ecosystem services for poverty alleviation

UNIVERSITY OF BIRMINGHAM

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Governance for Ecosystem Services and Poverty Alleviation

GESPA Working Paper 1: Analysing Governance of Renewable Natural Resources for Delivering Ecosystem Health and Poverty Alleviation

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1. Introduction

The 'Governance for Ecosystem Services and Poverty Alleviation' (GESPA) project aims to identify and collate findings and lessons on governance from ten years of projects funded by the UK Ecosystem Services for Poverty Alleviation (ESPA) programme. ESPA has been funding research into the relationships between ecosystem services and poverty alleviation in diverse settings and locations since 2007. In 2016, ESPA awarded grants to synthesize findings and lessons from previous and ongoing research; GESPA is one of these projects.

GESPA's focus on governance stems from recognition of the critical role of governance in mediating the links between ecosystem services and poverty alleviation. Such links, particularly positive links, are not automatic and are supported or constrained by a range of factors associated with governance. These include who makes decisions about how natural resources are used, how power is distributed and whether some groups of people are excluded from decision-making. Such decision-making arrangements, processes and outcomes affect ecosystem health and local livelihoods.

Wider recognition of the importance of governance for sustainable development is seen in Goal 16 of the Sustainable Development Goals (SDGs) (UN, 2015). Goal 16 seeks to:

> Promote peaceful and inclusive societies for sustainable development, provide access to justice for all and build effective, accountable and inclusive institutions at all levels.

Relevant targets of Goal 16 for the governance for ecosystem services and poverty alleviation include:

> 16.5 Substantially reduce corruption and bribery in all their forms
> 16.6 Develop effective, accountable and transparent institutions at all levels
> 16.7 Ensure responsive, inclusive, participatory and representative decision-making at all levels

In addition to Goal 16, GESPA seeks to contribute to the achievement of Goals 14 and 15, seeing governance as essential to the delivery of more sustainable and equitable use of marine and terrestrial ecosystems.

> Goal 14. Conserve and sustainably use the oceans, seas and marine resources for sustainable development
> Goal 15. Protect, restore and promote sustainable use of terrestrial ecosystems, sustainably manage forests, combat desertification, and halt and reverse land degradation and halt biodiversity loss

In seeking to contribute to the achievement of SDGs, GESPA aims to generate new knowledge on how to achieve improved governance for ecosystem services and poverty alleviation through reviewing how governance has been investigated and understood by a diversity of ESPA projects and situating that in a wider mapping of relevant literature. GESPA seeks to answer two research questions:

1. *What has been learnt from ESPA research on the nature and performance of governance arrangements, systems and processes at multiple levels for ecosystem health and poverty alleviation?*

2. *How do different governance approaches, from the global to local, shape the distribution of power and resources and with what impacts on poverty, equality and ecosystems?*

The purpose of this Working Paper is to establish a theoretical foundation that will guide the project's investigations into the above two research questions. The paper begins with a review of definitions of governance, natural resources and ecosystem services, and poverty alleviation. It moves on to identifying key themes within relevant literature, governance principles, theories and analytical frameworks and instruments associated with governance systems. The key points from the review are then summarised in the conclusion.

This Working Paper will be used to guide two phases of the GESPA project. The first phase involves the analysis of how governance has been interpreted, investigated and analysed within ESPA projects. The second situates GESPA research within the broader literature through a systematic mapping of literature associated with natural resource/ecosystem services and poverty alleviation. The review of literature presented in this Working Paper does not then seek to be comprehensive or exhaustive but to provide a guide for the project analysis and to the more systematic mapping.

2. Definitions

Defining the key terms utilised in the research questions will assist in identifying key characteristics and keywords for literature searches. However, there are multiple definitions for each of the key terms and the definitions are contested. Whilst such contestations may be noted here, the review of definitions is not exhaustive, but key points and issues from literature are identified. Definitions are considered here for: governance, natural resource governance, renewable natural resources, ecosystems, ecosystem services, poverty and related terms to poverty.

