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Territorio, Ambiente, Risorse e Salute

CICLO XXVII

***MEASURING THE EFFECTIVENESS OF CONSERVATION GOVERNANCE,  
POLICIES AND PROGRAMMES IN FOREST PROTECTED AREAS***

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## Summary

Failures of governance underlay many problems in natural resource management. *In-situ* conservation strategies, such as forest protected areas (FPAs), are currently one of the main strategies for forest and terrestrial biodiversity conservation. Nevertheless, there is no clear evidence in the current literature on the exact role of governance arrangements and cause-effect relationships between decision-making style and conservation outcomes of forest protected areas. Governance theory deals with the inquiry of how decisions are made and how decisions are implemented given the existing institutional frame and interactions of different actors. This work aims to clarify the role of governance, its diversity, quality and change, in the functioning of forest protected areas to deliver the desired social and ecological outcomes. Accordingly, the dissertation has three specific objectives: 1) to characterise and collate an evidence base on the role of governance in forest protected areas and their conservation outcomes globally; 2) to analyse potential for a shift from hierarchical to collaborative governance in a case example of tiger conservation; and 3) to evaluate inclusive policies and their implementation through state-driven decentralization programmes on the ground. This work applies a combination of qualitative and quantitative methods, including systematic review methodology, qualitative data analysis and quantitative impact assessment. The first part of the dissertation (Chapter 2) collates the evidence on conservation success of FPAs conditional on the type of their governance. This chapter explores protected areas globally and synthesizes the published literature up-to-today to create a global map of the evidence and knowledge base on the role of governance in the conservation effectiveness of protected areas with respect to social and ecological outcomes. The current evidence base is small and fragmented with the low explanatory power and methodological weaknesses. Conservation research often does not account for local governance elements while making judgement on conservation success. In case where it does, it measures conservation success through mainly one type of conservation outcome (ecological). However, social-related issues such as actors' attitudes and behaviour (intermediate outcomes on the change pathway) might contribute to more complete picture of the protected area success. The second part of the dissertation (Chapters 3 and 4) uses tiger conservation in central India as a case example to analyse governance change and the gaps between socially-inclusive and collaborative policies and actual practices on the ground. Chapter 3 investigates, from an institutional perspective, enabling and disabling factors for a shift towards "landscape-level conservation" that implies collaboration between PA managers and different actors in central India. The results show how a mix of institutional and cognitive factors can constrain a shift to the collaboration. Organisational structure of the public management agency and its "fortress conservation" mentality is perceived to be a major constrain for a change. Chapter 4 examines the case of two participatory projects around Pench Tiger Reserve in Madhya Pradesh and evaluates the effects of project participation through local community's attitudes towards biodiversity and trust and satisfaction with reserve authorities. The existing participatory approach seems to have only a small effect, mainly to people's conservation knowledge but not to their biodiversity attitudes and institutional trust. The main findings of this dissertation calls attention to the understanding of the decision-making process, informal and formal

institutions and interactions between conservation actors for more complete understanding and measurement of conservation success.

## Riassunto

Fallimenti di politiche e di governance sottendono molti problemi nella gestione delle risorse naturali. Interventi di conservazione *in situ*, come la creazione e gestione di aree forestali protette (AFP), sono attualmente una delle principali strategie per la conservazione delle risorse forestali e della biodiversità terrestre. Tuttavia, in letteratura, non vi è alcuna chiara evidenza sul ruolo dei meccanismi di governance e sulle relazioni di causa-effetto tra processo decisionale ed esiti della conservazione di AFP. La teoria della governance si occupa di come vengono prese e attuate le decisioni in un determinato contesto istituzionale e in presenza di determinate interazioni tra i diversi attori. Questo lavoro si propone di chiarire il ruolo dei meccanismi di governance, della loro diversità, qualità e degli eventuali cambiamenti, sul funzionamento di aree forestali protette affinché queste ultime possano offrire i risultati sociali ed ecologici desiderati. A questo scopo, la tesi ha tre obiettivi specifici: 1) caratterizzare, raccogliere e sistematizzare le conoscenze esistenti a livello globale sul ruolo della governance in AFP e sui loro risultati in termini di conservazione; 2) analizzare le potenzialità di un cambiamento da un approccio gerarchico ad una governance collaborativa in un caso esemplificativo di area protetta finalizzata alla conservazione della tigre; e 3) valutare le politiche di inclusione e la loro attuazione attraverso i programmi di partecipazione pubblica e decentramento dello Stato, sulla base degli interventi operativi realizzati a scala locale. In questo lavoro si applica una combinazione di metodi qualitativi e quantitativi, tra cui una metodologia di revisione sistematica della letteratura, un'analisi qualitativa di dati raccolti tramite interviste semi-strutturate ed una valutazione di impatto basata su metodi quantitativi. La prima parte della tesi (Capitolo 2) raccoglie le evidenze dei casi di successo ed efficacia di interventi di conservazione di AFP in ragione del tipo di governance cui le aree protette stesse sono soggette. Questo capitolo esplora aree protette a livello globale e sintetizza la letteratura ad oggi pubblicata al fine di creare una mappa globale delle evidenze ed una base di conoscenze sul ruolo della governance nell'efficacia della conservazione di AFP in relazione ai risultati sociali ed ecologici attesi. Le evidenze attualmente disponibili sono limitate e frammentate, hanno un potere esplicativo contenuto e debolezze metodologiche. La ricerca in questo campo spesso non tiene conto degli elementi di governance locale nel formulare un giudizio sul successo delle strategie e degli interventi di conservazione. Nel caso in cui lo fa, spesso misura il successo della conservazione soltanto (o soprattutto) attraverso i risultati dal punto di vista ecologico. Tuttavia, risultati sociali quali nuovi atteggiamenti e comportamenti (outcome intermedi lungo un percorso di cambiamento indotto da interventi di conservazione) potrebbero contribuire a fornire un quadro più completo dell'efficacia e del successo dell'area protetta. La seconda parte della tesi (Capitoli 3 e 4) usa il caso della conservazione della tigre in India centrale come esempio per analizzare il cambiamento nei meccanismi di governance e il divario tra le politiche e pratiche reali sul campo dal punto di vista dell'inclusione sociale e della collaborazione. Il Capitolo 3 indaga, da un punto di vista istituzionale, i fattori favorevoli e quelli che invece potrebbero ostacolare uno spostamento delle politiche e degli interventi verso una conservazione "a livello di paesaggio" (a scala meso, e non di singola unità boschiva, per esempio), che implica una maggior collaborazione tra i gestori dell'area protetta e i diversi attori, con un focus sempre in India centrale. I risultati mostrano

come un mix di fattori istituzionali e cognitivi siano in grado di limitare il passaggio alla collaborazione e di conseguenza di limitare la possibilità di proteggere e conservare in maniera efficace zone più ampie ed integrate di territorio. La struttura organizzativa interna dell'ente pubblico che si occupa della gestione dell'area protetta e la sua mentalità da "fortezza della conservazione" è percepita dagli operatori locali come un vincolo importante per un cambiamento. Il Capitolo 4 esamina il caso di due progetti partecipativi attuati nelle aree limitrofe alla Pench Tiger Reserve, nello Stato del Madhya Pradesh in India, e valuta gli effetti dei progetti/programmi di partecipazione e gestione congiunta dell'area attraverso l'analisi delle attitudini/atteggiamenti della comunità locale nei confronti della biodiversità, nonché la fiducia ed il grado di soddisfazione rispetto alle autorità pubbliche che operano nella riserva. Gli approcci e gli strumenti finora attuati sembrano avere un effetto molto limitato, solo in relazione alla conoscenza dei concetti di conservazione della biodiversità da parte delle persone residenti nell'area. Non si sono riscontrati effetti sulle attitudini, o sugli atteggiamenti/comportamenti dei membri della comunità locale nei confronti della biodiversità né sul loro grado di fiducia verso le istituzioni pubbliche. I principali risultati di questa tesi richiamano l'attenzione sull'importanza della comprensione del processo decisionale, le istituzioni informali e formali ed una più profonda comprensione delle interazioni tra attori per essere in grado di misurare il successo/efficacia degli interventi di conservazione di aree forestali protette ai fini della protezione della biodiversità.

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## ABBREVIATIONS AND ACRONYMS

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- CCB** Community Conserved Areas
- ED** Eco-development – a form of integrated conservation and development project
- ICDP** Integrated Conservation and Development Project
- IED** India Ecodevelopment – a project operational in 7 protected areas in India from 1994-2004
- FD** Forest Department
- FRA** Forest Rights Act Scheduled Tribes and Other Traditional Forest Dwellers (Recognition of Forest Rights) Act 2006 (or simply Forest Rights Act)
- FPAs** Forest protected areas
- JFM** Joint Forest Management
- NTCA** National Tiger Conservation Authority
- TRs** Tiger Reserves
- TTF** Tiger Task Force
- PAs** Protected Areas
- PSM** Propensity Score Matching
- PTR** Pench Tiger Reserve, Madhya Pradesh, India
- SR** Systematic Review
- WPA** Wildlife Protection Act, 1972
- WOK** ISI Web Of Knowledge publication database
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## CHAPTER 1

### INTRODUCTION

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#### Background and problem statement

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*In-situ* conservation strategies, such as forest protected areas (FPAs), are currently one of the main strategies for forest and terrestrial biodiversity conservation. The global protected area network is growing at an ever-increasing rate, covering 12% of Earth surface at present and protecting 13.5% of world's forests (Schmitt et al. 2009). However, biodiversity still continues to decline globally (Butchart et al. 2010).

The level of effectiveness of protected areas in producing desired ecological and social outcomes is unclear, including ambiguous evidence on a win-win solutions. A recent systematic review on the ecological impacts of terrestrial protected areas concluded that protected areas are proven to be effective in conserving habitat cover, but it is not entirely clear if they can successfully maintain species populations (Geldmann et al. 2013). Evidence on social impacts of protected areas is more ambiguous, and associated impacts are highly context-dependent with both negative and positive impact pathways (Pullin et al. 2013). Moreover, projects that combine development (e.g. poverty alleviation) and conservation (e.g. biodiversity conservation) goals are argued to be rarely successful, but the current evidence base is still not strong enough to provide any conclusive proofs (Adams et al. 2004; Brooks et al. 2006). Overall, there is a weak understanding of the factors under which protected areas provide desirable conservation or development outcomes.

Governance and institutional arrangements play an important role in determining efficacy of conservation policies and practice (Barrett et al. 2005). Some authors argue that governance influence: 1) management effectiveness through level of achievement of protected area objectives; 2) management equity through decisions on cost and benefit allocation; and 3) protected area viability through the establishment of

community, political and financial support (Eagles 2008; Borrini-Feyerabend et al. 2013). The important governance-relevant questions such as: *Who is accountable to whom? Who has decision powers? How decisions are made and implemented?* are frequently disregarded while examining PA effectiveness. Therefore, the cause-effect relationship between governance arrangements, PA (management) effectiveness and social and ecological outcomes is largely unclear (Pullin et al. 2013). There is a need for synthesis of existing evidence and provision of empirical answers on how different local governance arrangements and specific characteristics of decision-making and implementation process may influence conservation outcomes.

