in adjusting to ongoing change (Pomeroy 1995; Berkes 2009). Adaptive co-management (Armitage, Marschke and Plummer 2008) and co-governance (Kooiman *et al.* 2008) both embrace this sentiment and advocate for interactional approaches. Kooiman and colleagues (*ibid.*: 17) define what is needed as focusing on 'the whole of interactions taken to solve societal problems and to create societal opportunities; including the formulation and application of principles guiding those interactions and care for institutions that enable and control them'. In this practically oriented view, multi-stakeholder platforms are common vehicles for deliberation and decision-making that move beyond just management of resources to link to broader societal problem-solving and dimensions of decision-making and power relations in governance. Multi-stakeholder processes rooted in local realities are thought to be well-suited to governing dynamic and constantly changing social-ecological systems.

Scholars working with indigenous knowledge have argued for a long time that it is the intimate knowledge of ecosystems resulting from co-evolution of people and place that gives them the capacity to learn, adapt and thus nurture diversity in their ecosystems (Posey 2002; Berkes 2012). Within the broad co-governance field of theory and practice is a particular field of indigenous co-governance which has been experimenting with sharing responsibility of resources located in the territories of indigenous and local communities (e.g. Berkes 2012). This has been the case particularly in Western settings such as North America, Australia and New Zealand, where most of the documented indigenous co-governance experience comes from. The evidence of their success in terms of supporting improved environmental governance by indigenous peoples, however, is mixed. A major hurdle faced is that their framing continues to emphasise formal recognition of indigenous knowledge into Western governance mechanisms. For example, Nadasdy (2003) argued that in the case of the Kluane First Nation in Canada, the formalisation of their knowledge into joint governance mechanisms with the government had, in fact, led to co-option and assimilation. At the heart of the challenge of shifting to approaches that can embrace indigenous and local communities' knowledge is the unequal power relations between communities and external agents of co-governance (be they government officials or well-meaning researchers) (e.g. Cinner *et al.* 2012). In poorer contexts, evidence suggests that this challenge is even harder to overcome, and may do more harm than good by reinforcing existing inequalities (Ribot 1999; Béné and Neiland 2004; Wilson *et al.* 2006).

Thus, while there is growing recognition in sustainability approaches overall that linking across different epistemologies should be understood as embedded within institutional and societal dynamics (e.g. van Kerkhoff and Lebel 2015; Polk 2015), in practice, it tends to be the formal and Western epistemologies that drive the processes and reach out to 'others'. Buz Holling, an early proponent of interactional and adaptive environmental management models, wrote in a seminal article more than 20 years ago of the 'pathology' of command and control or centralised approaches that lead to loss of diversity and resilience (Holling and Meffe 1996). And while much progress has been made conceptually, a recent review of links between theory and practice of resilience (Plummer 2016) indicates that the pathology of government-driven and controlled management is still pervasive in many contexts, and relinquishing control to local levels and broader stakeholder groups remains unusual.

In the field of conservation there is a similar acknowledgement now of a need to balance biodiversity conservation and human wellbeing (McShane *et al.* 2011; Borrini-Feyerband and Hill 2015). Yet paradoxically, we also see today a resurgence of state-driven approaches.

The 'new conservation science' approach argues that with such limited biodiversity remaining intact in the planet, we should return to a protectionist approach to better control the benefits humans can derive from the environment (Doak *et al.* 2014). Decades of critique of the 'protectionist' people-free models of conservation (and the creation of national protected areas) have highlighted that they disempower local and indigenous communities, threaten their food security and consequently give rise to increased levels of poverty (e.g. Shiva 2001; Rosset 2003). Yet the debate between the people-centred and protectionist approaches seems to be still alive, and at times continues to obstruct approaches that support local community rights (Wilshusen *et al.* 2002).

This brief review has shown that theories and models of environmental governance and conservation have moved away from centralised modes to espouse more interactional approaches. Experience from practice over several decades, and with indigenous and local communities specifically, suggests that both opportunities and challenges remain in shifting mindsets and practices. Creating space for the ontologies and rights of indigenous peoples and communities as drivers of interactional governance models remains an emergent field of inquiry and practice.

3   Emerging biocultural approaches

Biocultural approaches to conservation, governance and development all stem from the concept of biocultural diversity. The concept was built through the recognition of an inextricable link between traditional knowledge, the cultural and linguistic systems that knowledge is embedded in, and conservation of biodiversity (e.g. Posey 2002). Biocultural diversity was first used as a metric to document, compare and analyse the links between linguistic, cultural and biological diversity (Maffi 2001, 2005; Maffi and Woodley 2012). Through its early use, the unprecedented loss of biodiversity the planet is facing was shown to map directly onto the loss of cultures and linguistic groups (Woodley 2010). An imperative to conserve both brought together scholarship, action and advocacy in diverse programmes that share the goal of conserving the world's biocultural diversity. Davidson-Hunt *et al.* (2012: 36) summarise four themes that underpin the resulting agenda: (i) exploring the interactions between cultural, linguistic and biocultural diversity; (ii) identifying common threats to biocultural diversity and the impacts of its loss; (iii) developing approaches for conservation and revitalisation; and (iv) establishing rights associated with conservation of biocultural diversity.

For more than ten years, multiple research and activist initiatives have been exploring this agenda, some focused at the level of international policy and others focused on direct interventions in partnership with indigenous and local communities. Syntheses of the conceptualisation of biocultural approaches, and synthetic learning from and for practice, are therefore now possible, which suggests a maturing into a field of biocultural diversity. As shown in Figure 1, conceptually it is situated within broader systems approaches for engagement with dynamic interactive social-ecological systems. This also builds on evidence that indigenous knowledge systems implicitly (and, at times, explicitly) take a complex systems view of interactions that nurture wellbeing (e.g. Apgar, Argumedo and Allen 2009; Berkes and Berkes 2009). The field has developed processes that support reflection and learning and use spiritual engagement with land as a driver of wellbeing, leading to lessons that inform broader resilience-seeking initiatives (Allen *et al.* 2009; Apgar *et al.* 2015).

Figure 3.1 Conceptual foundations for biocultural approaches in social-ecological systems approaches and specific fields such as co-management within them
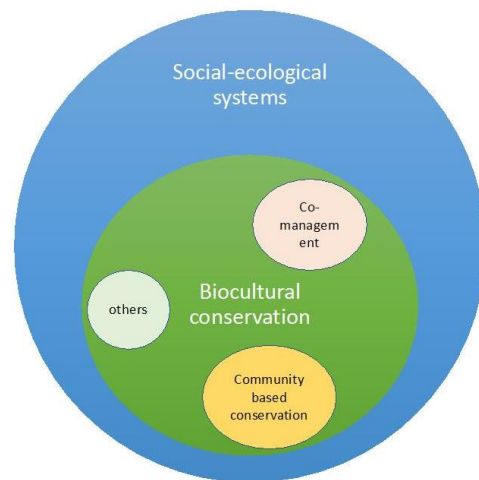
Source: Adapted from Gavin *et al.* (2015)

Key principles of biocultural approaches have been articulated recently (Gavin *et al.* 2015: 2) and illustrate a natural alignment with the values and principles of interactional environmental governance. They are holistic approaches; they acknowledge multiple objectives and stakeholders; they require tailored approaches to the particular cultural, social and ecological context; and are nesting across scales and transdisciplinary methodologies that nurture relationships and interactions.