Governance, natural resource governance and ecosystem governance

Governance is widely seen as reflecting a shift in decision-making away from government alone to the involvement of other actors (Kjær, 2004), but also can be seen as recognition of the many actors and fora involved in decision-making in the public realm. An example of a definition of governance is that given by Hyden et al. (2004: 16) as 'the formation and stewardship of the formal and informal rules that regulate the public realm, the arena in which state as well as economic and societal actors interact to make decisions'. There are few definitions of natural resource governance, though Barnes (2014: 3) defines it as 'those rules and processes that control the allocation of rights to and use of natural resources like forests, carbon, wildlife and land', with the 'distribution and exercise of power' being fundamental to how natural resource governance operates and its outcomes. The IUCN Natural Resource Governance Framework Assessment Guide uses the following definition:

> …natural resource governance can be understood as the norms, institutions, and processes that determine how power and responsibilities over natural resources are exercised, how decisions are taken and how citizens – including women, men, youth, indigenous peoples and local communities – secure access to, participate in, and are impacted by the management of natural resources.
>
> Campese (2016: 7)

A separate area of literature has recently emerged referring to the governance of ecosystem services. Loft et al. (2015), for example, identify four dimensions of ecosystem services governance: institutions, actors, knowledge and processes. In relation to these dimensions, they identify challenges for the governance of ecosystem services as:

1. 'the governance and management of multiple ES requires governance systems that can accommodate the complexity of socio-ecological contexts, diversity of institutions, actors, levels and scales, values and needs' (2015: 153)

2. ‘governance of ES and biodiversity face the challenge of taking into account diverse interests and value (systems) of different actors on different scales when negotiating trade-offs in the provision of these ES’ (2015: 154)
3. ‘lack of information, financial resources, and capacity…how scientific results are employed, if at all, in political and societal processes of decision-making’ (2015: 155).
4. ‘Political negotiation processes that shape institutions, including the choice, design, and implementation of mixes of policy instruments or the allocation of property rights’ (2015: 155)

From this review of definitions of governance, then, the following defining features can be identified:

1. Governance is concerned with decision-making over the public realm, with decisions made on rules that influence or determine access to and benefits from natural resources. Such rules may be formal or informal and governance is concerned with the enforcement or implementation of rules as well as the formation and negotiation of rules.
2. Such decision-making may take place at multiple ‘levels’, usually interpreted as administrative, such as village, district, national, regional and international, and involve actors outside of government as well as officers from multiple departments and elected representatives. This suggests that there will be a diversity of interests, objectives and management approaches, which may, at times, conflict.
3. The distribution of power is a key theme in definitions and characteristics of governance as power influence who is involved in making decisions, who is excluded, which options are considered, the outcomes of decision-making and the subsequent implementation and enforcement.

Ecosystems, ecosystem services and renewable natural resources

The ESPA programme draws on the Millennium Ecosystem Assessment as a starting point for understanding ecosystem services and so this paper refers to the definition of ecosystems from the MA, which views them as ‘a dynamic complex of plant, animal, and microorganism communities and the nonliving environment, interacting as a functional unit’ (MA, 2005: V). Ecosystem services are defined by the Millennium Ecosystem Assessment as ‘the benefits people obtain from ecosystems’ and they categorise these into provisioning, regulating, supporting and cultural services, giving examples as: ‘provisioning services such as food and water; regulating services such as regulation of floods, drought, land degradation, and disease; supporting services such as soil formation and nutrient cycling; and cultural services such as recreational, spiritual, religious and other nonmaterial benefits’ (MA 2005: 27).

Whilst literature on the governance of ecosystem services appears to be relatively recent, ecosystem-based approaches to forestry and fisheries management date back decades (Garcia et al., 2003; Wilkie et al., 2003). Such approaches advocate more holistic approaches to forest and fisheries management, recognising the broader ecosystem context and dynamics in which forest and fisheries resources exist. However, the adoption of an ecosystem-based approach in fisheries has not been widespread, due to concerns about mandate, resources and data (Patrick and Link, 2015). Within forestry, sustainable forest management can be seen as encompassing an ecosystem approach, but evidence of the existence of enabling conditions for SFM in tropical countries suggests that more work is needed to deliver on SFM practice in developing countries (MacDicken et al. 2015).

Management of natural resources in developing countries largely remains sectoral, with government ministries and departments organised in line with key natural resources, or within a ministry of natural resources, with ministries or departments of land, water, forestry, fisheries and agriculture being common. Therefore, this research project will investigate governance in relation to ecosystems, ecosystem services and renewable natural resources,

including forests, fisheries, wetlands and grazing land, focusing in particular on the relationships of such governance with poverty and poverty alleviation.