Conservation enforcement and implementation are frequently a difficult task, especially in developing tropical countries (Barrett et al. 2005). Effectiveness of implementation and enforcement frequently depends on the behaviour, values and motives of an implementing agency (Fleischman 2012).

With the recent paradigm shifts from strict and exclusive enforcement to participatory and collaborative policy implementation, the role of public agencies that manage parks is evolving. They are expected to abandon their traditions and exclusionary “mentality”, to adapt their working culture to people-oriented approaches, while increasing flexibility and improving communication skills, building trust with local community and other actors in the participatory and collaborative networks (Wyborn & Bixler 2013). Nevertheless, in the collaborative and participatory conservation literature, research on the behaviour of local conservation authorities, their possible resistance to change and influence on conservation policy implementation is limited (Lawrence 2007).

On the other side of the implementation effectiveness, it is argued that compliance with PA rules and support for conservation might be challenging if there is a lack of meaningful and active participation of local communities in decision-making positions (Andrade & Rhodes 2012). However, the final effects of participatory policies are often unclear and ambiguous. This is because existing evidence is frequently based on case studies and it is hard to create clear causal links between participation and resultant change in peoples’ conservation attitudes, behaviour and compliance. Therefore, there is a need for more rigorous evaluation studies with more robust designs to remove various

rival explanations of participatory effect, adjust for selection bias that occurs due to non-random assignment of such interventions (Miteva et al. 2012; Ferraro & Hanauer 2014; Baylis et al. 2015)

The following sections give an overview of the research objectives and research questions to fill the above identified knowledge gaps. Moreover, theoretical concepts that guide this research and a general overview of the whole work and forthcoming chapters are presented.

### Objectives and research questions

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Governance theory deals with the inquiry of how decisions are made and how decisions are implemented given the existing institutional frame and interactions of different actors (Kjaer 2004; Secco et al. 2014). This work aims to clarify the role of governance, its diversity, quality and change, in the functioning of forest protected areas to deliver the desired social and ecological outcomes.

Connected to different levels of enquiry, this dissertation has three main objectives: 1) to characterise and collate evidence base on the role of governance in forest protected areas and their conservation outcomes globally (**Chapter 2**); 2) to analyse the potential for a shift from hierarchical to collaborative governance in the case example of tiger conservation on the landscape level (**Chapter 3**); and 3) to evaluate inclusive policies and their implementation through state-driven decentralization programmes on the local level (**Chapter 4**).

Accordingly, this dissertation has three specific research questions:

1. What evidence exists on the role of governance in the effectiveness of forest protected areas?
  - Is there sufficient evidence on the comparative effectiveness of participatory versus top-down approaches in delivering conservation outcomes?
2. What are possible constraining and enabling factors for governance change in the continuum from “government to governance”, from park-centric to landscape level conservation?

- Can park authority change to follow the participatory politics and calls for collaboration?
3. How are shifts towards inclusive and collaborative policies reflected on the ground, at the level of project implementation?
    - Is participation effective in a state-driven decentralization context?

The research connected to research questions 2 and 3 is conducted on the case of tiger conservation, placed in central Indian tiger landscape complex, in Central Indian highlands (chapter 3) and in Pench Tiger reserve, Madhya Pradesh (Chapter 4). The reasons and justification for the specific research locations are given in respective chapters.

### Theoretical framework

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This dissertation is based on the perspectives from social research *for* and *on* conservation (Sandbrook et al. 2013). It pragmatically tries to connect and integrate different data, various methods and theories from disparate disciplines to understand how different actors and institutions interact and influence conservation outcomes in more or less effective way.

I consider FPAs as part of coupled systems of humans and the environment i.e. social-ecological systems (SES). FPAs exist through both ecological and social matrices; they are well connected to and functionally dependent on the political, social and economic structures in society. Governance modes of FPAs are equally complex and they exist on multiple interconnected (often uncoordinated) levels and scales: from local to international. Governance is context dependent and embedded in the cultural, political and social systems. To understand the links and feedback between governance modes and the success of FPAs it is necessary to use pluralistic approaches to obtain knowledge and best understanding of these complex systems, focus at different spatial and temporal scales, understand wider policy context and their history (Ostrom & Nagendra 2006).

This research starts from governance theories and link them to practice of conservation through critical examination of different aspects of conservation policy, its implementation and effectiveness. This is to ultimately emphasise the role of frequently forgotten local socio-political processes in the conservation success (Brechin et al. 2002). In order to achieve research objectives, this dissertation draws on findings and literature from political science, conservation biology, social psychology, development studies, and systems thinking. The application of these theories is evident within each of the data chapters.

Here, an overview of the governance theories is given with explanation of the shifts in conservation policy and practice thinking, and a critique to participation in order to introduce the rest of the dissertation.

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## GOVERNANCE THEORIES

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*“[...]meanings and interpretations of governance—which determine its actual elaboration and deployment—are framed by the historically contingent and constitutive interdependence between knowledge, representation and relations of power” (Batterbury & Fernando 2006).*

“*Governance*” is a highly contested concept used in various scientific fields and political processes, and it has many definitions and meanings. The definition depends on the particular research field and context, level at which policy and decision-making is analysed, views of relationships between governance actors, role of the state, researcher understanding of the institutional change, etc. Here, are explained in brief different interpretations of governance, starting from the institutional grounding of the concept.

Theories of governance have grounding in the institutionalism (Kjaer 2004). Institutions<sup>1</sup> are basic components of natural resource governance and are structures that shape and influence human behaviours, interests and values (Vatn 2005). Institutions can influence human behaviour through formal bureaucratic rules (e.g. official laws and contracts) or through more tacit, informal, socially embedded and unwritten rules (e.g. social norms). Institutions can be understood from two different perspectives. Individualist view defines institutions as external constraints that influence an individual “*in her calculation of what is the most optimal to do*” (Vatn, 2006: 2). They are informal and formal “rules of the game” that are concisely designed to decrease uncertainty (North 1990; Ostrom 1990). Social constructivists argue how institutions are not only external constraints, but are rules that can form individuals and their values (Vatn 2006). Institutions can be also explained through the “bricolage” concept that emphasises the role of power (asymmetries), social relationships and historical legacy in the institutional crafting and rule enforcement, which is missing in previous accounts of institutions (Cleaver 2001, 2002). New institutions are created refurbishing the old ones, patched together from different social, cultural and political sources, through constant adaptation, innovation and legitimisation (Koning and Cleaver, 2012).

Governance research introduces missing human agency in the structure and analysis of institutions. From the institutional perspective, a broad definition of governance refers to the rules’ setting, application and enforcement (Kjaer 2004).

Applicable for more local and protected area levels, governance can be defined as a “*set of processes, procedures, resources, institutions and actors that determine how decisions are made and implemented*” (Secco et al., 2010: 105). It is essentially about “*who has the influence, who decides and how decision makers are held accountable*” (Graham et al. 2003; Borrini-Feyerabend et al. 2006:116). The research presented in the dissertation uses this overarching governance definition.

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<sup>1</sup> Institutions can also be understood as organisations. Organisations are “set of institutional arrangements and participants who have a common set of goals and purposes, and who must interact across multiple action situations at different levels of activity” (Polski & Ostrom 1999:4). They are agencies, multi-lateral organisations (UN, WB), universities etc. In this dissertation, institutions are understood in their first meaning as “rules of the game”.

However, distinction between terms “*management*” and “*governance*” are often blurred in the conservation literature. Governance of natural resources and protected areas investigates policy, decision-making and implementation processes and corresponds to actors and their networks that facilitate formulation and implementation of a policy (Pahl-Wostl, 2009). Management is about “*resources, plans and actions that are a product of applied governance*” (Lockwood 2010:755). Management is composed of activities “*of analysing and monitoring, developing and implementing measures to keep the state of a resource within desirable bounds*” (Pahl-Wostl 2009:355).

Governance scholars often focus on the role of the state in the regulation, policy making and implementation. In this stream of thinking, governance literature explores transformed roles of the state in today’s society and analyses shifts “*from government to governance*” (Bodegom et al. 2008).

The terms government and governance should not be confused although they have the same roots and they were traditionally understood as synonyms (Jabeen 2007). The notion of government refers to an “old” governance model (Peters 2000). It is a top-down, monocentric, hierarchical and formal way of governing where the state steers, exerts control over society, economy and resources (Termeer et al. 2010). This is the traditional state-centric system of command-and-control. Therefore, the issue at focus in the literature on “old” governance is the level and capacity of a state to control (Pierre 2000). However, it is argued that ‘old’ forms of hierarchical governance frequently fail to give proper answers to current multi-scale complex environmental issues (Bulkeley 2005; Lemos & Agrawal 2006), especially with the current processes of neoliberalization, decentralisation and individualisation (Van Tatenhove et al. 2000).

Governance, as a “new” form of decision-making (Peters 2000) refers to co-ordination and implies involvement of not only a state, but also of a private sector and civil society in the decision-making process (Borrini-Feyerabend et al. 2006). The new governance model mainly rests upon less formal governing and soft laws i.e. non-binding documents and voluntary instruments such as standards (Mörth 2005).

This division to “old” and “new” governance can help in focusing on novel forms of power distribution and solving collective problems. Nevertheless, in contemporary



decision-making these borders are blurred, as there is continuum rather than a complete shift of control from government (state power) to governance (non-state actors (Hezri & Dovers 2006). Rhodes further writes: “*the most fascinating puzzles may be found at the boundaries of governing modes, both old and new, where they overlap, merge into one another and develop hybrid forms*” (Rhodes 2005:4).

Moreover, the state is still present and needed, not only to monitor activities of new governance instruments (Lemos & Agrawal 2006), but also to “*back up the authority and legitimacy of new governance solutions*” (Paavola et al. 2009:3)

Governance is seen as a tool for solving environmental dilemmas and conflicts (of interest) over environmental resources (Davidson & Frickel 2004; Paavola 2007). This definition is argued to eliminate distinction between government and governance, as it rather emphasises the importance of social justice (over pure economical efficiency) in governance studies (Paavola 2007).

Some authors, within the “new” governance thinking, focus on governance as networks. According to Kjaer (2004), the network governance refers to interaction of a centre with the society, implying the notion of the connectivity and both horizontal and vertical relations within the society (Kjaer 2004). Rhodes sees governance as “*self-organising, interorganisational networks*” (Rhodes 1996:660). Similarly Jessop defines governance as heterarchy that implies “*self-organising interpersonal networks, negotiated inter-organisational co-ordination and decentred, context mediated inter-systematic steering*” (Jessop 1998:29)

Apart from hierarchies and networks, governance as a model of governing can also be developed and enforced by markets. Due to dissatisfaction with the regulatory control by the state, voluntary, incentive-based mechanisms and free-market solutions such as: eco-tax, certification, eco-labelling, voluntary conservation agreements are becoming well established in the environmental governance (Lemos & Agrawal 2006).

Other authors point to broader issues of governing and focus on the importance of scale and interactions between different governance levels. Governance operates at various scales and levels. According to Gibson et al. (2000), *scales* are defined as “*the spatial, temporal, quantitative, or analytical dimensions used to measure and study any*

*phenomenon*”, while *levels* are “*the units of analysis that are located at the same position on a scale*”, but not necessarily hierarchically ordered.