A relatively new thread within the field brings together innovation and design thinking. Informed by Sen's (1999) capabilities framework, it emphasises endogenous development more directly than previous conceptualisations. As Davidson-Hunt *et al.* (2012) argued, the capabilities and self-determination of indigenous and local communities drives innovation and co-evolution of biocultural diversity. They suggest that a biocultural design approach is an empowering avenue to create 'new compositions of co-existence that work to extend the real freedoms of individuals and groups of people' (*ibid*.: 43). This move towards innovation from below reiterates that interactions should be driven from the local contextual reality, yet also create a space for hybrid approaches in collaboration with other stakeholders.

There is also a central work stream linked to international policy processes, building on established legal frameworks to protect rights over land, knowledge and practices. The CBD focuses on protecting the knowledge of local and indigenous communities that supports conservation, and within this remit, the International Union for Conservation of Nature (IUCN)'s Commission on Environmental, Economic and Social Policy (CEESP) has played a leading role in advocating for community-centred and biocultural approaches to development and conservation. Further, the FAO's International Treaty (ITPGRFA) focuses on the knowledge and framing practices of indigenous and local communities that support agrobiodiversity. Biocultural initiatives take a rights-based approach and therefore engage with these frameworks to support translation of policy into practice within nation states.

While engaging with existing frameworks, they also provide critique and identify alternative modes of engagement in the absence of political support. A notable example is the development of community biocultural protocols. Bavikatte and Jonas (2009: 12), in a report for Natural Justice, argued that the CBD regimes for access and benefit-sharing from use of traditional knowledge used a narrow conception and focused mainly on commercial application of traditional knowledge. This ignores the social-cultural systems, embedded within ecosystems that stem from an indigenous worldview and way of engagement, and

thus may pose a threat to their survival. They advocate for 'local integrity' – the ability of a system to achieve its own goals. Biocultural community protocols (BCPs) are offered as a means by which communities may respond to the gap of international and national regimes. They emphasise the processes through which communities codify their intention to self-determine their future in the production of their BCP. As the example shows, their biocultural framing argues that environmental governance for resilience is best achieved through local, endogenous development, which is rooted in the rights, knowledge and identities of those who remain stewards of biodiversity and agrobiodiversity.

We know that biocultural approaches to territorial and environmental conservation are conceptually aligned with interactional approaches, suggesting there is potential to build more equitable and inclusive governance models through them. They suggest that hybrid forms may emerge from the lived experience of knowledge and practice holders within social-ecological systems. They acknowledge a need to bring multiple stakeholders together. Yet the precarious nature of land titles and local people's rights make engagement risky at times. When the communities whose territories and livelihoods are at stake do not even have a place at the negotiating table, opening up their governance models to create 'hybrid' spaces is not always safe. Consequently, biocultural advocacy to support rights-based environmental governance at times focuses less on sharing power and more on claiming space to protect what remains at threat. This means that the biocultural arguments used in policy advocacy can, at times, fall into essentialism – such as advocating for local integrity at the expense of cross-scale interactions – which builds a dichotomous and somewhat naïve view of the local versus the global, or the formal versus the informal. This false dichotomy can not only obscure processes of marginalisation that occur not just between the top and the bottom but also within homogeneously presented 'communities', but may also become an unintended barrier to building interactional governance. In a time of global change, where the local is necessarily engaging with the global, this may be dangerous. A question remains, therefore, on the potential of biocultural approaches to create space for existent locally driven environmental governance while *at the same time* pursuing more interactional and inclusive approaches within national contexts.

4   Case studies

I selected the two case studies based on my own research experience with global indigenous networks (see, for example, Apgar 2010), availability of documentation of the experiences, and the availability of initiative implementers to provide reflections and learning through in-depth interviews to supplement the document review. The two cases are interlinked in practice, particularly in their policy-influencing strategies focused primarily on the global CBD agenda, yet also sufficiently different to be analysed as such. They illustrate the diverse ways in which biocultural approaches have been implemented. The first is based on comparative action research projects in different locations implemented with a central interest of protecting agrobiodiversity, while the second is based on grassroots and activist work in a large number of locations across the world focused on conservation of biodiversity. For each, I discuss how informal and formal governance processes intersect and what hybrid forms of knowledge and practice emerge to identify their potential for pursuing more interactional and inclusive environmental and territorial governance.

4.1 Indigenous biocultural heritage territories

The International Institute for Environment and Development (IIED) supports a stream of work on indigenous biocultural heritage that sits across their programmatic areas of natural resource management, biodiversity and agriculture. The institutional cross-cutting nature of the work stream in and of itself says something of the interdisciplinary and holistic

institutional arrangements required when using biocultural approaches. Through a rights-based approach, the central aim is to highlight and support the role of traditional knowledge for in situ biodiversity conservation. The logic of in situ conservation, rooted in place, culture and local ontologies, does not subscribe to linear thematic or disciplinary boundaries nor to the logic of government structures or thematic agendas. The scope of implementation bridges working directly with communities in context through an action research modality, to feed findings in to international policy spaces such as the CBD's work on access and benefit-sharing and their working group on article 8j. It is, thus, inherently a cross-scale endeavour.

The concept of indigenous biocultural heritage (IBCH), according to Argumedo and Pimbert (2008), builds on concepts from multiple disciplines and policy spaces that describe the social-ecological reality of indigenous peoples. It was developed endogenously through linking the lived realities of communities to existing scholarly and policy frameworks. It was first defined in May 2005 during a planning workshop for the Protecting Community Rights over Traditional Knowledge: Implications of Customary Laws and Practices project, which aimed to assist indigenous and local communities to protect their rights over traditional knowledge of biodiversity based on their customary laws. The emerging understanding was then used as a conceptual framework to develop cases of protecting community rights over traditional knowledge in India, China, Kenya, Panama and Peru. IBCH is a 'complex system of interdependent parts centred on the reciprocal relationship between indigenous peoples and their natural environment' (*ibid.*: 6). It was deemed appropriate to guide work in each site 'because it recognizes the inter-linkages between traditional knowledge, biodiversity, landscapes, cultural values, and customary law, and the need to protect traditional knowledge systems as a whole' (IIED 2007). This concept can be understood as appropriate for mediating between contextual in situ understandings and cross-case and broader themes that can be drawn from them in order to feed in to policy processes across scales.

Through use of IBCH as their guiding approach in five distinct localities, IIED found it to be useful analytically to engage with the interconnectedness of the parts of customary systems. For example, when analysing the biocultural heritage found in the traditional rice cultivation systems of the Eastern Himalayas, spiritual values associated with production were uncovered, while in the Peruvian Andes it broadened understanding of 'laws' to the more natural legal systems that exist in communities (IIED 2007). The concept was also useful in the development of tools to protect local traditional knowledge – for example, in Panama, the Kuna used it to frame a community protocol to manage engagement with external agents through their own appreciation of their interconnected knowledge system. This provides a concrete example of how strengthening understanding of the endogenous territorial system can support better interaction with research or development interventions, opening up potential for hybrid knowledge systems without putting local knowledge and wisdom at risk.

The IBCH case studies draw out key findings that describe the world views that underpin how indigenous and local communities conserve biodiversity. They provide evidence that these systems are holistic and based on spiritual beliefs with central principles that guide interactions, such as reciprocity, equilibrium and duality (Swiderska *et al.* 2009). Of particular interest are their findings on key drivers of intergenerational transmission and renewal of traditional knowledge systems, which are particularly relevant given the threats they face. They found that transmission is based on everyday practice of families and communities that relate to both wild and domesticated species and require access to sacred areas and local institutions to uphold customary law (*ibid.*). The action research process has provided a rich understanding of central elements of local systems of governance.