In many cases, the renewable natural resources that are central to the livelihoods of so many people in developing countries are considered to be common pool resources, that is they are characterised by being non-excludable (it is difficult to exclude people from their use) and subtractable (extraction by someone reduces the amount available to others at a given time). Common pool resources may be governed by the state, private individuals or by a collective of individuals through a common property regime, or they may be open access. It is also likely that the property regime in place may be a hybrid of these regimes.

Alternative framings to ecosystem services have recently emerged, based on critiques of the concept of ecosystem services. One alternative framing responds to the lack of recognition of reciprocity between people and nature in the definition of ecosystem services, that is, that people can improve and positively contribute to ecosystem services and not only derive benefits. Comberti et al. (2015) put forward the concept of 'services to ecosystems' (S2E) to capture this reciprocity, noting that it is particularly relevant to indigenous and traditional rural societies. A second alternative framing to ecosystem services stems from concern about the focus on economic valuation with ecosystem services approaches and literature, neglecting other forms of value. Work associated with the Intergovernmental Platform on Biodiversity and Ecosystem Services (IPBES) developed the concept of 'nature's contributions to people' (NCP), defined as 'all the positive contributions, or benefits, and occasionally negative contributions, losses or detriments, that people obtain from nature' (Pascual et al., 2017: 9). Such alternative framings highlight the need to be aware of limitations as well as opportunities associated with the concept of ecosystem services and these complement discourses on poverty, recognising multidimensionality and subjective dimensions as well as objective assessments and measures.

Poverty and poverty alleviation

Whilst this review of definitions starts with considering definitions of poverty, it is not possible to do this without considering related terms, particularly well-being and livelihoods. These are therefore briefly considered as well. Poverty was seen for many years as being mainly concerned with a lack of money or income, reflected in the 'dollar a day' measure. However, since at least the late 1990s, it has been widely accepted that poverty has multiple dimensions, such as lack of voice and empowerment and lack of adequate access to public services. The World Bank (2000: 15) therefore defined poverty as 'pronounced deprivation in wellbeing', with deprivation including vulnerability and exposure to risk, as well as inadequate education, access to health care and material deprivation. Accepting that there is a multi-dimensionality to poverty reflects recognition that there are different interpretations and experiences of poverty. This multidimensionality is particularly reflected in the Multidimensional Poverty Index (MPI), which collects data on ten indicators of deprivation within the categories of health, education and standard of living to develop an overarching index at national or sub-national level (Alkire and Santos, 2010). The alleviation of poverty may, then, refer to the easing, or reduction, of a dimension, or more than one dimension, of poverty.

Within the ESPA programme, guidance for projects defined poverty as 'the lack of, or inability to achieve, a socially acceptable standard of living, or the possession of insufficient resources to meet basic needs' (Suich, 2011: 2). This guidance goes on to recognise the role of institutions in mediating access to resources, the importance of acknowledging the multidimensionality and dynamics of poverty and that investigations of 'social differentiation, distributional concerns and issues of power' should be part of poverty analyses (Suich, 2011).

The Millennium Ecosystem Assessment takes a similar view of wellbeing as has been taken to poverty, reflecting that 'historically, human wellbeing was largely defined in terms of income and consumption; it is now recognized as including the material minimum for a good life, freedom and choice, health, good social relations, security, and peace of mind and spiritual experience' (MA, 2003: 47). Sen (1999) refers to wellbeing as coming from a set of capabilities to function in society, including, for example, having power, voice or access to education. McGregor (2008: 1) defines wellbeing as 'a state of being with others, where human needs are met, where one can act meaningfully to pursue one's goals, and where one enjoys a satisfactory quality of life'.

Finally, literature related to governance for ecosystem services and poverty alleviation may also focus on livelihoods and improving livelihoods. Chambers and Conway (1992: 6) define a livelihood as comprising of 'the capabilities, assets (stores, resources, claims and access) and activities required for a means of living'. Ellis (2000: 10) builds on this original definition, noting that access to assets and activities is mediated by institutions and social relations: 'A livelihood comprises the assets (natural, physical, human, financial and social capital), the activities, and the access to these (mediated by institutions and social relations) that together determine the living gained by the individual or household'.