Governance is characterised as multi-level (Hooghe & Marks 2003) and functioning on “*local, national, international and intermediate levels simultaneously*” (Paavola 2007:94), emphasising upward, downward and sideways reallocation of authority from central states (Hooghe & Marks 2003). This conceptualisation of governance emphasises importance of jurisdictional or spatial scale, their levels and cross-level interactions in governance research (Termeer et al. 2010). The notion of multi-level governance has emerged from EU-studies (Kjaer 2004)

The notion of polycentric governance refers to organisation of authorities and tackles inter-sectoral problems. This approach implies existence of numerous decision-making centres being formally independent of each other (Ostrom et al. 1961, 2010). *Where facts are uncertain, values in dispute, stakes high and decisions urgent* (Funtowicz & Ravetz 1991), multi-layered polycentric governance efficiently linked across scales, is perceived to provide a variety of responses to the complex problems, encouraging necessary innovation and self-organisation (Ostrom 1998)

Adaptive governance is about change, complexity and uncertainty in socio-ecological systems (Folke et al. 2005). Governance is closely related to ability of society to manage system resilience (Lebel et al. 2006) that is a measure of amount of change a system can undergo and still retain the same controls on structure or function (Folke et al. 2002; Lebel et al. 2006). Multi-scale interactions, institutional “interplay” between scales, and “fit” between social and ecological systems are focal points of this approach (Young 2002; Termeer et al. 2010). These authors argue that the most common problem in the governance of the natural resources is the fit problem (Young et al. 2006; Bruyninckx 2009; Paavola et al. 2009). Namely, frequently there is a mismatch between scales of decision-making and policy intervention (social scale) and the resources we want to govern (ecological scale).

Despite diversity of definitions and uses of the term, Kjaer (2004) points out that essentially focus of governance is on efficiency and democracy. These two pivots are further connected to “output” and “input” legitimacy respectively.

Legitimacy is about recognition of different actors and their values, fair participation and legitimate distribution in order to produce compliance with the established rules (Paavola 2007). Output-oriented legitimacy originates in “*effectiveness of rules to produce tangible results*”. Input-oriented legitimacy deals with democratic governance processes and comes from “*agreement of those who are asked to comply with the rules*” (Kjaer 2004:12).

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## CONSERVATION AND GOVERNANCE EVALUATION

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According to the *Oxford dictionary of English*, effectiveness is the degree to which something is successful in producing a desired result, whereas success is the accomplishment of an aim or purpose, i.e. it is the effectiveness of the treatment.

One of the most important steps in policy cycle is thorough policy analysis and robust evaluation, which drive further policy advancement. Evaluation of governance is also a precondition for its improvement. Yet, there is still no consolidated way of measuring governance effectiveness in forestry and biodiversity conservation (Giessen & Buttoud 2014). Moreover, there are very few attempts to evaluate forest and conservation governance at the local (intervention) level where the concrete decisions are taken (Borrini-Feyerabend et al. 2013; Secco et al. 2014)

There are, however, two general approaches in governance evaluation: process-oriented and outcome-oriented (Wesselink & Paavola 2008; Rauschmayer et al. 2009). Process-oriented evaluation looks at how process or procedures are conducted during formulation and/or implementation of the governance arrangements and assumes that the governance outcomes will be effective if the implementation procedure is good (Secco et al. 2014). This approach refers to measurements of governance quality under the “good governance” concept that is a set of normative principles such as legitimacy, accountability, participation, transparency, etc. (Giessen & Buttoud 2014).

Outcome - oriented approach implies that “*an outcome of a governance process can be analysed with regard to its direct outputs and to the assumed consequences of such outputs, in terms of changes in the system-to-be-governed*” (Wesselink & Paavola 2008:18). However, one of the major disadvantages of this approach is that frequently one cannot see the clear direct link i.e. establish causality between adopted governance measures and the changes in the system. Uncertainty and methodological weaknesses connected to both process and outcome evaluation could be solved with their integration (Rauschmayer et al. 2009)

Then again, there are more developments in the field of policy and programme impact evaluation and conservation scientists are trying to mainstream these developments into evaluation of conservation policies and practices (Baylis et al. 2015). An evaluator needs to create a proper counterfactual (*What would have happened if there had been no intervention at all?*) and eliminate rival explanations to measure observed impacts<sup>2</sup> (Ferraro 2009:77). Appropriate study designs that can attribute impact to the intervention, having baseline data (condition before intervention), and control for confounding variables are the basics of reliable and robust measurement of impacts (Ferraro & Pattanayak 2006). Confounding can arise from: 1) contemporaneous factors occurring along with the project and affecting its outcomes (historical trends, unobserved ecological or socio-economical characteristics, etc.); 2) selection bias as conservation interventions are not randomly distributed in the landscape (Ferraro & Pattanayak 2006; Ferraro 2009). I will further explain types of study designs, counterfactual outcomes and reasons for problem of attribution in evaluation.

Impact measurement is operationalized through experimental or quasi-experimental designs that try to identify exogenous<sup>3</sup> variation of an intervention (Ferraro, 2009). However, experimental design requires that there is a random assignment of intervention across study area, which is rare and unethical (in some cases) in the conservation context (Ferraro and Pattanayak, 2006). Quasi-experimental design tries to overcome randomization issue. A counterfactual is generated through: 1) chance/natural

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<sup>2</sup> In this dissertation, *impacts* are considered to be longer-term effects of an intervention, while *outcomes* are shorter-term or intermediately effects (see also Figure 4.1 for illustration of this)

<sup>3</sup> *Exogenous* variable is “a variable in a model or system that is causally independent of other variables in the model or system.” *Endogenous* variable is “a variable in a model or system that is causally dependent on other variables in the model or system” (Ferraro & Pattanayak 2006: 483, box 2).

circumstances create a control group (natural experiment); 2) statistical matching where a control group is created by matching area or a subject under an intervention to a very similar non-intervention area or a subject; 3) creating instrumental variables as a source of exogenous variation (Ferraro & Hanauer 2014).

Moreover, non-experimental designs are applicable when control group or comparison is not available. This design does not have the same scientific rigour as experimental and quasi-experimental designs due to smaller power to detect causal relationships. However, non-experimental designs can have higher external validity than for example experimental designs, as stronger generalisability is implied by a natural setting (Margoluis et al. 2009:88)

Quantitative research designs (experimental, quasi-experimental and non-experimental) are subject to time and funding and, hence, often difficult to implement in the real-life conservation. In such circumstances, qualitative evaluation allows for in-depth analysis of intervention pathways. It does not use a counterfactual, but it can be applied also along quasi- and non-experimental designs to better understand their findings. Here, the main element of the robust evaluation design is a sampling strategy (Margoluis et al., 2009).

A key issue that needs to be considered in the evaluation is a question of validity. External validity considers wider applicability or generalizability of the evaluation to other people, locations and times. Internal validity is about estimating casual relationship (controlling for hidden bias). Construct validity is independent of the study design and is about whether the reported treatments and outcomes are the ones actually measured (Margoluis et al. 2009)

Finally, non-linear response outcomes, lack of appropriate comparator, multiple interventions of a single conservation program, time lag between intervention and a response, spill-over effects, etc. question applicability of impact evaluation due to attribution problem. Modifying effects of governance and local-political process in PAs are adding to the complexity of evaluation. Therefore, linking conservation interventions (e.g. protected areas) with resulting biophysical changes in the environment (e.g. forest cover) becomes extremely difficult. This could be surpassed by

measuring impact on the intermediate scale such as changes or differences<sup>4</sup> in human behaviour (Ferraro, 2009) or even changes in people's attitudes that lead to that behaviour. A theory of change helps evaluator to hypothesize the pathway from an intervention to different or intermediary outcomes and impacts and to develop alternative explanations for observed effects (see **Chapter 4, Figure 4.1**).

Finally, scale misconceptions might affect effectiveness and efficiency of policy intervention. The scale in the field of policy evaluation "*has an impact on defining issues, collecting data at the appropriate level, identifying resources and stakeholders that function at this particular scale, and formulating policy*" (Bruyninckx, 2009:32).

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## SHIFTING DISCOURSES AND GOVERNANCE MODES IN CONSERVATION

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Conservation is inherently political process (Leader-Williams et al. 2010) practiced in "a world laden with power differentials between governments, between institutions, and between people" (Lewis 2005:186).

Protected areas are spaces set aside to restrict access to the resources. The governing rules, restrictions and the access rights can be agreed upon and executed by the national government, local communities, privates or combination of these actors. Moreover, distribution of power, decision-making scale, types of actors and nature of their collaboration classifies governance into 4 modes: 1) governance by government, 2) shared governance or co-management, 3) private governance and 4) governance by communities and indigenous people. (Borrini-Feyerabend 2003; Borrini-Feyerabend et al. 2006) (see also **Chapter 2.1**). These different approaches to conservation are frequently determined by global political economy and are exercised through international conservation agreements (Macura et al. 2013).

Command-and-control<sup>5</sup> government-led approach has been dominant in conservation practice and introduced to developing countries, making nature-culture divide and often

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<sup>4</sup> Difference in wording comes from a type of comparator. Before/after comparison can show outcome *changes*, while control/impact comparison can show outcome *differences*

<sup>5</sup> Also called in the literature as "fence and fine approach", "fortress conservation" or "conservation by exclusion"

dissolving pre-existing traditional community resource governance (Philip 2004). This is “old governance” with monocentric hierarchical structure, valuing expert over local knowledge and excluding local people both from the meaningful decision-making and from the physical park territory (by forcefully evictions and involuntary relocations).

Despite a view that government-run protected areas with defined and restricted resource uses is the successful strategy to keep the forests intact, other scholars argue that these exclusive approaches create high social costs locally through increasing conflicts among protected areas and local people (Wilshusen et al. 2002). This unequal distribution of benefits can ultimately lead to negative attitudes among local people (for a review see: Macura et al. 2011), lack of compliance and anti-conservation behaviour (retaliation), which can negatively reflect on biodiversity level (White et al. 2009)

Pushed by international conservation agreements and donor funding (such as World Bank), since 1980's and early 1990's these protected areas frequently have some level of people involvement through integrated conservation and development projects (ICDPs). However, the idea behind the ICDP is purely conservation-centric – it is usually based on the provision of alternative livelihood sources to adjacent local communities in order to wean them away from parks (Brown 2002)

After early 1980's “new” and more inclusive governance of the protected areas emerged. This “populist” discourse and inclusive paradigm recognised local people as valid and legitimate actors in conservation (Reyes-Garcia et al. 2013).

Power sharing, decentralization or devolution and multi-level interactions among actors frame this “new” paradigm. Co-managed or multi-stakeholder protected areas are arrangements between a governmental agency and local/mobile/indigenous communities, user associations, private entrepreneurs and landowners that together share power and responsibility, make and enforce decisions. Community conserved areas rely on the self-enforcement, and are governed and voluntarily conserved by indigenous groups, local and mobile communities through customary laws and other traditional institutions. More recently and following global governance trends, private protected areas came into fore where private landowners, individuals, NGOs and other

not-for profit and for-profit organisations make and enforce decisions, have control and/or ownership over resources (Borrini-Feyerabend et al. 2006).