4.1.1 The Potato Park

The international IBCH partnership has since moved towards developing explicit hybrid governance models called IBCH Territories (IBCHT). A good example of this in practice is the Potato Park, in Cusco, Peru. The Potato Park is an IBCHT encompassing some 9,000 hectares of land managed collectively by six Quechua communities. The national setting for this globally recognised innovative model of community conservation is one of colonial and post-colonial land tenure systems that have displaced many indigenous communities from fertile lands. The six communities that today are governed through a collective system based on their customary laws were previously in conflict as they separately fought for land titles in the post-colonial tenure system. The Peruvian governments of the 1990s pursued neoliberal economic reforms that are known to benefit urban centres and consumption at the expense of rural livelihoods (Crabtree 2002; Bentley, Tripp and de la Flor 2001). With this agenda has come the promotion of biotechnologies, based on a perception of traditional agriculture as 'backwards', leading to further threats to the continuation of agrobiodiversity and associated germplasm. Yet it has been precisely the ability of the Quechua to protect agrobiodiversity that has enabled the Potato Park to produce a unique interactional approach to territorial governance.

As the name suggests, its central goal is to conserve the diversity of native potato species and varieties, understood as embedded within the traditional knowledge systems and social-cultural practices of the communities. Yet these systems are continuously evolving, and the potato is still important to the local economy through sale and bartering in local and regional markets. It is located in the southern Peruvian Andes, between 3,000 and 5,000 metres above sea level near Pisaq, in the sacred valley of the Cusco region, a micro-centre of origin of the potato and centre of diversity of other Andean crops including quinoa – a Vavilov Center of World Origin (Brush 2000). The park's mountain landscape includes several agro-ecological zones managed through traditional farming and gathering practices. Potatoes have been farmed in the region for more than 7,000 years and today some 600 varieties (and according to traditional knowledge classification, 1,344 different varieties) are still cultivated by the communities of the Potato Park (ANDES 2016).

The co-creation process and production of hybrid knowledge is the result of creating space for the communities of the Potato Park to protect their IBCH through strengthening and adapting an ancient approach to governance – the *ayllu* system. The *ayllu* was established in pre-Incan times as an economic, political, social and ecological governance approach (Rangifo Vasquez 1998). According to Argumedo and Wong (2010), the objective is to attain wellbeing, defined as *Sumaq Qausay* – the ideal that is sought after by men and women, which translates into social, economic and political wellbeing through a 'full life'. This idea of *buen vivir* (Spanish translation) as an alternative development model has gained ground in Latin America, based on this ancient concept of wellbeing that is holistic and interactional (Walsh 2010).

During Incan times, the *ayllu* was defined based on parentage and included three organisational levels: the family level, the group of families that shared the territory, and the overall territorial level. In high mountainous ecosystems, verticality, and establishment of agro-ecological zones contributing different agricultural produce at different elevations, is also an important organising feature that continues to be used today. The Potato Park was established through forming an agreement between the six communities that collectively govern the territory that comprises their *ayllu*, creating an Association of Communities of the Potato Park – this itself is a hybrid governance structure as the association formally gives them ability to engage with external actors as a collective. Each village elects a chairperson to coordinate the work of the association in their village. Within each, the family unit remains the productive unit, and distribution of land and crop rotation in the mosaic landscape of the

Potato Park is coordinated through village-level committees that are linked to the territorial governance through the association.

The IBCHT framing of the Potato Park experience has helped to make explicit and revive the underlying principles that have historically guided engagement between people and the mountain landscape. The most important principle that relates to management not just of the social world, but also the ecosystems, is the Andean concept of *ayni*. Translated as 'reciprocity', *ayni* is understood through mutuality and compensation with all living beings beyond just humans, and is central to how equilibrium is established (Walsh and Argumedo 2016) within the *ayllu*. This principle plays out in practice in decisions that are made around how to rotate crops as well as rituals used to continue to give back and engage with the natural and spiritual worlds. These practices have been revived through the Potato Park structures and procedures, thus making a direct link between these hidden and 'informal' ways of organising to more structured and formally recognised governance mechanisms.

The Association of Communities engages directly with external actors in building inclusive and effective environmental governance models. A concrete example of this is the establishment of a repatriation agreement with the International Potato Center (CIP), in which potato varieties that had been lost from the communities and stored in CIP's gene bank were returned. This is a unique global example, as the repatriation agreement did not just enable scientists to collaborate with local knowledge-holders, but in repatriating the varieties it also returned the rights over the knowledge and genetic material back to the local communities. The agrobiodiversity of the Potato Park makes it an extremely valuable in situ repository of wild and cultivated germplasm for the world. An ongoing collaboration between scientists from CIP and local experts has led to co-creation of knowledge and practice that ensures this agrobiodiversity will not be lost to commercial purposes. The Potato Park has made a contribution of potato varieties to the Svalbard global seed vault – a gesture that illustrates their identity as guardians of global agrobiodiversity.

The opportunity for interactional governance is mediated through a supporting external agent, the indigenous organisation Asociación ANDES from Cusco. ANDES' mission is 'to create local capacities and strategic responses to confront socio-economic, cultural, ecological and political effects of globalization on local Andean communities' (Argumedo and Stenner 2008). It has worked over the years with a number of international partners and donors on developing the IBCHT concept and its application, and its members are active in international debates and policy-making spheres, inherently crossing local informal spaces and national and international formal spaces of governance. The facilitating role that ANDES has played in bringing together the six communities in this cooperative form of landscape management continues to be instrumental. It has bridged scales and power relations – at times taking the 'voice' of communities to the international sphere where they do not otherwise have a voice, and at other times, more directly facilitating local voices to be heard within national policy processes. The space of mediation is necessarily messy and challenging to navigate. Collaboration does not mean consensus and conflict resolution through a mediator may sometimes be needed – a role that ANDES has had to play on occasion in order to evolve the Potato Park hybrid governance mechanisms.

ANDES works through local technicians from the communities who play an important daily role of facilitating the IBCHT model in practice. The creation of economic collectives (including a seed repatriation and conservation collective, a gastronomy collective, a women's video collective, a craft collective, a collective of guides and a medicinal plant collective) are intended to create opportunities to build local economy that is based on their valued biocultural resources. Taking advantage of its location in a major tourist destination (the sacred valley) has opened up other opportunities for interactional governance through an ecotourism project that links the park's ecosystems and economic collectives to a source of income. Yet, it is true also that the Potato Park and its *ayllu* system of governance sits

within the context of increasing pressures on rural agricultural-based livelihoods. There are strong incentives for people, especially young people, to migrate for temporary or permanent work opportunities, suggesting that any hybrid system in today's hyperconnected world needs to ensure it is reflexively understanding the direction it takes so as to be relevant and effective – and, indeed, to provide an ongoing avenue for *Sumaq Qausay*.