From this review, it can be concluded that any investigation into governance, renewable natural resources/ecosystems and poverty alleviation, must recognise the multidimensionality of poverty, that poverty and wellbeing may be interpreted and experienced differently (subjective and objective perspectives), that poverty alleviation may address one or multiple dimensions of poverty, with interlinkages between the dimensions, and that experiences and manifestations of poverty may be discussed with reference to perspectives on, and changes in, wellbeing and livelihoods.

3. Key themes in literature on the governance of renewable natural resources

In a topic guide written for the Department for International Development, Nunan (2016) identified the following as key themes in the literature and practice of natural resource governance:

1. Decentralisation of responsibility and power to lower levels of government has taken place in many countries and natural resource sectors.
2. Participation of resource users either in collaborative arrangements, working with government, or in community-based approaches, has been common since the 1980s.
3. The scale of natural resource and social systems may mean that governance actors and processes occur at multiple levels and scales.
4. The complexity of social-ecological systems has led to increasing interest in adaptive approaches that enable greater responsiveness to new information and change.
5. Formal and informal institutions shape access to and control over natural resources and different institutions may be navigated or used to gain and maintain access and control.
6. Politics and power are integral to the nature and performance of governance.

Each of these is elaborated on briefly to highlight key characteristics and issues.

Decentralisation

The decentralisation of decision-making and management responsibilities to lower levels of government within natural resource sectors since the 1980s reflects the broader adoption of decentralisation, bringing power closer to people (Larson and Soto, 2008; Larson and Ribot, 2004; Ribot, 2002). Key issues arising from the experience of decentralisation are the lack of

power and resources received by lower levels of government, constraining their ability to undertake their governance functions (Larson and Soto, 2008; Ribot, 2002).

Collaborative and community-based management
A further trend in many natural resource sectors has been the adoption of collaborative governance approaches, such as fisheries co-management and joint forest management, with resource users working with government in managing resources. Alternatively, community-based approaches have also been employed, with communities taking on more responsibility in natural resource management. Both approaches may involve the formation of local structures, often through democratic elections, leading to a need to consider appropriate forms of representation. There may be legal mandate for the functioning and composition of such structures (Jentoft et al., 2003). These approaches differ from common property type regimes, or traditional governance arrangements, referring instead to government- or project-driven approaches to enable the participation of resource users in management systems.

Collaborative and community-based approaches have led to examples of improved livelihoods and sustainable management of resources (e.g. Community Conservancies in Namibia (Binot et al., 2009) and fisheries co-management in the Philippines (Maliao et al., 2009)). However, common challenges experienced in collaborative and community-based natural resource management (CBNRM) include: elite capture, inadequate power sharing by government and lack of downward accountability to resource users (Nunan, 2016). In addition to such challenges, very often the adoption of collaborative and CBNRM approaches in developing countries is initially supported by donor projects; once donor funding ends, it is challenging to maintain the support and impetus such initiatives need to further develop, or even carry on.

Scale and multi-level governance
Many renewable natural resources provide multiple ecosystem services and are therefore accessed by many actors. This means that more than one part of government, and associated non-governmental actors, may be involved in governance. In addition, these resources may cross administrative and national boundaries, requiring cooperation and interaction between administrations at the same level, but also between levels, e.g. between local and district levels. The inter-sectoral and multi-level nature of the governance landscape presents many challenges, such as the lack of incentives and capacity for coordination, cooperation and integration of policies and practices. This can lead to competing, or even conflicting, policy objectives and management approaches. There are also challenges for the performance and outcomes of governance resulting from the multi-level nature of the system, particularly in terms of perceptions of legitimacy, accountability and transparency (Termeer et al., 2010; Poteete, 2012). International agreements and systems form part of governance frameworks of natural resources.

Adaptive governance
An adaptive governance approach places greater emphasis on the process and capacity for governance than on structures, recognising that there can be many sources of uncertainty within natural resource governance (Chaffin et al., 2014). Systems and processes are needed that can respond in a timely way to new information and changes. Such an approach highlights the need for information generation, sharing and use, responsive decision-making, reflecting the need for flexibility and capacity to deal with uncertainty.

Institutions
The widely accepted definition of institutions given by North (1990) is frequently used in literature on natural resource governance and livelihoods. North (1990: 3) defines institutions as ‘the rules of the game in a society, or more formally, are the humanly devised constraints that shape human interaction’, which ‘reduce uncertainty by providing a structure to

everyday life'. Within literature on natural resources, Cleaver (2012: 8) defines institutions as 'arrangements between people which are reproduced and regularised across time and space and which are subject to constant processes of evolution and change'.