Since recently there are calls for “back to barriers” movement arguing against inclusive protected areas based on their presumably unsuccessful record in conserving the biodiversity and shifting attention from conservation to development goals (Hutton et al. 2005)

Protected areas continue to extend. Landscape-level and trans-boundary governance approaches emerged recently and it is especially applicable to the conservation of wide-ranging large carnivores (such as tigers). These complex governance arrangements extend the governance scales from local to regional and above to solve the problem of “fit” or align ecological with the governance scale. They require more intensive collaboration across scales, sectors and levels, coordination between landscape actors so their actions have meaningful direction, nested governance that can accommodate different decision levels and arena for consensus building, negotiation over land tenure (for illustration see: Wyborn & Bixler 2013)

Participation in protected area governance may have several different roles (Lawrence 2007; Niedzialkowski et al. 2012): a) shift responsibility from governments to local level actors and help (donor- or state-propelled) decentralization, b) increase legitimacy of conservation by inclusion (process legitimacy) and solve local conflict, c) create better conservation outcomes (output legitimacy) through increasing awareness of locals about resources or simply regenerate resources at lower cost.

Depending on different institutional designs, social (sometimes exclusive) norms that moderate interactions among participants and the final aim of participation, there are several modes or participating: passive, nominal, consultative, activity-specific, active and finally interactive (empowering) participation.

However, participation is frequently criticised on various grounds. It means so many things to so many people as the term may refer to: share of intention, an action or an impact (Lawrence 2007). In their book, Cooke and Kothari (2001), argue that participation usually serves the interests of donors, but also it can be manipulated by the local people. Participation focus on achieving efficiency does not actually lead to



empowerment of local people (which is often a moral stand in the reasons to use participation)(Reed 2008).

When being implemented (or imposed by donor requirements) where it does not fit the local culture and social structures, it creates participatory “exclusions” instead (Agarwal 2001) or it can even erode positive conservation and institutional attitudes (Macura et al. 2011). Even where culturally accepted, when requiring participation as a tool (regardless of purpose) it is frequently (but wrongly) assumed that local communities are homogenous group of people with the same motives (Agrawal & Gibson 1999). In such circumstances, participation can often create deeper structural gaps in the local community. Moreover, participation arenas can also serve as re-assertion of the control and power by dominant actors (elite capture- (e.g. Balooni et al. 2010)) or for shifting responsibility from practitioners to locals, making local community convenient scapegoat for failures of conservation and undesired ecological outcomes (Cooke & Kothari 2001)

Finally, earlier mentioned conservation evaluation implies measurement of success. However, the question is what success means to different actors in the conservation. Having in mind presented complexity of the protected areas, success is not easy to define. Protected areas are increasingly established not only to conserve biodiversity, but also to provide ecosystem benefits and socio-economical support to adjacent communities, have tourism purpose (Watson et al. 2014). Therefore, it is frequently not possible to evaluate conservation success only based on the ecological outcomes such as species abundance or forest cover. This cannot inform about local conflicts or retaliatory behaviour (White et al. 2009). Focusing on ecological measures of success might disregards objectives of local power actors, which may produce negative conservation outcomes in the future (Murray 2005). It is argued that calls for fortress conservation become more frequent out of the reductionist view of conservation success (Brechin et al. 2010)

### Dissertation structure

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This dissertation is composed of five chapters, with three standalone data chapters, all revolving around different facets of governance in FPAs. The work presented here uses

a combination of qualitative and quantitative approaches including systematic review methodology, qualitative data analysis and quantitative impact assessment that are all separately described in the data chapters.

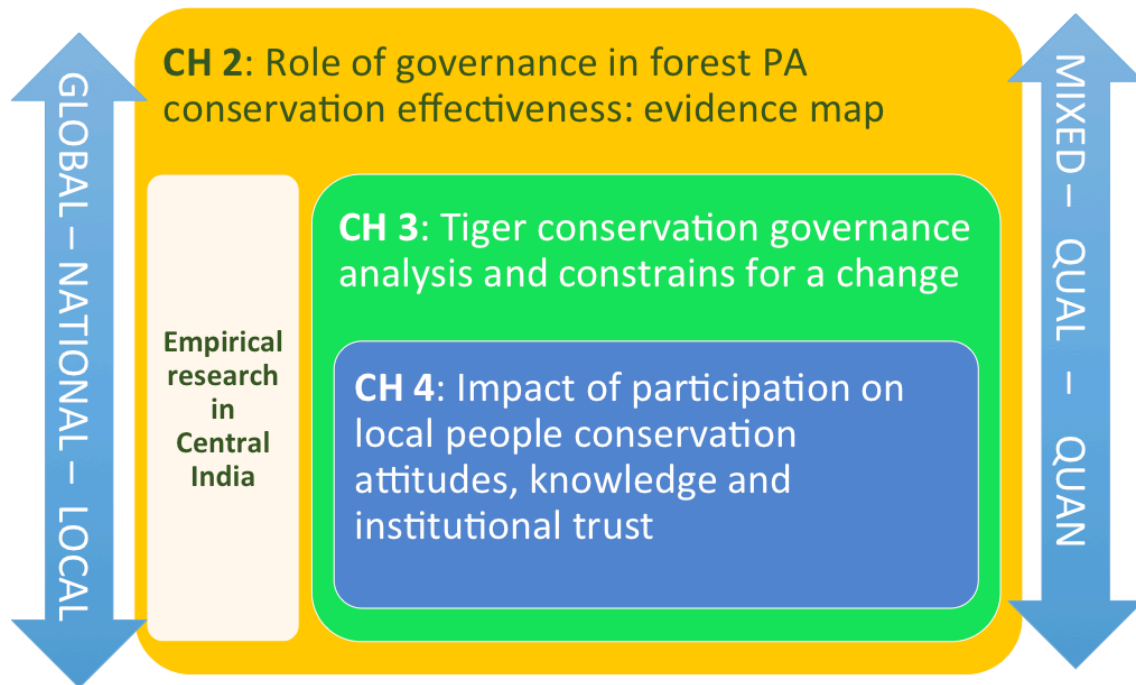
First part of the dissertation (**Chapter 2**) collates the evidence on conservation success of FPAs conditional on the type of their governance. This chapter explores protected areas globally and synthesizes the published literature up-to-day to create a global map of the evidence and knowledge base on the role of governance in the conservation effectiveness of protected area with respect to social and ecological outcomes. The results of the map call attention to the knowledge-gaps in the field of conservation governance, provide inputs for future research and generate questions for potential evidence syntheses.

Second part of the dissertation (**Chapters 3 and 4**) uses tiger conservation in central India as a case example to analyse governance change and the gaps between socially-inclusive and collaborative policies and actual practices on the ground. **Chapter 3** investigates, from institutional perspective, enabling and disabling factors for a shift towards “landscape-level conservation” that implies sectoral integration, inclusion and collaboration between PA managers and different actors in central Indian tiger landscape. **Chapter 4** focuses on the local level participatory policy implementation. It examines the case of two participatory projects around Pench Tiger Reserve in Madhya Pradesh and evaluates the effects of project participation through local community’s attitudes towards biodiversity and trust and satisfaction with reserve authorities. Chapter 5 contains discussion, policy and practice recommendations and conclusions. **Table 1.1.** provides a brief overview of research questions, methodology and research outputs.

**TABLE 1.1** SUMMARY OF RESERACH QUESTIONS, METHODS AND OUTPUTS

<b>Research questions</b>	1. What evidence exists on the role of governance in the effectiveness of forest protected areas?	2. What are possible constraining and enabling factors for governance change in the continuum from “government to governance”, from park-centric to landscape level conservation?	3. How are shifts towards inclusive and collaborative policies reflected on the ground, at the level of project implementation?
<b>Research level and focus of the study</b>	<u>Global</u> : Collating and characterising evidence on governance in FPAs globally	<u>Regional</u> : Institutional analysis of enabling and constraining factors for management change	<u>Local</u> : Effectiveness of participatory projects in state-driven decentralization context
<b>Method</b>	Systematic evidence synthesis	Case study: Qualitative data analysis (Grounded theory approach)	Case study: Matching and quantitative impact assessment
<b>Evidence source</b>	Secondary: existing qualitative and quantitative literature on FPAs	Empirical: Fieldwork data from Pune, Nagpur, Dehradun and New Delhi	Empirical: Fieldwork data from Pench Tiger reserve, Madhya Pradesh
<b>Data collection</b>	Search through 15 publication databases, 47 organisational websites, bibliographic and internet search	Open-ended interviews, direct observation, analysis of policy documents	321 household surveys, 3 months of direct observation, 30 semi/structured informal and formal interviews
<b>Research Outputs</b>	Chapter 2:Protocol published in Environmental Evidence; Systematic map submitted to Environmental Evidence	Chapter 3 under preparation for publication	Chapter 4:Under review in Regional Environmental Change

**Figure 1.1** provides a quick overview of the connections between the chapters, and nested structure of the thesis with the research conducted at different levels (noted on the left side arrow) and through different methodological approaches (right side arrow).



**FIGURE 1.1** CONNECTION BETWEEN THE CHAPTERS AND RESEARCH LOGIC

## References

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- Adams, W.M., Aveling, R., Brockington, D., Dickson, B., Elliott, J., Hutton, J., Roe, D., Vira, B. & Wolmer, W. (2004). Biodiversity conservation and the eradication of poverty. *Science*, 306, 1146–9.
- Agarwal, B. (2001). Participatory exclusions, community forestry, and gender: An analysis for South Asia and a conceptual framework. *World Dev.*
- Agrawal, A. & Gibson, C. (1999). Enchantment and disenchantment: the role of community in natural resource conservation. *World Dev.*
- Andrade, G.S.M. & Rhodes, J.R. (2012). Protected areas and local communities: An inevitable partnership toward successful conservation strategies? *Ecol. Soc.*, 17.
- Balooni, K., Lund, J.F., Kumar, C. & Inoue, M. (2010). Curse or blessing? Local elites in Joint Forest Management in India's Shiwaliks. *Int. J. Commons*, 4, 707–728.