The case of IBCH and ICBHT work led by IIED, and the Potato Park as one example in a particular context, illustrate the potential for biocultural approaches to contribute from an 'informal' governance space, and to build hybrid approaches. The next generation of this stream of work is now moving towards supporting innovation as the driver of IBCH. The Smallholder Innovation for Resilience (SIFOR) project builds on the initial case studies and extends the work through documenting 'biocultural innovations'. A baseline study conducted in the Potato Park recently recorded 31 such biocultural innovations; 18 technological, 4 market, and 9 institutional (Asociación ANDES 2016: 8). This work is still maturing and hopes to bring to light the rich potential these models have for supporting adaptation to climate change and building more resilient and cross-scale governance, fuelled from the lived realities of marginalised communities who are interacting with an ever-changing and complex world.

4.1.2 Indigenous and community conserved areas (ICCAs)

The Indigenous and Community Conserved Areas (ICCA) Consortium is a relatively young organisation in a formal sense – it has been a registered Swiss non-profit for just seven years. It builds on work done by a large and growing number of local organisations that have historically focused on supporting biodiversity conservation through indigenous and community models. It currently has 99 member organisations and 220 honorary members (ICCA website, undated). This network of local, regional and global organisations has spent more than 20 years highlighting and building evidence for the role that indigenous peoples and communities play in nurturing and conserving biocultural diversity, striving to influence international and national policy.

As the Consortium's global coordinator, Grazia Borrini-Feyerabend, explains, the terms CCA or ICCA[2] are much more than acronyms; they refer to a synthetic concept that includes a diversity of approaches to territorial and biodiversity governance, each understood within context. Generically, community conserved areas are defined as 'natural and modified ecosystems with significant biodiversity, ecological and related cultural values, voluntarily conserved by indigenous peoples and local communities through customary laws or other effective means' (Kothari 2006: 3). In each locality, locally appropriate names are used – for example, *comunas* in Spain or *tierras colectivas* and *comarcas* in Panama. Years of work across locations has enabled the distillation of three essential features of all ICCAs: (i) a bond that one or more communities has with the ecosystems and/or species because of cultural or livelihood ties; (ii) management decisions made by the community leads to conservation of habitats, species, ecological benefits, whether that is its main objective or not; and (iii) some form of community governance mechanism exists enabling communities to play an important role in decision-making.

The rich diversity of experiences that are encompassed under the ICCA banner is increasingly visible as documented and shared through a global ICCA registry and also some national registries, which are enabling nationally focused work on ICCAs to progress (e.g. Pathak Broome and Dash 2012). The 48 experiences documented and shared through Borrini-Feyerabend *et al.*'s (2010) companion document to IUCN/CEESP Briefing Note No. 10 on ICCAs are but a small sample. They range from experiences in Northern contexts, such as community orchards in the UK and *comunales* in Spain, to coastal, inland water,

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[2] The consortium often uses the two interchangeably as the term community is used to include indigenous people for the sake of convenience while recognizing the special status of indigenous peoples (Kothari 2006).

mountain, forest and arid conservation areas across lower-income countries. What emerges from this picture of diversity is the incredible potential there is to harness local endogenous models for both conservation and development outcomes.

Crystallising the concept of ICCAs and much of the work to support them has emerged out of a research, policy and activist space fostered through the IUCN CEESP and its theme of people-centred conservation. Over time, greater diversity in governance models for supporting biodiversity conservation has been accepted by the IUCN and the CBD, now distinguishing between four types, based on who makes conservation decisions: type A (government); type B (rights-holders and stakeholders together); type C (private individuals and organizations); and type D (indigenous peoples or local communities) (Borrini-Feyerabend *et al.* 2014).

From the years of experience with many ICCAs, the Consortium has distilled a number of lessons. The first and probably most important lesson is that 'the strength and integrity of the concerned communities are essential to the existence and thriving of the ICCA' (Borrini-Feyerabend *et al.* 2010: 28). The resilience of local biocultural systems is linked to their capacity to govern through use of their traditional and now hybrid institutions, leadership and connection to their land. This lesson echoes the main thrust of much of the IBCHT work. One of the main advocacy arguments supporting ICCAs, building on this, is that instead of being considered 'informal' and therefore less important than formally protected areas, they should be recognised as *de facto* conserved areas based on the conservation outcomes they are already producing. As such, it is argued that they should be given a higher standing within national systems of conservation. As Kothari (2016: 10) notes, 'what is needed is a shift in thought paradigms – so that those focused on wildlife conservation need to expand their minds to respect the world's oldest conservationists – indigenous peoples and local communities'. This argument remains highly relevant in contexts where political and economic marginalisation, and neoliberal extractive agendas, continue to be real threats to the integrity of ICCAs that remain invisible in conservation systems.

The Global Forest Coalition, a member of the ICCA Consortium and itself a large network of organisations defending social justice and the rights of forest peoples, has responded to this particular threat through an initiative that aims to support the resilience of community conservation. Currently working with 60 forest communities in more than 20 countries, it conducts participatory assessments to understand the basis of community conservation resilience and identify demand-driven support mechanisms (Community Conservation Resilience Initiative 2015). In eastern Paraguay, for example, the participatory assessments brought to light that the conservation practices of peasant communities (which are themselves hybrid systems of traditional and agro-ecological practices) are severely undermined by the expansion of agro-industrial practices triggered by large-scale agro-industrial meat production that is used to frame national agricultural policy. This co-constructed evidence can now feed into policy advocacy to support peasant communities that currently have no land tenure rights (Apgar *et al.* 2017). These experiences underpin another lesson from across ICCAs that 'friends and allies from civil society can and do play crucial supporting roles' (Borrini-Feyerabend *et al.* 2010: 29) and 'external support to ICCAs is particularly helpful in: enforcing rules and providing fair and coherent judgement and retribution to violators; developing local capacities to respond to threats and manage conflicts; providing opportunities for joint learning; and fostering good governance at all levels' (*ibid.*: 38). The point to be made here is that there are many players interacting to support a bottom-up conservation agenda that respects local processes first and foremost.

This advocacy agenda is successfully influencing international policy in important ways. For example, at the recent CBD Conference of the Parties in December 2016, several decisions[3] were taken that have opened up more space for ICCAs to be recognised within national conservation regimes as already contributing to conservation outcomes. This shift is, in turn, moving the ICCA work from advocating for recognition to engaging more with the reality of being part of nested and overlapping governance systems (Borrini-Feyerabend and Hill 2015). The questions now are around how to ensure that community conservation may be strengthened within the evolving complex hybrid reality that poses both challenges and opportunities for building more inclusive governance.

Greater decentralisation of governance in many parts of the world is creating hybrid local governance systems. The experience with some ICCAs is that decentralisation leads to a rise in party politics ruling at the local level (seen, for example, in Cameroon, Senegal and Mali). Given that local integrity for conservation of biocultural diversity rests in large part on local leadership, the influx of party politics could undermine the ability to maintain a resilient system of conservation. This is not to suggest that local leadership is somehow free of power and manipulation, but rather, there is evidence that traditional decision-making mechanisms – based on their embedded relationship with the natural systems – tend to be better at supporting collective environmental goals. Downward accountability tends to be easier in systems that start from an in situ conservation logic where people can connect around territory. Yet on the other hand, in situations where powerful local leadership has historically marginalised sectors of the population, more hybrid forms of decentralised governance can help to dissipate this power and build more inclusivity.

There is an increasingly recognised need to further explore these questions of how the informal and formal mesh in ICCA contexts, to engage with them with a more nuanced appreciation of power dynamics not just across scales but also within scales, to better understand an interface that is becoming more prevalent. As the biocultural approach underpinning the ICCA work is applied in very different contexts, there is opportunity for future work to harness cross-context learning to further contribute practical experiences for managing the tensions that come with hybrid models of governance.