There are two key features of literature on institutions, institutional analysis and governance of natural resources. These are:

1. That a binary categorisation of institutions is common in literature, distinguishing between formal and informal institutions or bureaucratic and socially-embedded, for example. Cleaver (2002: 13) offers the following definitions: 'Bureaucratic institutions are those formalised arrangements based on explicit organisational structures, contracts and legal rights, often introduced by governments or development agencies. Socially embedded institutions are those based on culture, social organisation and daily practice'.
2. That there are generally seen to be two broad schools of thought on institutions and natural resource management (Cleaver 2012; Nunan et al. 2015). Cleaver (2012), for example, labels these as mainstream and critical institutionalism. Mainstream institutionalism is associated with common property theory and with the design of institutions for sustainable governance of common pool resources. Analysis may draw on Ostrom's design principles, the Institutional Analysis and Development framework or the Social-Ecological Systems framework. Critical institutionalism, however, places greater emphasis on 'the historical formation of institutions and the complex interplay between modern and traditional, formal and informal arrangements' (Cleaver et al., 2013: 168), rather than the deliberate design of institutions to solve problems. Interplay between institutions is reflected in the concept of *institutional bricolage*, 'the processes in which people (consciously or unconsciously) draw on existing social formulae and arrangements (rules, traditions, norms, roles and relationships) to patch together institutions in response to changing situations' (Cleaver et al., 2013: 168).

Customary structures, systems and rules are often critical to natural resource governance, forming part of the 'rules of the game' in many situations. Institutions beyond those formed to manage natural resources are also relevant to the governance situation as institutions such as gender norms, kinship and power relations affect how people access and benefit from natural resources.

Politics and power

Politics and power are intrinsic to natural resource governance, which is unsurprising as governance involves decision-making over allocation of access to and benefits from natural resources. Within natural resource governance, key themes, characteristics and issues that have emerged include: the nature and degree of power sharing between actors; capture of governance structures and processes by more powerful interests; and, gendered relations. The degree and nature of power sharing is particularly important between national and decentralised government and between government and resource users in collaborative governance and CBNRM. Sharing power does not imply having equal power. The degree and nature of power may be investigated in terms of how it is manifested in decision-making and revenue generation, for example. Capture of governance structures and processes by the more powerful is referred to as 'elite capture'; in such situations, elites may benefit by gaining paid positions, access to revenue and control over decision-making about resources (Muyengwa et al., 2014). Gendered norms and relations are imbued with power and affect the participation of women and men in governance structures and processes as well as how women and men gain and maintain access to and benefits from natural resources.

A concern related to politics and power that has received less attention in the literature is corruption. Research has yet to determine whether there is a definitive link between corruption and deforestation and forest degradation (Meehan and Tacconi, 2017) and overexploitation of fisheries, though it has been linked to a lack of enforcement of regulations in fisheries (Sundström, 2015, 2016) and forestry (Smith et al., 2003).

4. Governance principles

Principles have been identified that are associated with how governance functions and performs. Examples of sets of principles within natural resource governance literature include those put forward by Lockwood et al. (2010) and Springer (2016). Lockwood et al. (2010) identified eight principles, as: legitimacy, transparency, accountability, inclusiveness, fairness, integration, capability and adaptability. Springer (2016) identified 12: inclusive decision-making, recognition and respect for legitimate tenure rights, devolution, diversity of cultures and knowledge, strategic vision, empowerment, coordination and coherence, sustainable resources and livelihoods, social and environmental accountability, protection of the vulnerable, rule of law and access to justice. To keep to a fairly generic list of principles, this paper focuses on Lockwood et al.'s (2010) set, which are shown and explained in Table 1.