- Barrett, C.B., Lee, D.R. & McPeak, J.G. (2005). Institutional arrangements for rural poverty reduction and resource conservation. *World Dev.*, 33, 193–197.
- Batterbury, S.P.J. & Fernando, J.L. (2006). Rescaling Governance and the Impacts of Political and Environmental Decentralization: An Introduction. *World Dev.*, 34, 1851–1863.
- Baylis, K., Honey-rosés, J., Börner, J., Corbera, E., Ezzine-de-blas, D., Ferraro, P.J., Lapeyre, R., Persson, M., Pfaff, A. & Wunder, S. (2015). Mainstreaming impact evaluation in nature conservation. *Conserv. Lett.*, 1–17.
- Bodegom, A.J. van, Klaver, D., Schoubroeck, F. van & Valk, O. van der. (2008). *FLEGT beyond T: Exploring the meaning of “Governance” concepts for the FLEGT process*. Wageningen, NL.
- Borrini-Feyerabend, G. (2003). Governance of protected areas: innovations in the air.... *Policy Matters*, 12, 92–101.
- Borrini-Feyerabend, G., Dudley, N., Jaeger, T., Lassen, B., Pathak Broome, N., Phillips, a. & Sandwith, T. (2013). *Governance of Protected Areas: From understanding to action*. *Best Pract. Prot. Area Guidel. Ser. No. 20*.
- Borrini-Feyerabend, G., Johnston, J. & Pansky, D. (2006). Governance of protected areas. In: *Manag. Prot. areas a Glob. Guid.* (eds. Lockwood, M., Worboys, G. & Kothari, A.). Earthscan, London, pp. 116–145.
- Brechin, S.R., Murray, G. & Mogelgaard, K. (2010). Conceptual and Practical Issues in Defining Protected Area Success: The Political, Social, and Ecological in an Organized World. *J. Sustain. For.*, 29, 362–389.
- Brechin, S.R., Wilshusen, P.R., Fortwangler, C.L. & West, P.C. (2002). Beyond the square wheel: toward a more comprehensive understanding of biodiversity conservation as social and political process. *Soc. & Natural Resour.*, 15, 41–64.
- Brooks, J.S., Franzen, M. a., Holmes, C.M., Grote, M.N. & Borgerhoff Mulder, M. (2006). Development as a conservation tool: Evaluating ecological, economic, attitudinal, and behavioural outcomes CEE review 05-014 (SR20). *Collab. Environ. Evid.*, 014, 0–32.
- Brown, K. (2002). Innovations for conservation and development. *Geogr. J.*
- Bruyninckx, H. (2009). Environmental evaluation practices and the issue of scale. In: *Environ. Progr. policy Eval. Addressing Methodol. challenges*. *New Dir. Eval.* (eds. Birnbaum, M. & Mickwitz, P.). Wiley Periodicals, Inc, pp. 31–39.
- Bulkeley, H. (2005). Reconfiguring environmental governance: Towards a politics of scales and networks. *Polit. Geogr.*, 24, 875–902.

- Butchart, S., M. W., Collen, B., van Strien, A., Scharlemann, J., Almond, R.E.A., Baillie, J.E.M., Bomhard, B., Brown, C., Bruno, J., Carpenter, K.E., Carr, G.M., Chanson, J., Chenery, A.M., Csirke, J., Davidson, N.C., Dentener, F., Foster, M., Galli, A., Galloway, J.N., Genovesi, P., Gregory, R.D., Hockings, M., Kapos, V., Lamarque, J.-F., Leverington, F., Loh, J., McGeoch, M.A., McRae, L., Minasyan, A., Morcillo, M.H., Oldfield, T.E.E., Pauly, D., Quader, S., Revenga, C., Sauer, J.R., Skolnik, B., Spear, D., Stanwell-Smith, D., Stuart, S.N., Symes, A., Tierney, M., Tyrrell, T.D., Vié, J.-C. & Reg Watson. (2010). Global biodiversity: indicators of recent declines. *Science* (80-. ), 328, 1164–1168.
- Cleaver, F. (2001). Institutional bricolage, conflict and cooperation in Usangu, Tanzania. *IDS Bull.*, 32, 26–35.
- Cleaver, F. (2002). Reinventing Institutions : Bricolage and the Social Embeddedness of Natural Resource Management. *Eur. J. Dev. Res.*, 11–30.
- Cooke, B. & Kothari, U. (2001). *Participation: The new tyranny?* Zed Books, London.
- Davidson, D.J. & Frickel, S. (2004). Understanding Environmental Governance: A Critical Review. *Organ. Environ.*, 17, 471–492.
- Eagles, P. (2008). Governance models for parks, recreation and tourism. In: *Transform. Park. Prot. Areas Policy Gov. a Chang. World* (eds. Hanna, K., Clark, D. & Slocombe, D.). Routledge, London, pp. 39–61.
- Ferraro, P. & Pattanayak, S. (2006). Money for nothing? A call for empirical evaluation of biodiversity conservation investments. *PLoS Biol.*, 4, e105.
- Ferraro, P.J. (2009). Counterfactual Thinking and Impact Evaluation in Environmental Policy. In: *Environ. Progr. policy Eval. New Dir. Eval. 122* (eds. Birnbaum, M. & Mickwitz, P.). Wiley Interscience, 7, pp. 75–84.
- Ferraro, P.J. & Hanauer, M.M. (2014). Advances in Measuring the Environmental and Social Impacts of Environmental Programs. *Annu. Rev. Environ. Resour.*, 39, 495–517.
- Fleischman, F.D. (2012). Public Servant Behaviour and forest policy implementation in Central India.
- Folke, C., Carpenter, S., Elmqvist, T., Gunderson, L., Holling, C.S. & Walker, B. (2002). Resilience and sustainable development: building adaptive capacity in a world of transformations. *Ambio*, 31, 437–440.
- Folke, C., Hahn, T., Olsson, P. & Norberg, J. (2005). Adaptive Governance of Social-Ecological Systems. *Annu. Rev. Environ. Resour.*, 30, 441–473.

- Funtowicz, S. & Ravetz, J. (1991). A New Scientific Methodology for Global Environmental Issues. In: *Ecol. Econ.* (ed. Costanza, R.). Columbia University Press, New York, pp. 137–152.
- Geldmann, J., Barnes, M., Coad, L., Craigie, I.D., Hockings, M. & Burgess, N.D. (2013). Effectiveness of terrestrial protected areas in reducing habitat loss and population declines. *Biol. Conserv.*, 161, 230–238.
- Gibson, C.C., Ostrom, E. & Ahn, T.K. (2000). The concept of scale and the human dimensions of global change: A survey. *Ecol. Econ.*, 32, 217–239.
- Giessen, L. & Buttoud, G. (2014). Defining and assessing forest governance. *For. Policy Econ.*, 49, 1–3.
- Graham, J., Amos, B. & Plumptre, T. (2003). *Governance Principles for Protected Areas in the 21st century. A discussion paper.* Ottawa.
- Hezri, A. a. & Dovers, S.R. (2006). Sustainability indicators, policy and governance: Issues for ecological economics. *Ecol. Econ.*, 60, 86–99.
- Hooghe, L. & Marks, G. (2003). Unraveling the Central State, but How? Types of Multi-level Governance. *Am. Polit. Sci. Rev.*, 97, 233–243.
- Hutton, J., Adams, W.M. & Murombedzi, J.C. (2005). Back to the Barriers? Changing Narratives in Biodiversity Conservation. *Forum Dev. Stud.*, 32, 341–370.
- Jabeen, N. (2007). Good or good enough governance in South Asia : constraints and possibilities. Inaugural Address.
- Jessop, B. (1998). The rise of the governance and the risks of failure: the case of economic development. *Int. Soc. Sci. J.*, 50, 29–45.
- Kjaer, A.M. (2004). *Governance.* Cambridge, Polity Press.
- Lawrence, A. (2007). Beyond the second generation: towards adaptiveness in participatory forest management. *CAB Rev. Perspect. Agric. Vet. Sci. Nutr. Nat. Resour.*, 2.
- Leader-Williams, N., Adams, W.M. & Smith, R.J. (2010). Deciding What to Save: Trade-offs in Conservation. In: *Trade-offs Conserv. Deciding What to Save* (eds. Leader-Williams, N., Adams, W.M. & Smith, R.J.). Blackwell Publishing Ltd.
- Lebel, L., Anderies, J., Campbell, B., Folke, C., Hatfield-Dodds, S., Hughes, T. & Wilson, J. (2006). Governance and the capacity to manage resilience in regional social-ecological systems. *Ecol. Soc.*, 11, 19.
- Lemos, M.C. & Agrawal, A. (2006). Environmental Governance. *Annu. Rev. Environ. Resour.*, 31, 297–325.

- Lewis, M. (2005). Indian Science for Indian Tigers?: Conservation Biology and the Question of Cultural Values. *J. Hist. Biol.*, 38, 185–207.
- Lockwood, M. (2010). Good governance for terrestrial protected areas: A framework, principles and performance outcomes SEARCH 1. *J. Environ. Manage.*
- Macura, B., Nayak, B., Suškevičius, M. & Tondrasoa, T. (2013). Local Manifestations of International Conservation Ideologies and Biodiversity Conflicts in Developing Economies. In: *Pap. from course "Global Environ. Governance" June 25 - July 6, 2012. Vol 2* (eds. Vatn, A., Kjosavik, D., Kulindwa, K. & Vedeld, P.). Aas, Norway, pp. 1–30.
- Macura, B., Zorondo-Rodríguez, F., Grau-Satorras, M., Demps, K., Laval, M., Garcia, C.A. & Reyes-García, V. (2011). Local Community Attitudes toward Forests Outside Protected Areas in India. Impact of Legal Awareness, Trust, and Participation. *Ecol. Soc.*, 16, 16.
- Margoluis, R., Stem, C., Salafsky, N. & Brown, M. (2009). Design Alternatives for Evaluating the Impact of Conservation Projects. In: *Environ. Progr. policy Eval. Addressing Methodol. challenges. New Dir. Eval.* (eds. Birnbaum, M. & Mickwitz, P.). pp. 85–96.
- Miteva, D., Pattanayak, S.K. & Ferraro, P.J. (2012). Evaluation of biodiversity policy instruments: what works and what doesn't? *Oxford Rev. Econ. Policy*, 28, 69–92.
- Mörth, U. (2005). Soft Law and New Modes of EU Governance – A Democratic Problem? (Paper presented in Darmstadt November 2005).
- Murray, G.D. (2005). Multifaceted Measures of Success in Two Mexican Marine Protected Areas. *Soc. Nat. Resour.*, 18, 889–905.
- Niedzialkowski, K., Paavola, J. & Jedrzejewska, B. (2012). Participation and protected areas governance: The impact of changing influence of local authorities on the conservation of the Białowieża primeval forest, Poland. *Ecol. Soc.*
- North, D. (1990). *Institutions, Institutional Change, and Economic Performance*. Cambridge University Press., Cambridge (UK).
- Ostrom, E. (1990). Governing the commons: the evolution of institutions for collective actions.
- Ostrom, E. (1998). Scales, polycentricity, and incentives: designing complexity to govern complexity. In: *Prot. Glob. Biodivers. converging Strateg.* (eds. Guruswamy, L. & McNeely, J.). Durham NC, p. 149-167.
- Ostrom, E. & Nagendra, H. (2006). Insights on linking forests , trees , and people from the air , on the ground , and in the laboratory.