5 Opportunities and challenges for interactional and inclusive environmental governance

I established at the outset that the conceptual space for biocultural approaches to environmental and territorial governance is situated within broader interactional approaches that recognise a role for local spaces and knowledge. In spite of the slow shift towards supporting more bottom-up and interactional approaches (Plummer 2016), there is now an established precedent for inclusion of local knowledge and decision-making practices in environmental governance in many parts of the world. Yet creating space for the ontologies and rights of indigenous peoples and communities as drivers of interactional governance models is a relatively new endeavour. The two cases of biocultural approaches that I have explored started from the premise that inclusion of indigenous and other local communities

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[3] Decision XIII/2 on progress towards the achievement of Aichi Biodiversity targets 11 and 12 in which parties are invited to give consideration to areas that are managed under collective action by indigenous peoples and local communities, and to develop voluntary guidance and best practice on identifying and recognising ICCAs (Jonas, pers. comm.).

should be built on understanding their in situ models. It is important to note that what is understood in situ is not seen as static or historical, but as evolving and hybrid realities. The political activist imperative of much of the advocacy work related to indigenous development at times obscures this reality, and while the biocultural narratives can fall into this trap, their conceptual grounding in complexity means they are more likely to embrace the 'traditional' as alive and evolving.

Recent progress at the CBD illustrates a global policy commitment to recognising conservation efforts by communities that have historically been ignored in decision-making; it appears, therefore, that the informal is now catching the policy-makers' attention, at least in the global sphere. The IBCHT case provides evidence that a different ontological reality forms the foundation for the way communities engage with territory – in the case of the Quechua of the Andes, their *ayllu* system embodies that ontology and organises life systemically. The outcomes of this ongoing engagement are manifest in many realms or disciplines – for example, the agrobiodiversity required to support food security and nutrition and the cultural and natural heritage to support a local ecotourism economy; these are both modern and evolving realities but are firmly rooted in ancient ontologies. Using a holistic approach, such as IBCH, which attempts to understand the complex interactions in situ, opens up the opportunity to see multiple outcomes as they are emerging. This 'in-situ political ecology of agricultural biodiversity' (Graddy 2013) is, in and of itself, a significant contribution. And practically, what is interesting in the Potato Park example in Peru, is that this view of what works is precisely what helps it to engage and support more meaningful and inclusive cross-scale interactions. The repatriation agreement with CIP is a collaboration that continues to fuel co-creation of new knowledge, bringing science and traditional knowledge together to better support environmental outcomes not just locally but globally, through safeguarding valuable agrobiodiversity. Rooting today's governance in the historical *ayllu* system is, therefore, fuelling a contemporary and interactional approach.

A similar lesson emerges from the ICCA work, where across many different contexts (including in Europe and other Northern settings), local experiences show that in spite of conservation often not being the central premise for decision-making about natural resources and territory, the 'informal' governance mechanisms are, in fact, *better at* achieving and sustaining conservation goals than many formal conservation efforts. Both cases, therefore, illustrate that creating space to value the integrity of the livelihoods, conservation and governance systems in situ is a necessary first step to building more interactional approaches. It is possible, with this approach, to create space for existent locally driven environmental governance while *at the same time* pursuing more interactional and inclusive approaches within national contexts. This is achieved through starting with rom what works locally and seeing that as the grounding for how to interact across scales. The grounding is what ensures the social justice outcomes for historically excluded people. The discourse and advocacy arguments of proponents of biocultural approaches that are based on this evidence – calling for a realignment of conservation towards rights and self-determination – may well be normative political statements; however, they are also evidenced calls for building more effective vehicles to achieving improved conservation and development outcomes.

Interactional environmental governance approaches advocate for greater interaction between different stakeholders, and biocultural approaches suggest more attention should be placed on the interactions between the formal and the informal. Recent research on the importance of 'formalising' local governance in Yugoslavia (see Khan Mohmand 2016: 22) suggests that 'bringing government closer to the people in the form of formalising of organic local institutions appears to matter' in terms of citizen participation and service delivery. Yet the ways in which that interaction unfolds are particularly important in contexts of political marginalisation. The ICCA experiences vary on this point. In some cases, ICCA proponents seek formalisation into national conservation mechanisms because without recognition, they

cannot support their desired goals. In other settings, particularly where decentralisation and devolution is still young (such as in some African countries like Kenya), there is a risk that party politics will corrupt local decision-making and further degrade the local processes that are central to achieving environmental goals. This suggests that there is no 'one size fits all' for interactional governance; it is more important to pay attention to *how* the interactions play out in different contexts.

Both the IBCHT and ICCA experiences provide evidence that social movements and research and development organisations can be important 'friends' and 'allies' that facilitate interactional approaches and linking out from local contexts. Yet these interactions are complex and it would be naïve to suggest that they are void of tensions or easily navigated. As Shankland *et al.* (2016) caution from their experiences in Brazil, the claim-making and dialogue between social movements that advocate for the rights of indigenous peoples and their local governance mechanisms is not without challenges, as leadership must maintain legitimacy with the grassroots while playing a cross-scale role. The mediating role and capacity required to link across scales is a fundamental challenge for indigenous peoples whose governance mechanisms are rooted within a bottom-up logic embedded in territory, and who are now engaging with national and global processes that are built on representative systems decoupled from scale (Apgar 2010). The skills required to navigate the interactions stem back to traditional and continuously evolving leadership development systems that build facilitating leaders who are able to mediate between worlds (*ibid.*). Thus, the hybrid spaces that biocultural approaches seek and the interactions between the formal and informal call for interactional leadership and facilitation skills. Without attention to the quality of interaction, they may just as easily undermine the integrity of biocultural heritage systems and thus exclude instead of include.

6 Conclusion: implications for supporting inclusive environmental governance

Adaptive co-management (Armitage *et al.* 2008) and co-governance (Kooiman *et al.* 2005) models of environmental governance embrace interaction and open up opportunities to use multi-stakeholder processes rooted in local realities to engage with complex and cross-scale challenges. Donors and implementing agencies concerned with protecting the significant portion of the world's remaining biodiversity that is nurtured by indigenous peoples and local communities can play a supporting role by:

i. Understanding what exists in context: biocultural approaches start from what exist in situ. They provide concrete and compelling evidence that environmental and social outcomes may be nurtured when existing ways of knowing, engaging with and nurturing biocultural diversity are respected. These are not static but are evolving, and take hybrid forms, and can only be understood in context. In the exploration of what exists, it is important not to focus through a thematic or sectoral lens (our expert lenses) only but to start broad and build a picture of how various spaces are connected and interacting. The IBCHT work provides a framework that is based on social-ecological systems theory to build holistic understanding of conservation, development and territory as locally rooted and connected to national and global processes.

ii. Building understanding of how the informal interfaces with the formal: with a greater understanding of what exists, both formally and informally, and the specific technical, social and political challenges faced in a particular context, it is then possible to explore in greater depth the space in between the formal and informal. This space is

where opportunity for hybrid processes emerges, and addressing complex environmental challenges becomes possible, yet it must be carefully negotiated. A power analysis can help bring to light hidden and invisible power that may influence if and how well-meaning attempts to create greater interaction or 'formalisation' of the informal leads to opening up or closing down spaces for voice of the marginalised.