Table 1 Governance principles for natural resource management

Principle	Components
Legitimacy	• The source(s) of legitimacy of governance structures should be identified. May come from legislation and/or through acceptance by stakeholders that the structures have authority to govern. • Very often power is devolved to the lowest level appropriate for effective governance. • Integrity of the governance structures and processes matters for legitimacy.
Transparency	• Concerns the visibility of decision-making processes • Reasons for decisions communicated to stakeholders • Information available about the arrangements and performance of governance structures
Accountability	• Allocations of responsibility for decisions and actions should be clear and accepted • Information should be available on how those responsibilities have been met
Inclusiveness	• Mechanisms enable all groups of stakeholders to participate in and influence decision-making processes and outcomes
Fairness	• The interests of all stakeholder groups should be given due attention and respect • There should be no bias towards any particular group/interest in decision-making • Consideration should be given to how the costs and benefits of decisions are distributed
Integration	• Coordination between and within levels of governance • Flow of information and resources • Priorities, plans and activities within and across levels of governance fit together
Capability	• Those involved in governance have the skills, resources, experience and knowledge needed • Systems in place that enable effective governance
Adaptability	• Governance structures seek and respond to new knowledge and can cope with situations of uncertainty • Problems and issues are anticipated and managed • Individuals and structures reflect on and learn from performance

Source: Adapted from Lockwood et al. (2010: 991-996) and Nunan (2015:161-162)

5. Theories and frameworks for analysing governance

Many theories, frameworks and approaches have been, and could be, drawn on to investigate natural resource governance. These may include:

- Common property theory associated with Ostrom's eight design principles (Ostrom, 1990), the Institutional Analysis and Development (IAD) framework and the associated Social Ecological Systems framework (Ostrom et al. 2014).
- Agrawal and Ribot's (1999) framework for the analysis of decentralised natural resource governance, with a focus on actors, power and accountability
- Governability Assessment framework (Chuepagdee and Jentoft, 2009) to assess the governability of interlinked natural and social systems.
- Analysis of decentralization of natural resource management (Batterbury and Fernando, 2006).

Table 2 sets out the components of each of these frameworks/approaches.

Table 2 Comparison of approaches to the analysis of governance

Design principles (Ostrom, 1990)	**Decentralization (Agrawal and Ribot, 1999)**	**Governability assessment (Chuenpagdee and Jentoft, 2009)**	**Analysis of governance (Batterbury and Fernando, 2006)**
Clearly defined boundaries Rules governing use or provision of the resource must be appropriate to local conditions Collective-choice arrangements Monitoring of rules and use Graduated sanctions Conflict resolution mechanisms Recognition of legitimacy Nested enterprises	Actors Power Accountability Representation	Governing system System to be governed: human/societal and natural systems Governing interactions Analysis in terms of: • Diversity • Complexity • Dynamics • Scale	Historical context needed Political economy of governance Scale and levels Rules in use Political ecology of governance

The frameworks combine elements of the characteristics and principles of natural resource governance identified earlier.

6. Governance and the use of regulations, rights and PES schemes

The management of natural resources is closely associated with governance arrangements, particularly given that governance involves decision-making about the management approaches to be employed and facilitates implementation, monitoring and enforcement. Management is generally viewed as being concerned with technical issues and implementation. Béné and Neiland (2006) explain the difference between governance and management as follows:

> management is about action, governance is about politics. Management is about the implementation – in a technocratic sense – of decisions and actions in accordance with rules ... Governance is about sharing responsibility and power; it is about setting the policy agenda and objectives and about the processes of implementing management actions.
>
> Béné and Neiland (2006, p10)

However, management and governance are closely related and it is important to recognise and accept that in literature and practice the terms may be intertwined and used interchangeably. Two areas of management measures or instruments that are used in natural resource management are noted here:

- The setting and enforcement of rules and regulations, with property rights often associated with these rules and regulations.
- The use of Payment for Ecosystem Services schemes

Rules and regulations may be 'formal' or 'informal', that is decided upon and enforced by government, sometimes in collaboration with other actors, or by the resource users themselves. Both may be in existence within a system. Rules and regulations may be either input or output related – that is, they may set out what equipment and methods can be used to extract resources (such as types of fishing gear) or how much and from where resources can be extracted. They may ban any extraction, such as bans on killing of wildlife for subsistence. These are the most common types of rules and regulations that exist within developing countries in relation to natural resources. The system of governance in place may affect the types of regulations decided upon and how, or whether, they are enforced.