- Ostrom, E., The, S., Economic, A. & June, N. (2010). Beyond Markets and States : Polycentric Governance of Complex Economic Systems. *Am. Econ. Rev.*, 100, 641–672.
- Ostrom, V., Tiebout, C.M. & Warren, R. (1961). The Organization of Government in Metropolitan Areas: A Theoretical Inquiry. *Am. Polit. Sci. Rev.*, 55, 831–42.
- Paavola, J. (2007). Institutions and environmental governance: A reconceptualization. *Ecol. Econ.*, 63, 93–103.
- Paavola, J., Gouldson, A. & Kluvánková-Oravská, T. (2009). Interplay of actors, scales, frameworks and regimes in the governance of biodiversity. *Environ. Policy Gov.*, 19, 148–158.
- Pahl-Wostl, C. (2009). A conceptual framework for analysing adaptive capacity and multi-level learning processes in resource governance regimes. *Glob. Environ. Chang.*, 19, 354–365.
- Peters, G. (2000). Governance and Comparative Politics. In: *Debating Governance. Authority, Steering, Democr.* (ed. Pierre, J.). Oxford University Press, Oxford, pp. 36–53.
- Philip, K. (2004). Civilizing Natures: Race, Resources, and Modernity in Colonial South India.
- Pierre, J. (2000). *Debating Governance: Authority, Steering, and Democracy*. Oxford University Press, Oxford, UK.
- Polski, M.M. & Ostrom, E. (1999). *An Institutional Framework for Policy Analysis and Design. W98-27. Development*.
- Pullin, A.S., Bangpan, M., Dalrymple, S., Dickson, K., Haddaway, N.R., Healey, J.R., Hauari, H., Hockley, N., Jones, J.P.G., Knight, T., Vigurs, C. & Oliver, S. (2013). Human well-being impacts of terrestrial protected areas. *Environ. Evid.*, 2, 19.
- Rauschmayer, F., Berghöfer, A., Omann, I. & Zikos, D. (2009). Examining processes or/and outcomes? Evaluation concepts in European governance of natural resources. *Environ. Policy Gov.*, 19, 159–173.
- Reed, M.S. (2008). Stakeholder participation for environmental management: A literature review. *Biol. Conserv.*, 141, 2417–2431.
- Reyes-Garcia, V., Ruiz-Mallen, I., Porter-Bolland, L., Garcia-Frapolli, E., Ellis, E.A., Mendez, M.-E., Pritchard, D.J. & Sanchez-Gonzalez, M.-C. (2013). Local understandings of conservation in southeastern Mexico and their implications for community-based conservation as an alternative paradigm. *Conserv. Biol.*, 27, 856–65.

- Rhodes, M. (2005). The Scientific Objectives of the NEWGOV Project: A Revised Framework. NEWGOV Consortium Conference: 30- 31 May 2005; Florence, European University Institute.
- Rhodes, R.A.W. (1996). The new governance: governing without government. *Polit. Stud.*, XLIV, 652–667.
- Sandbrook, C., Adams, W.M., Büscher, B. & Vira, B. (2013). Social research and biodiversity conservation. *Conserv. Biol.*, 27, 1487–90.
- Schmitt, C.B., Burgess, N.D., Coad, L., Belokurov, A., Besançon, C., Boisrobert, L., Campbell, A., Fish, L., Gliddon, D., Humphries, K., Kapos, V., Loucks, C., Lysenko, I., Miles, L., Mills, C., Minnemeyer, S., Pistorius, T., Ravilious, C., Steininger, M. & Winkel, G. (2009). Global analysis of the protection status of the world's forests. *Biol. Conserv.*, 142, 2122–2130.
- Secco, L., Da Re, R., Pettenella, D.M. & Gatto, P. (2014). Why and how to measure forest governance at local level: A set of indicators. *For. Policy Econ.*, 49, 57–71.
- Van Tatenhove, J., Arts, B. & Leroy, P. (2000). *Political modernization and the environment: the renewal of environmental policy arrangements*. Kluwer, Dordrecht.
- Termeer, C.J. a M., Dewulf, A. & van Lieshout, M. (2010). Disentangling scale approaches in governance research: Comparing monocentric, multilevel, and adaptive governance. *Ecol. Soc.*, 15.
- Vatn, A. (2005). *Institutions and the Environment*. *Econ. Aff.* Edward Elgar, Cheltenham, UK.
- Vatn, A. (2006). Institutions. Entry prepared for the Internet Encyclopaedia of Ecological Economics.
- Watson, J.E.M., Dudley, N., Segan, D.B. & Hockings, M. (2014). The performance and potential of protected areas. *Nature*.
- Wesselink, A. & Paavola, J. (2008). *Analysing Multilevel Water and Biodiversity Governance in their Context Report*. *UFZ-Discussion Papers*. *GoverNat*.
- White, R.M., Fischer, A., Marshall, K., Travis, J.M.J., Webb, T.J., di Falco, S., Redpath, S.M. & van der Wal, R. (2009). Developing an integrated conceptual framework to understand biodiversity conflicts. *Land use policy*, 26, 242–253.
- Wilshusen, P.R., Brechin, S.R., Fortwangler, C.L. & West, P.C. (2002). Reinventing a Square Wheel: Critique of a Resurgent “Protection Paradigm” in International Biodiversity Conservation. *Soc. Nat. Resour.*, 15, 17–40.

- Wyborn, C. & Bixler, R.P. (2013). Collaboration and nested environmental governance: Scale dependency, scale framing, and cross-scale interactions in collaborative conservation. *J. Environ. Manage.*, 123, 58–67.
- Young, O.R. (2002). *The institutional dimensions of environmental change: fit, interplay, and scale*. MIT Press, Cambridge, MA.
- Young, O.R., Lambin, E.F., Alcock, F., Haberl, H., Karlsson, S.I., McConnell, W.J., Myint, T., Pahl-wostl, C., Polsky, C. & Ramakrishnan, P.S. (2006). A Portfolio Approach to Analyzing Complex Human-Environment Interactions : Institutions and Land Change, 11.



## CHAPTER 2

### THE ROLE OF GOVERNANCE IN FOREST PROTECTED AREAS: MAPPING THE EVIDENCE

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Primary research, which presents answers to policy-relevant questions, is rapidly growing in the field of conservation (Woodcock et al. 2014). A reviewing and synthesising research finding is thus increasingly important to help inform policy and support decision-making. However, factors that introduce bias in evidence synthesis, such as variability of primary research quality or the subjectivity of a reviewer, may feed unreliable findings to policy and practice.

Traditional reviews are often hampered by the lack of comprehensiveness, transparency and reliability. They are also highly susceptible to bias. Sources of bias are emerging from all stages of the review process: evidence identification (e.g. using only one search database or not including grey literature), evidence selection (e.g. selecting studies by the authors familiar to a reviewer) and synthesis (e.g. vote counting) (Woodcock et al. 2014; Haddaway et al. 2015).

Systematic evidence synthesis (including systematic maps and systematic reviews) is considered to be a gold standard for reliable evidence compilation and/or syntheses. This is a rigorous tool for collating and synthesising a large amount of available evidence in a transparent, repeatable and objective way (Pullin & Knight 2009). The reliability and rigour of this review methodology is founded in transparent and strict review procedures that aim to mitigate bias, increase procedural objectivity and critically appraise the evidence (Petticrew & Roberts 2006; Haddaway et al. 2015).

Systematic evidence synthesis is used across several fields (e.g. education research, medicine and policy evaluation). They include peer-reviewed and grey literature, and may mix both qualitative and quantitative evidence. Inspired by health research, this methodology has been adopted since 2006 in the field of environmental management and conservation (Pullin & Knight 2001). It's suitability was evident by its ability to

help build an evidence base to answer effectiveness-related questions (i.e. what works and under what conditions) in the field of conservation (Pullin & Knight 2009). Systematic evidence syntheses have been increasingly commissioned by decision-making organisations and are used to inform policy-makers (Pullin & Knight 2012).

In comparison to full systematic reviews used for evidence synthesis, systematic maps are tools for cataloguing existing evidence. They aim to collate evidence on a broad policy- or practice-relevant question and identify knowledge gaps (Gough et al. 2012). Thus, the mapping process does not involve a full critical appraisal (i.e. studies are not appraised for external validity), evidence extraction or synthesis (CEE, 2013).

The systematic mapping process is composed of several successive phases: 1) identifying & developing the research question (with involvement of stakeholders); 2) generating and publishing a peer-reviewed protocol (see Chapter 2.1 and Macura et al. 2013); 3) undertaking a systematic search for studies; 4) selecting relevant evidence; 5) assessing quality of the mapped studies through appraisal of the internal validity; 6) reporting & dissemination of findings (Chapter 2.2).

This chapter is composed of two parts. The first section (Chapter 2.1) contains the protocol for the evidence synthesis. The protocol has been peer-reviewed and published in the *Journal of Environmental Evidence* (Macura et al. 2013). The protocol prescribed strict systematic procedures and detailed methodological steps to be used in the mixed-methods evidence map to follow (Chapter 2.2).

The methodology followed in this chapter is based on the Collaboration For Environmental Evidence (CEE) guidelines (2013) for evidence synthesis.

## References

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Collaboration for Environmental Evidence (CEE). (2013). *Guidelines for Systematic Review and Evidence Synthesis in Environmental Management. Version 4.2.*

- Gough, D., Thomas, J. & Oliver, S. (2012). Clarifying differences between review designs and methods. *Syst. Rev.*, 1, 28.
- Haddaway, N.R., Woodcock, P., Macura, B. & Collins, A. (2015). Making literature reviews more reliable through application of lessons from systematic reviews. *Conserv. Biol.*
- Macura, B., Secco, L. & Pullin, A.S. (2013). Does the effectiveness of forest protected areas differ conditionally on their type of governance? *Environ. Evid.*, 2, 14.
- Petticrew, M. & Roberts, H. (2006). *Systematic reviews in the social sciences*. Blackwell Publishing Ltd, Oxford, UK.
- Pullin, A.S. & Knight, T.M. (2001). Effectiveness in Conservation Practice: Pointers from Medicine and Public Health. *Conserv. Biol.*, 15, 50–54.
- Pullin, A.S. & Knight, T.M. (2009). Doing more good than harm – Building an evidence-base for conservation and environmental management. *Biol. Conserv.*, 142, 931–934.
- Pullin, A.S. & Knight, T.M. (2012). Science informing Policy – a health warning for the environment. *Environ. Evid.*, 1, 15.
- Woodcock, P., Pullin, A.S. & Kaiser, M.J. (2014). Evaluating and improving the reliability of evidence syntheses in conservation and environmental science: A methodology. *Biol. Conserv.*, 176, 54–62.





## CHAPTER 2.1

### SYSTEMATIC REVIEW PROTOCOL

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#### Background

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Forests contain roughly 90% of terrestrial biodiversity and they provide a wide variety of ecosystem services, contributing to the livelihoods of more than 1 billion people (World Bank 2008). Yet, forest degradation and deforestation are advancing at alarming rate, especially in the tropics (FAO 2010) and are putting at risk a high diversity of species and habitats sustained by forest ecosystems (Schmitt et al. 2009).