iii.   Building trust and partnership: the biocultural approaches came from initiatives that are possible because of longstanding relationships between allies that have built trust. A major challenge faced by many supporting processes that start from the local are the short donor timelines that expect quick results (often with large targets at large scale) and only want to fund new innovative programming at every cycle. The complexity of working across scales to build interactions that can support real inclusion, with systems of governance and leadership that bridge local to global logics, is not amenable to quick fixes. IIED, for example, has built the IBCHT work over decades of interaction with partners through an action research modality. More of these partnerships are needed to support emergent processes of understanding and change.

iv.   Developing appropriate capacities to facilitate interactions: a key lesson from experiences of implementing biocultural approaches is that what matters most, in context, is how interactions are mediated between multiple stakeholders. Traditionally, intervention or development leaders are rewarded for strengthening their own programmes (or departments) and not for building links to others. Disconnected interventions led by subject matter experts are common in environmental management as in all fields. Yet integrative or systemic programming requires a shift to putting the bigger vision before the immediate needs of any one programme or organisation. A critical leadership attribute, therefore, is the ability to bridge different viewpoints and help people develop and articulate a shared vision. Often undervalued in collaborative programming, particularly in the realm of environmental management (which is traditionally dominated by reductionist science), is the social process 'expert' whose role is to see across scales and spaces and build new ways of communicating. Using biocultural approaches requires careful consideration of these social process skillsets and their associated mindsets.

v.   Using systemic monitoring and evaluation (M&E) methods and tools: there is much conceptual and methodological development in systemic approaches to planning, monitoring and evaluating development interventions (for examples, see articles in the 2015 *IDS Bulletin Towards Systemic Approaches to Evaluation and Impact*, and a CDI practice paper on *Assessing Impact in Dynamic and Complex Environments*). Yet much of this progress still fails to influence the way in which M&E systems are built and therefore how we measure success. Biocultural approaches and interventions are not amenable to linear, indicator-driven measures of success because they seek social change and work with emergent processes in complex settings. Using appropriate mechanisms to plan, monitor, evaluate and learn from change processes as they unfold can become a powerful tool in building more inclusive interventions.

References

Agrawal, A. (2007) 'Forests, Governance, and Sustainability: Common Property Theory and its Contributions', *International Journal of the Commons* 1.1: 111–36

Agrawal, A. (2002) 'Indigenous Knowledge and the Politics of Classification', *International Social Science Journal* 54.173: 287–97

Agrawal, A. (1995) 'Dismantling the Divide Between Indigenous and Scientific Knowledge', *Development and Change* 26.3: 413–39

Allen, W.; Ataria, J.M.; Apgar, J.M.; Harmsworth, G. and Tremblay, L.A. (2009) '*Kia pono te mahi putaiao* – Doing Science in the Right Spirit', *Journal of the Royal Society of New Zealand* 39.4: 239–42

Altieri, M.A. and Toledo, V.M. (2011) 'The Agroecological Revolution in Latin America: Rescuing Nature, Ensuring Food Sovereignty and Empowering Peasants', *The Journal of Peasant Studies* 38.3: 587–612

Apgar, J.M. (2010) 'Adaptive Capacity for Endogenous Development of Kuna Yala, an Indigenous Biocultural System', Doctoral dissertation, Lincoln University

Apgar, J.M.; Argumedo, A. and Allen, W. (2009) 'Building Transdisciplinarity for Managing Complexity: Lessons from Indigenous Practice', *International Journal of Interdisciplinary Social Sciences* 4.5: 255–70

Apgar, J.M.; Allen, W.; Moore, K. and Ataria, J. (2015) 'Understanding Adaptation and Transformation through Indigenous Practice: The Case of the Guna of Panama', *Ecology and Society* 20.1: 45

Apgar, J.M.; Mustonen, T.; Lovera, S. and Lovera, M. (2017) 'Moving Beyond Co-Construction of Knowledge to Enable Self-Determination', *IDS Bulletin* 47.6, http://bulletin.ids.ac.uk/idsbo/article/view/2830/ONLINE%20ARTICLE (accessed 6 November 2017)

Argumedo, A. and Pimbert, M. (2008) *Protecting Farmers' Rights with Indigenous Biocultural Heritage Territories: The Experience of the Potato Park*, International Institute for Environment and Development (IIED)/Asociación ANDES

Argumedo, A. and Stenner, T. (2008) *Association ANDES: Conserving Indigenous Biocultural Heritage in Peru,* London: International Institute for Environment and Development

Argumedo, A. and Wong, B.Y.L. (2010) 'The *Ayllu* System of the Potato Park (Peru)', in C. Bélair, K. Ichikawa, B.Y.L. Wong and K.J. Mulongoy (eds), *Sustainable Use of Biological Diversity in Socio-ecological Production Landscapes,* Background to the 'Satoyama Initiative for the benefit of biodiversity and human well-being', Technical Series no. 52, Montreal: Secretariat of the Convention on Biological Diversity, www.cbd.int/doc/publications/cbd-ts-52-en.pdf (accessed 7 November 2017)

Armitage, D.; Marschke, M. and Plummer, R. (2008) 'Adaptive Co-management and the Paradox of Learning', *Global Environmental Change* 18.1: 86–98

Asociación ANDES (2016) *Resilient Farming Systems in Times of Uncertainty: Biocultural Innovations in the Potato Park, Peru*, London: International Institute for Environment and Development, http://pubs.iied.org/14663IIED/ (accessed 1 November 2017)

Bavikatte, K. and Jonas, H. (eds) (2009) *Bio-Cultural Community Protocols: A Community Approach to Ensuring the Integrity of Environmental Law and Policy*, United Nations Environment Programme/Natural Justice

Béné, C. and Neiland, A.E. (2004) 'Empowerment Reform, Yes… But Empowerment of Whom? Fisheries Decentralization Reforms in Developing Countries: A Critical Assessment with Specific Reference to Poverty Reduction', *Aquatic Resources, Culture and Development* 1.1: 35–49

Bentley, J.W.; Tripp, R. and de la Flor, R.D. (2001) 'Liberalization of Peru's Formal Seed Sector', *Agriculture and Human Values* 18.3: 319–31

Berkes, F. (2012) 'Implementing Ecosystem-based Management: Evolution or Revolution?' *Fish and Fisheries* 13.4: 465–76

Berkes, F. (2009) 'Evolution of Co-Management: Role of Knowledge Generation, Bridging Organizations and Social Learning', *Journal of Environmental Management* 90.5: 1692–1702

Berkes, F. and Berkes, M.K. (2009) 'Ecological Complexity, Fuzzy Logic, and Holism in Indigenous Knowledge', *Futures* 41.1: 6–12

Born, S.M. and Genskow, K.D. (2000) 'Toward Understanding: New Watershed Initiatives', A report from the Madison Watershed Workshop, University of Wisconsin-Madison

Borrini-Feyerabend, G.; Lassen, B.; Stevens, S.; Martin, G.; de la Peña, J.R.; Ráez-Luna, E.F. and Farvar, M.T. (2010) *Bio-cultural Diversity Conserved by Indigenous Peoples and Local Communities – Examples & Analysis*, IUCN/CEESP

Borrini-Feyerabend, G. and Hill, R. (2015) 'Governance for the Conservation of Nature', in G.L. Worboys, M. Lockwood, A. Kothari, S. Feary and I. Pulsford (eds) *Protected Area Governance and Management*, Canberra: ANU Press