Closely related to rules and regulations are the establishment of 'property rights'. Property is an economic term, defined by Bromley (1991: 2) as 'a benefit or income stream', with a property right defined as 'a claim to a benefit or income stream that the state will agree to protect' (Bromley, 1991: 2). Property rights are often viewed as important in relation to the use of many natural resources, such as land, forests and fisheries. The types of rights, and regimes associated with those rights, will depend on the resource and context. In relation to land, rights relate to 'the right to use, sell, transfer/bequeath, allow use by others and restrict use by others' (Henley, 2013: 6). Land rights are strongly related to governance in terms of how rights are established, allocated and enforced. In relation to common pool resources, Schlager and Ostrom (1992) identify five types of rights, as set out in Table 3.

Table 3 Rights associated with common-pool resources

Right	Definition
Access	The right to enter a defined physical property
Withdrawal	The right to obtain the "products" of a resource
Management	The right to regulate internal use patterns and transform the resource by making improvements
Exclusion	The right to determine who will have an access right, and how that right may be transferred
Alienation	The right to sell or lease either or both of the above collective-choice rights

An alternative management approach is the use of Payment for Ecosystem Services schemes which involve the beneficiaries of ecosystem services compensating the providers through payments for changes in behaviour or practices that deliver on agreed objectives. The most cited definition of a PES scheme is given by Wunder (2005: 3), where a PES scheme is defined as involving:

- 'a *voluntary* transaction where
- a *well-defined* ES (or a land-use likely to secure that service)
- is being 'bought' by a (minimum one) ES *buyer*
- from a (minimum one) ES *provider*
- if and only if the ES provider secures ES provision (*conditionality*)'

PES schemes may be based on agreements with individuals, such as individual farmers or landowners, or with communities. An example of a community-based PES scheme is Mikoko Pamoja in Gazi Bay, Kenya, where two villages have agreed to set aside an area of mangrove forest in exchange for payments for the capture and storage of carbon (Huxham et al., 2015). Although PES schemes were originally seen as a strictly market-based instrument, intended to overcome many of the supposed disadvantages of regulatory approaches to improving environmental management, there is now widespread recognition that PES schemes incorporate a spectrum of activities comprising 'a transfer of resources between social actors, which aims to create incentives to align individual and/or collective land use decisions with the social interest in the management of natural resources' (Muradian et al. 2010: 1205). Reducing Emissions from Deforestation and forest Degradation (REDD+) are a particular type of PES scheme, initiated at the global level under the United Nations Convention on Climate Change. REDD+ therefore interacts with governance arrangements from the global to the local and therefore concerns many aspects of governance, including how user groups are formed, composed and function.

7. Conclusion

From this review of literature on the governance of renewable natural resources, common threads from the definitions, key themes, principles and theory/frameworks exist. These are set out in Table 4, which provides a summary of what should be investigated in efforts to understand the nature and performance of governance of renewable natural resources.

Table 4 Key dimensions of natural resource governance

Key dimensions of governance	Questions
Structures	• Who are the actors involved and where are they located? • What structures and processes have been established to facilitate governance? What is their legal mandate and how well are they working? • How are resource users represented in governance structures
Rules	• What types of decisions are made, implemented and enforced by governance structures? • What is being governed – a specific natural resource or ecosystem service, or is an ecosystem-based approach adopted? • Where do formal and informal rules come from and what do they address? • Is enforcement effective? • What property rights do users have, where do they come from, how are they enforced and what are the implications of the rights' regime?
Institutions	• Which institutions (formal and informal) influence governance arrangements, performance and outcomes for ecosystems and benefits to poor people?
Distribution of power	• Who and which structures have power over which decisions? Where does power come from? • What are the implications of the distribution of power?
Scale	• How do the natural resource systems 'fit' within administrative boundaries and with what implications for governance? • To what extent is governance within and across levels (horizontal and vertical) coordinated and how is interaction facilitated?
Principles: Accountability Participation Transparency Legitimacy	 • How accountable are governance structures and what mechanisms exist to encourage accountability and in which direction (upwards, downwards or horizontal)? • Who participates, when, why, how and how much? • What mechanisms exist for transparency in decision-making? • Where does legitimacy come from and what are the perspective of those within and beyond the governance system on its legitimacy?
Adaptive capacity	• How flexible and responsive to change are the governance systems and processes? • What information is generated, shared and used?
Outcomes	• What have been the outcomes for ecosystem health and the scale, distribution and sustainability of benefits from ecosystem services for poor people? • How has poverty been alleviated as a result of the governance of ecosystem services?
Justice and equity	• How equitable and just are governance processes? To what extent do they incorporate recognition, procedural and distributive equity?

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