Establishment of *in situ* conservation strategies, such as protected areas (PAs), has been the major response to a global demand for conservation of biodiversity and ecosystem services (Millennium Ecosystem Assessment 2005) and more specifically, to the reduction of tropical deforestation (Andam et al. 2008). Accordingly, there has been a year-on-year increase in the number of PAs and they are today covering 12% of the total world's land surface (Dudley 2008) and 13.5% of the world's forests (Schmitt et al. 2009)

Nevertheless, the effectiveness of biodiversity and forest conservation measures<sup>6</sup> is under question as the rate of biodiversity loss is not decelerating (Butchart et al. 2010). There is evidence that PAs are decreasing the deforestation rate (Naughton-Treves et al. 2005; Andam et al. 2008) estimated through measures of land clearing prevention (Bruner et al. 2001) and decreasing the incidence of forest fires (Nelson & Chomitz 2009). However, some authors argue that many of the claimed positive conservation effects might be a function of a PA location i.e. low accessibility of protected land, but not the effect of actual protection measures (Ferraro & Pattanayak 2006; Andam et al.

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<sup>6</sup> Under effective conservation we mean positive and measurable effects of conservation policies and practices on biodiversity and target ecosystems, populations, species or habitats.

2008). Additionally, increasing deforestation and pressures on the resources in social-ecological systems that surround PAs, might diminish conservation efforts inside PAs, through effects of ecological isolation and landscape fragmentation (Sánchez-Azofeifa et al. 2003; Naughton-Treves et al. 2005)

However, there is no systematic information on how different local governance modes and day-to-day decision-making processes within forest PAs may cause a change in PA effectiveness in terms of producing desired conservation outcomes. In context of PAs, governance can be defined as “a set of processes, procedures, resources, institutions and actors that determine how decisions are made and implemented” (Secco et al. 2011:105). It is about power, relationships, accountability and responsibility exercised by organisations and actors (Graham et al. 2003; Borrini-Feyerabend et al. 2006). Conservation governance arrangements are becoming multilevel and complex (Berkes 2007). Governments are not the only source of environmental decision-making authority and there is a shift from administrative to collaborative state (Koontz & Thomas 2006). Power to make and enforce decisions is distributed among diverse social actors (Lemos & Agrawal 2006), including indigenous, mobile and local communities, local governments, NGOs and the private sector (Borrini-Feyerabend 2003). The change of the scale of governance has been occurring (mostly in the developing countries), and the authority and responsibility to make and enforce decisions are shifted from nation-state to lower-level authorities (decentralization) or to institutions outside the state (devolution) (Agrawal & Gupta 2005; Sikor et al. 2008)

Following the main trends in conservation governance and based on the power distribution and scale of decision-making, type of different actors involved and level and nature of their collaboration, four broad modes of PAs governance can be identified (Borrini-Feyerabend 2003; Borrini-Feyerabend et al. 2006): 1) governance by government, 2) shared governance or co-management, 3) private governance and 4) governance by communities and indigenous people. These governance modes are briefly described in the following paragraphs as each of them may deliver different social and ecological outcomes.

1) Government PAs are governed by the centralised governmental agency (ministry or park agency reporting directly to the government) that enforces decisions, has authority, responsibility and accountability for managing PAs (Borrini-Feyerabend et al. 2006). Government agencies are often considered as legitimate actors that can deliver public benefits and are accountable directly to the public (Baral & Stern 2010). Nevertheless, some authors argue that this 'old' (Peters 2000) hierarchical type of governance is not able to handle size and complexity of PAs (Borrini-Feyerabend 2003). Moreover, state PAs with top-down and exclusionary conservation approach, frequently present in developing world, are being increasingly reported to produce unequal distribution of rights, power and benefits and create social conflicts (Kothari 2008).

2) Co-managed or multi-stakeholder PAs are governance modes where a governmental agency and other stakeholders, such as local/mobile/indigenous communities that depend on the area culturally or for their livelihoods, or user associations, private entrepreneurs and landowners share power and responsibility, make and enforce decisions. Formal decision-making authority might be vested in one agency (often governmental body), but that agency is required by law to collaborate with other stakeholders (Dudley 2008). This collaborative partnership may be materialised through many forms: from consultation to decision-making carried out by consensus (Borrini-Feyerabend et al. 2006). Co-management is frequently labelled as managing relationships, not resources (Natcher et al. 2005; Berkes 2009). However, it is argued that the partnerships in co-management arrangements can be problematic as nature of power sharing makes less powerful partners, such as indigenous people, disadvantaged (Nadasdy 2003).

3) Private PAs where private landowners, individuals, NGOs and other not-for profit and for-profit organisations make and enforce decisions, have control and/or ownership over resources. PAs can be governed by private and non-governmental actors, that might be perceived more efficient than bureaucratic structure of governmental agencies, also providing technical and financial support, bringing new ideas and capacity building (Baral & Stern 2010). However, the legitimacy and accountability of private parties is always limited and questionable, especially due to the vested interests of funding

agencies and reluctance of governments to give authority or legal recognition to private parties (Dudley 2008; Baral & Stern 2010). Moreover, since designation of a private PA is a voluntary act, providing long-term security for conservation may pose a challenge (Dudley 2008).

4) Community conserved areas<sup>7</sup> are governed and voluntarily conserved by indigenous groups, local and mobile communities through customary laws. Authority and responsibility is vested within communities through a variety of ethnic governance or locally arranged rules and organisation that can be very complex, with diverse management and ownership rights. Community conserved areas depend on the government recognition and respect of community/indigenous rights over the territory (Borrini-Feyerabend et al. 2006). However, community based conservation are criticised to be vulnerable to external drivers and not being able to deal with larger scale biodiversity processes (e.g. management of migratory species) (Berkes 2006).

Fifth, hybrid governance type may be added to this classification as in the reality borders between governance modes are blurred (Rhodes 2005) and this is especially because of complex land and resource ownership rights, diversity in management authority and funding sources (Eagles 2008).

Nevertheless, the importance of the local political processes within PAs is frequently ignored in the conservation effectiveness literature. Therefore, to improve PAs governance and their conservation outcomes, there is need for more clear information on how differences in local governance modes and decision-making processes may cause variability in the outcomes and thus, in the effectiveness of forest PAs.

Four previous Systematic Reviews have addressed the various aspects of community-based conservation, synthesising and assessing primary literature on: 1) development as a conservation tool (Brooks et al. 2006); 2) the effect of local cultural context (Waylen et al. 2010) and 3) broader social - political context on community based management

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<sup>7</sup> Community conserved areas have been relatively recently internationally recognized as a PA at IUCN World Parks Congress in 2003 (Durban) and at the COP VII of CBD in 2004 (Kuala Lumpur) (Kothari 2006b:1)

(Brooks et al. 2010), and 4) community forest management as a mechanism for supplying global environmental benefits and improving local welfare (Bowler et al. 2010). There are two more Systematic Reviews that have a wider conservation focus on terrestrial PAs and their 1) effectiveness in maintaining biodiversity and reducing habitat loss (Geldmann et al. 2013) and 2) securing human-well being (in preparation) (Pullin et al. 2012). This Systematic review is complementary to previous ones, looking from the governance perspective on effectiveness of forest protected areas worldwide; and determining the links between governance processes and multiple conservation outcomes.

Due to high complexity and variety of conservation practices, we will focus our analysis on conservation of forest resources only and on governance of forest PAs. To be defined as a PA, conservation governance arrangements have to: 1) have geographical limits or boundaries; 2) predominantly aim to achieve conservation benefits, but not excluding other related benefits (e.g. social benefits); 3) be designated and managed by legal gazetted means or by non-gazetted, but officially recognized NGO policies or customary laws; 4) have a body of governing rules; and 5) have a clearly identified organization or individual with a governance authority (Kothari 2006a; Dudley 2008). We define forest PAs as “a subset of all protected areas that includes a substantial amount of forest as defined for the purposes of Forest Protected Areas. This may be the whole or a part of a protected area”. This IUCN’s definition excludes commercial plantations and forest managed for industrial purposes within the less strictly protected categories (Dudley & Phillips 2006:19).

## Objectives of the Review

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We aim to assess relative effectiveness of different governance regimes within forest PAs by contrasting different governance characteristics and processes on the basis of multiple measures of success<sup>8</sup>.

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<sup>8</sup> The outcome measures are adopted from Systematic Reviews by Brooks et al. (2006, 2010, 2013) that employed set of ecological, attitudinal, behavioural and economic measures of success to estimate effectiveness of conservation intervention. However, as Pullin and colleagues (2012) in their review

There are recently quite a few studies that have estimated effectiveness of PAs (e.g. (Rodrigues et al. 2004; Gaston et al. 2008; Porter-Bolland et al. 2012)), but they have focussed solely on the tropics and only few of them assessed PAs effectiveness integrating multiple performance measures (Murray 2005; Ferraro et al. 2011; Granderson 2011). Apart from biodiversity conservation, PAs have various multifaceted and context-dependent objectives (Murray 2005), in both, ecological and the social-economic domain. Examining PAs effectiveness in terms of biodiversity conservation only, might lead to restricted conclusions as it disregards local conflicts and resistance expressed through negative attitudes towards conservation policies and practices and anti-conservation behaviour of local stakeholders; it does not take into account institutional, economical or political changes in surrounding social-ecological systems influenced by PAs (e.g. employment opportunities or migration level) and it may reinforce a fortress conservation mentality (Brechin et al. 2002, 2010; Wilshusen et al. 2002; Hutton et al. 2005; Murray 2005; Hawken & Granoff 2010; Ferraro et al. 2011; Granderson 2011).

In this review, we look at the following outcome measures:

A) Outcome measures within forest PA boundaries:

- 1) Attitudinal success measured through (difference/change in) attitudes of local stakeholders<sup>9</sup> towards focal PA, authority and/or management practices
- 2) Behavioural success measured through (difference/change in) level of conservation-oriented behaviour necessary to decrease the threats to natural resources (e.g. decrease in level of illegal activities, poaching, etc.)
- 3) Ecological success measured through (difference/ change in) deforestation rate, biodiversity level, maintenance of forest cover and forest density, condition, health.

B) Outcome measures outside of forest PAs boundaries:

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focused mainly on social-economical analysis of terrestrial PAs, this review does not assess the economical effectiveness to avoid the potential overlap

<sup>9</sup> A stakeholder in this study refers to those who affect and those affected i.e. both actively and passively involved individuals, groups or organizations in a PA governance (after (Grimble & Wellard 1997)).

4) Spillover effects in surrounding social-ecological systems i.e. social, institutional and ecological changes on the local level including (Andam et al. 2008): displacement of deforestation and agricultural pressures, preventive clearing at the nearby private land to prevent protective regulation, establishment of private reserves, better law enforcement at the neighbouring land, reforestation initiatives, new employment opportunities and similar. The spillover effects will be included into analysis only if there are reported baseline data against which these effects might be defined and measured (Ewers & Rodrigues 2008). Because of practical reasons, these changes will be recorded only at the local level that might be at a lowest administrative unit where a PA is located (e.g. municipality).

This review aims at answering following primary question:

*Does the effectiveness of forest protected areas differ conditionally on their type of governance?*

Elements of the primary question are shown in the **Table 2.1.1**.

Secondary question is:

Which characteristics of decision-making process influence the outcomes of forest protected areas?