Borrini-Feyerabend, G.; Bueno, P.; Hay-Edie, T.; Lang, B.; Rastogi, A. and Sandwith, T. (2014) *A Primer on Governance for Protected and Conserved Areas*, Gland, Switzerland: IUCN

Brunner, R.D.; Colburn, C.H; Cromley, C.E.; Klein, R.A. and Olson, E.A. (2002) *Finding Common Ground: Governance and Natural Resources in the American West,* Yale University Press

Bryan, J. (2009) 'Where Would We Be Without Them? Knowledge, Space and Power in Indigenous Politics', *Futures* 41.1: 24–32

Brush, S.B. (2000) *Genes in the Field: On-farm Conservation of Crop Diversity*. International Plant Genetic Resources Institute (IPGRI)/Lewis Publishers/International Development Research Centre (IDRC)

Chess, C.; Hance, B.J. and Gibson, G. (2000) 'Adaptive Participation in Watershed Management', *Journal of Soil and Water Conservation* 55.3: 248–52

Chomsky, A. (2016) 'Social Impacts of Resource Extraction', *Latin American Research Review* 51.1: 243–54

Cinner, J.E.; McClanahan, T.R.; MacNeil, M.A.; Graham, N.A.; Daw, T.M.; Mukminin, A.; Feary, D.A.; Rabearisoa, A.L.; Wamukota, A.; Jiddawi, N.; Campbell, S.J.; Baird, A.H.; Januchowski-Hartley, F.A.; Hamed, S.; Lahari, R.; Morove, T. and Kuange, J. (2012) 'Comanagement of Coral Reef Social-Ecological Systems', *Proceedings of the National Academy of Sciences of the United States of America* 109: 5219–5222

Clunan, A.L. and Trinkunas, H.A. (eds) (2010) *Ungoverned Spaces: Alternatives to State Authority in an Era of Softened Sovereignty*, Stanford CA: Stanford University Press

Coates, K. (2003) *A Global History of Indigenous Peoples,* London: Palgrave Macmillan

Crabtree, J. (2002) *Peru: An Oxfam Country Profile*, Oxford: Oxfam Publishing

Crutzen, P.J. (2006) 'The "Anthropocene"', in E. Ehlers and T. Krafft (eds) *Earth System Science in the Anthropocene,* Springer-Verlag Berlin Heidelberg

Davidson-Hunt, I.J.; Turner, K.L.; te Pareake Mead, A.; Cabrera-Lopez, J.; Bolton, R.; Idrobo, C.J.; Miretski, I.; Morrison, A. and Robson, J.P. (2012) 'Biocultural Design: A New Conceptual Framework for Sustainable Development in Rural Indigenous and Local Communities', *SAPI ENS (Surveys and Perspectives Integrating Environment and Society)* 5.2

De Vente, J.; Reed, M.S.; Stringer, L.C.; Valente, S. and Newig, J. (2016) 'How Does the Context and Design of Participatory Decision Making Processes Affect their Outcomes? Evidence from Sustainable Land Management in Global Drylands', *Ecology and Society* 21.2: 24

Dirzo, R. and Raven, P.H. (2003) 'Global State of Biodiversity and Loss', *Annual Review of Environment and Resources* 28.1: 137–67

Doak, D.F.; Bakker, V.J.; Goldstein, B.E. and Hale, B. (2014) 'What Is the Future of Conservation?' *Trends in Ecology & Evolution* 29.2: 77–81

Esquinas-Alcázar, J. (2005) 'Protecting Crop Genetic Diversity for Food Security: Political, Ethical and Technical Challenges', *Nature Reviews Genetics 6.*12: 946–53

Gavin, M.C.; McCarter, J.; Mead, A.; Berkes, F.; Stepp, J.R.; Peterson, D. and Tang, R. (2015) 'Defining Biocultural Approaches to Conservation', *Trends in Ecology & Evolution* 30.3: 140–45

Graddy, T.G. (2013) 'Regarding Biocultural Heritage: In Situ Political Ecology of Agricultural Biodiversity in the Peruvian Andes', *Agriculture and Human Values* 30.4: 587–604

Greiner, C. and Sakdapolrak, P. (2016) 'Migration, Environment and Inequality: Perspectives of a Political Ecology of Translocal Relations', in R. McLeman, J. Schade and T. Faist (eds), *Environmental Migration and Social Inequality.* Advances in Global Change Research, vol 61. Springer

Holling, C.S. and Meffe, G.K. (1996) 'Command and Control and the Pathology of Natural Resource Management', *Conservation Biology* 10.2: 328–37

Hooghe, L. and Marks, G. (2003) 'Unraveling the Central State, but How? Types of Multi-level Governance', *American Political Science Review* 97.2: 233–43

IAASTD (2009) *Agriculture at a Crossroads: A Global Summary for Decision Makers,* The International Assessment of Agricultural Knowledge, Science, and Technology for Development, Washington DC: Island Press

IIED (2007) Protecting Community Rights over Traditional Knowledge, Research Partners' Workshop, Panama, November, http://pubs.iied.org/pdfs/G02212.pdf (accessed 24 November 2017)

ISSC, IDS and UNESCO (2016) *World Social Science Report 2016. Challenging Inequalities: Pathways to a Just World,* Paris: UNESCO Publishing

Johnson, C. and Forsyth, T. (2002) 'In the Eyes of the State: Negotiating a "Rights-Based Approach" to Forest Conservation in Thailand', *World Development* 30: 1591–1605

Khan Mohmand, S. (2016) *Informal Local Governance Institutions: What They Do and Why They Matter?* IDS Working Paper 468, Brighton: IDS

Kooiman, J.; Bavinck, M.; Chuenpagdee, R.; Mahon, R. and Pullin, R. (2008) 'Interactive Governance and Governability: An Introduction', *Journal of Transdisciplinary Environmental Science* 7.1: 1–11

Kothari, A. (2006) 'Community Conserved Areas: Towards Ecological and Livelihood Security'*, Parks* 16.1: 3–13

Leach, W.D. and Pelkey, N.W. (2001) 'Making Watershed Partnerships Work: A Review of the Empirical Literature', *Journal of Water Resources Planning and Management* 127.6: 378–85

Leach, W.D. and Sabatier, P. A. (2005) 'Are Trust and Social Capital the Keys to Success? Watershed Partnerships in California and Washington', *Swimming Upstream: Collaborative Approaches to Watershed Management*, 233–58, https://vtechworks.lib.vt.edu/handle/10919/68210 (accessed 2 November 2017)

Lemos, M.C. and Agrawal, A. (2006) 'Environmental Governance', *Annual Review of Environment and Resources* 31: 297–325

Lemos, M.C. and de Oliveira, J.L.F. (2004) 'Can Water Reform Survive Politics? Institutional Change and River Basin Management in Ceará, Northeast Brazil', *World Development* 32.12: 2121–37

Maffi, L. (2005) 'Linguistic, cultural, and biological diversity', *Annual Review of Anthropology* 34*: 599–617

Maffi, L. (2001) *On Biocultural Diversity: Linking Language, Knowledge, and the Environment,* Washington: Smithsonian Institute Press

Maffi, L. and Woodley, E. (2012) *Biocultural Diversity Conservation: A Global Sourcebook,* New York: Earthscan

McShane, T.O.; Hirsch, P.D.; Trung, T.C.; Songorwa, A.N.; Kinzig, A.; Monteferri, B. *et al.* (2011) 'Hard Choices: Making Trade-offs Between Biodiversity Conservation and Human Well-being', *Biological Conservation* 144.3: 966–72

Molnar, A., Scherr, S. and Khare, A. (2004) *Who Conserves the World's Forests? Community-Driven Strategies to Protect Forests and Respect Rights*, Washington DC: Forest Trends and Agricultural Partners, www.forest-trends.org/publication_details.php?publicationID=384 (accessed 2 November 2017)

Mullen, M.W. and Allison, B.E. (1999) 'Stakeholder Involvement and Social Capital: Keys to Watershed Management Success in Alabama', *Journal of the American Water Resources Association* 35.3: 655–62

Nadasdy, P (2003) *Hunters and Bureaucrats: Power, Knowledge and Aboriginal-State Relations in the Southwest Yukon,* Vancouver: UBC Press

Ostrom E. (1990) *Governing the Commons: The Evolution of Institutions for Collective Action*, New York: Cambridge University Press

Pathak Broome, N. and Dash, T. (2012) 'Recognition and Support of ICCAs in India', in A. Kothari, with C. Corrigan, H. Jonas, A. Neumann and H. Shrumm (eds), *Recognising and Supporting Territories and Areas Conserved By Indigenous Peoples And Local Communities: Global Overview and National Case Studies*, Secretariat of the Convention on Biological Diversity, Technical Series no. 64, Kalpavriksh and Montreal: ICCA Consortium and Natural Justice, www.cbd.int/pa/doc/ts64-case-studies/india-en.pdf (accessed 7 November 2017)

Patton, M. (1990) *Qualitative Evaluation and Research Methods*, Thousand Oaks CA: SAGE Publications

Plummer, R.; Baird, J.; Bullock, R.; Dupont, D. and Renzetti, S. (2016) 'Probing the Relationship between Ecosystem Perceptions and Approaches to Environmental Governance: An Exploratory Content Analysis of Seven Water Dilemmas', *Resilience* 1–20

Plumptre, T. and Graham, J. (1999) *Governance and Good Governance: International and Aboriginal Perspectives*, Ottawa: Institute on Governance

Polk, M. (2015) 'Transdisciplinary Co-Production: Designing and Testing a Transdisciplinary Research Framework for Societal Problem Solving', *Futures* 65: 110–22

Pomeroy, R.S. (1995) 'Community-based and Co-Management Institutions for Sustainable Coastal Fisheries Management in Southeast Asia', *Ocean & Coastal Management* 27.3: 143–62

Posey, D. (2002) 'Upsetting the Sacred Balance: Can the Study of Indigenous Knowledge Reflect Cosmic Connectedness?', in P. Sillitoe, A. Bicker and J. Pottier (eds), *Participating in Development: Approaches to Indigenous Knowledge,* New York: Routledge

Prud'homme R. (1995) 'The Dangers of Decentralization', *The World Bank Research Observer* 10.2: 201–20, http://documents.worldbank.org/curated/en/602551468154155279/The-dangers-of-decentralization (accessed 2 November 2017)

Raffles, H. (2003) *Intimate Knowledge,* Center for Global, International and Regional Studies, https://escholarship.org/content/qt1p69t326/qt1p69t326.pdf (accessed 2 November 2017)

Rangifo Vasquez, G. (1998) 'The Ayllu', in F. Apffel-Marglin and PRATEC (The Center for Mutual Learning) (eds), *The Spirit of Regeneration: Andean Culture Confronting Western Notions of Development*, London: Zed Books

Reed, M.S. (2008) 'Stakeholder Participation for Environmental Management: A Literature Review', *Biological Conservation* 141.10: 2417–31

Ribot, J.C. (1999) 'Decentralization, Participation and Accountability in Sahelian Forestry: Legal Instruments of Political-Administrative Control', *Africa: Journal of the International African Institute* 69.1: 23–65

Rice, J. (2016) 'Slow Violence and the Challenges of Environmental Inequality', *Environmental Justice* 9.6: 176–80

Rosset, P. (2003) 'Food Sovereignty: Global Rallying Cry of Farmer Movements', *Food First Backgrounder* 9.4: 1–4

Sen, A. (1999) *Development as Freedom*, Oxford: Oxford University Press

Shankland, A.; Sullivan, Z.; Alberto Dayrell, C.; Crystina Alvarenga, A. and Felipe Batista Rocha, D. (2016) '*Traditional Peoples' and the Struggle for Inclusive Land Governance in Brazil*, IDS Working Paper 477, Brighton: IDS

Shiva, V. (2001) *Protect or Plunder? Understanding Intellectual Property Rights*, London: Zed Books

Shiva, V. (1993) 'Monocultures of the Mind', *Trumpeter* 10.4

Smith, L.T. (1999) *Decolonizing Methodologies: Research and Indigenous Peoples,* London: Zed Books

Swiderska, K.; Argumedo, A.; Song, Y.; Li, J.; Pant, R.; Herrera, H.; Mutta, D.; Munyi, P. and Vedavathy, S. (2009) *Protecting Community Rights over Traditional Knowledge: Implications of Customary Laws and Practices. Key Findings and Recommendations 2005-2009,* http://pubs.iied.org/pdfs/14591IIED.pdf (accessed 6 November 2017)

Turnbull, D. (2009) 'Futures for Indigenous Knowledges', *Futures* 41.1: 1–5

Van Kerkhoff, L.E. and Lebel, L. (2015) 'Coproductive Capacities: Rethinking Science-Governance Relations in a Diverse World', *Ecology and Society* 21.1: 14

Walsh, C. (2010) 'Development as Buen Vivir: Institutional Arrangements and (De)Colonial Entanglements', *Development* 53.1: 15–21

Walshe, R. and Argumedo, A. (2016) 'Ayni, Ayllu, Yanantin and Chanincha: The Cultural Values Enabling Adaptation to Climate Change in Communities of the Potato Park, in the Peruvian Andes', *GAIA-Ecological Perspectives for Science and Society* 25.3: 166–73

Weber EP. (2000) 'A New Vanguard for the Environment: Grass-roots Ecosystem Management as a New Environmental Movement, *Society & Natural Resources* 13.3: 237–59

Westbury, N.D. (2002) 'The Importance of Indigenous Governance and its Relationship to Social and Economic Development', Unpublished background issues paper produced for Reconciliation Australia, Indigenous Governance Conference, 3–5 April, Canberra

Wilshusen, P.R.; Brechin, S.R.; Fortwangler, C.L. and West, P.C. (2002) 'Reinventing a Square Wheel: Critique of a Resurgent "Protection Paradigm'' in International Biodiversity Conservation', *Society & Natural Resources* 15.1: 17–40

Wilson, D.C.; Ahmed, M.; Siar, S.V. and Kanagaratnam, U. (2006) 'Cross-Scale Linkages and Adaptive Management: Fisheries Co-management in Asia', *Marine Policy* 30.5: 523–33

Woodley, E. (2010) 'Lessons Learned from the Projects', in L. Maffi and E. Woodley (eds), *Biocultural Diversity Conservation: A Global Sourcebook*, New York: Earthscan

Wunsch, J.S. and Olowu, D. (1997) 'Regime Transformation from Below: Decentralization, Local Governance, and Democratic Reform in Nigeria', *Studies in Comparative International Development* 31.4: 66–82