Based on the aforementioned trends in PA governance, we selected following analytical variables that might describe governance processes:

1) Scale of decision-making:

1.1) Level of decentralization i.e. level of implementation of “subsidiarity” principle (central decision-making, decentralization or devolution);

2) Individual versus multi-actor decision-making:

2.1) Diversification of stakeholders’ categories (one versus multi-actor);

2.2) Nature of stakeholders’ participation (pro-active, consultancy, passive, none);

3) Collaboration among stakeholders in decision-making:

3.1) Nature of collaboration (formal, informal, none);

3.2) Level of collaboration (horizontal/internal, vertical/external, multilevel).

TABLE 2.1.1 ELEMENTS OF THE SYSTEMATIC REVIEW QUESTION

Setting	Perspective	Interest, phenomena of	Comparison	Evaluation
Forest protected areas	1) Local Community  2) PA Authority/Management staff	1) <b>Governmental</b> PAs  2) <b>Co-managed</b> PAs  3) <b>Private</b> PAs  4) <b>Community</b> conserved areas  5) <b>Hybrid</b> forms	Different governance regimes	1) <b>Attitudinal success</b> measured through (difference/change in) attitudes of local stakeholders towards focal PA, authority and/or management practices 2) <b>Behavioural success</b> measured through (difference/change in) level of conservation-oriented behaviour necessary to decrease the threats to natural resources 3) <b>Ecological success</b> measured through (difference/change in) deforestation rate, biodiversity level, maintenance of forest cover and forest density, condition, health, etc. 4) <b>Spillover effects:</b> social, institutional and ecological changes in surrounding social-ecological systems

We assume that governance processes i.e. how decisions are made and implemented, influence level of conservation effectiveness, its ecological and social outcomes. Using theory of change approach, we hypothesise that: **(H1)** making decisions at lowest level possible, **(H2)** collective or multi-actor decision making, **(H3)** high level of proactive participation in day-to-day decision-making and **(H4)** multilevel collaboration among stakeholders can lead to more positive attitudinal, behavioural and ecological success of PAs and decrease negative spillover effects around them.



## Methods

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### SEARCH STRATEGY

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We will search for all available evidence relevant to the questions, whether published or unpublished, including both peer reviewed papers and relevant grey literature.

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### PUBLICATION DATABASES

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The general search will be conducted using the following online databases:

- ISI Web of knowledge
- Scopus
- PubMed
- Agricola
- International Development Research Center (IDRC) digital library
- Scienceindex
- Public library of science
- Directory of Open Access Journals
- COPAC
- Social Sciences research network
- Index to Theses Online
- CAB Abstracts

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### WEB SEARCH ENGINES

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Due to repeatability, the web search will be mainly used for reference cross-checks. Following web search engines will be used:

- 1) [www.scholar.google.com](http://www.scholar.google.com)
- 2) <http://scientific.thomsonwebplus.com/>
- 3) [www.scirus.com](http://www.scirus.com) (web sources only)

Only the first 50 hits of each search will be screened.

#### ORGANISATIONAL WEBSITE SEARCH

Specific searches will be conducted using the following websites of organisations specialised in the field of (forest) PA management and governance. Where possible, only publication sections of the websites will be used for search. List of websites was compiled from previous Systematic Reviews on effectiveness of PAs and community-based conservation (Brooks et al. 2006, 2010; Bowler et al. 2010; Waylen et al. 2010; Pullin et al. 2012; Geldmann et al. 2013) and completed by including websites of organisations well-known in the field of natural resource governance, forestry and PAs.

<http://www.agter.org/>

<http://www.capri.cgiar.org/>

[http://www.catie.ac.cr/Magazin\\_ENG.asp?CodIdioma=ENG](http://www.catie.ac.cr/Magazin_ENG.asp?CodIdioma=ENG)

<http://www.cbnrm.net/>

<http://www.cgiar.org/>

<http://www.cifor.org/>

<http://www.cof.orst.edu/org/istf/ftpp.htm>

<http://www.communityforestryinternational.org/>

<http://www.conservation.org>

<http://www.cooperationcommons.com/>

<http://www.culturalsurvival.org/current-projects/universal-periodic-review>

<http://cfs.nrcan.gc.ca/publications>

<http://community.eldis.org/>

<http://conserveonline.org/>

<http://csid.asu.edu/socecolib>

<http://dec.usaid.gov/index.cfm>

<http://www.dfid.gov.uk>

<http://www.eci.ox.ac.uk/publications/index.php>

<http://www.eldis.org/>

<http://www.etfrn.org>

<http://www.fao.org/>, <http://www4.fao.org/faobib/>

<http://www.firstpeoplesworldwide.org/resources.asp>

<http://www.forest-trends.org/publications.php>

<http://forests.org/>

<http://www.ifad.org/>

<http://www.iied.org>

<http://iog.ca/>

<http://www.indiana.edu/~workshop/publications/index.php>

<http://www.iucn.org/about/union/commissions/wcpa/>

<http://www.iufro.org/publications/>

<http://www.lib.umn.edu/cgi-bin/forestry/index.cgi>

<http://www.nzdl.org/fast-cgi-bin/library?a=p&p=about&c=envl>

<http://wwf.panda.org>

<http://povertyandconservation.info/en/bibliographies>

<http://protectedareasandgovernance.groupsites.com>

<http://www.rainforestportal.org/>

<http://www.tropicalforests.ox.ac.uk>

<http://www.un.org/en/>

<http://www.undp.org/>, <http://sgp.undp.org/>

[http://web.undp.org/gef/gef\\_library.shtml](http://web.undp.org/gef/gef_library.shtml)

<http://www.unep-wcmc.org/>

<http://www.unep.org>, <http://ekh.unep.org/>

<http://www.wcs.org>

<http://web.worldbank.org>

## BIBLIOGRAPHIC SEARCHES

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Reference lists of relevant review studies will be searched for relevant primary articles.

## SEARCH TERMS

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The following English search terms and their various combinations using Boolean operators (AND, OR), wild-cards (for any group of characters (\*)) or for a single character (\$) will be used to perform search in the databases and Internet search

engines. Search strings will be adapted to different formats and requirements of databases and search engines to be explored. Specifically, if a website does not allow for complex search strings and Boolean operators, we will use simple search terms such as “protected area”, “governance”, “park”, “reserve”, “biodiversity”, “conservation”.

### 1) Search string for PA governance and management regimes

“NGO\*” OR (non\$governmental and organi\$ation) OR “private nature reserve\*” OR “privat\*” OR “governme\*” OR “community conserved area\*” OR “indigenous” or (“comanag\*” or “co-manag\*”) OR “collaborative” OR “decentrali\*” OR “devolut\*” OR “joint management” OR (delegat\* AND authorit\*) OR (“integrated and conservation and development”) or “ICDP\*” or “governance” or “self-governance” or “institution\*” or “rule\*” or “norm\*” or “polit\*” or “polic\*” or “paper park\*” OR “participat\*” or “accountab\*” or “legitima\*” or ”compliance” or “enforcement\*” or “coercion\*” or “trust\*” or “conflict\*” or “exclusion\*” or “access” or “local elite\*” or “elite capture” or “revenue\$sharing”

AND

“protected area\*” OR “nature reserve\*” OR park\* OR “monument\*” OR “wilderness area\*” OR “world heritage site\*” or “sanctuar\*” or “refug\*” or “biosphere reserve\*” or “protected landscape” or “management area\*” or “sacred forest\*” or “sacred grove\*”

AND

forest\*

### 2) Search string for social outcomes

“attitude\*” OR “behavi\*” OR “perception\*” OR “belief\*” OR “perspective\*” OR “opinion\*” OR “view\*”

### 3) Search string for ecological outcomes

“conserv\*” or “deforest\*” or “degrad\*” or “biodiversity” or desert\* or “threaten” or “leakage\*” or (“spillover\*” or “spill-over\*”) or “reforest\*” or “afforest\*” or (“re-

growth” or “regrowth”) Or “forest clearance” or “land use change” or “land cover change” or “loss\*”

We will combine search strings as follows: 1 AND (2 OR 3).

Search strings developed above are the result of numerous iterations performed in ISI Web of Knowledge database. Full record of iterations has been kept and will be further developed while advancing the search. Citations will be imported into an Endnote library and online systematic review software EPPI-reviewer 4.0 (Thomas et al. 2010). Duplicates will be deleted.

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## STUDY INCLUSION CRITERIA

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Relevant documents will be selected by application of inclusion criteria. Inclusion criteria will be first applied to the document title, after to the abstract and in the final phase, to the whole document.

To filter studies based on abstracts, two reviewers will apply inclusion criteria. Repeatability of the application of inclusion criteria will be inspected using Kappa statistics on a sample of abstracts to assess the level of agreement between two reviewers. In case of  $\kappa < 0.6$ , inclusion criteria will be discussed, re-interpreted and adjusted if necessary. After this procedure is done, only one reviewer will apply inclusion criteria to the rest of the studies.

Relevant subject populations: Biodiversity indicators within and human populations living in and/or around forest PAs.

Relevant interventions/phenomena of interest: Forest PAs under government, co-managed or joint, private and community modes of governance worldwide.

Relevant comparators: comparisons among different interventions (governance regimes). They will follow the appropriate study design explained below. Studies

without relative comparators may be included into analysis as well. Comparators reported within the qualitative study can be created using perceptions or reconstructing the memories of respondents. If present in the study, constructed comparators where external data sets or models are applied to develop scenarios for comparison will be also included into our analysis.

Relevant outcomes:

- 1) Changes or differences in attitudes of local stakeholders towards focal PA governance, authority and/or management practices;
- 2) Changes or differences in level of conservation-oriented behaviour necessary to decrease the threats to natural resources;
- 3) Changes or difference in deforestation rate, biodiversity level within a forest ecosystem, maintenance of forest cover and forest density, condition, health (including fires);
- 4) Social, institutional and ecological changes on the local level that may include for example leakage (i.e. increased pressures on resources shifted outside a focal forest PA) or policy side effects (i.e. positive or negative impacts of a policy instrument on non-focal sectors and activities).

To be included into our analysis, a study has to report on at least two types of outcomes.

Relevant types of study design: Empirical studies using qualitative, quantitative or mixed methods that can be designed as control-intervention site comparisons/case control study, cohort study, case series, cross sectional study, interrupted time series, Before-After/Control-Intervention (BACI design), randomized control trials/control trials.

In case of multiple evidence sources for one PA, data will be combined but the most recent evidence will be prioritised.

Language: Studies published in English.

Following studies will be excluded:

- Studies with a focus on PAs that do not meet the previously mentioned definition of Forest PAs (Dudley & Phillips 2006). This definition is provided in the IUCN Guidelines on use of PA management categories and we will follow and consult it for further clarifications and detailed interpretation.
- Studies with a focus on conservation of a single or a group of species within forest PAs.

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#### POTENTIAL REASONS FOR HETEROGENEITY AND EFFECT MODIFIERS

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Set of effect modifiers (predictor variables) that can cause variation in the outcomes are expected to be as follows:

Governance and decision-making characteristics: scale of decision-making; individual versus multi-actor decision-making; nature of stakeholders' participation; level and nature of collaboration among stakeholders;

Resource ownership;

Level of resource access and use by the local actors;

Presence of a local leader;

Source of PA funding;

National context: corruption and illegality, development level, income inequality;

Human population size in and around PAs;

Type of ecosystem and climatic conditions;

Proximity of the forest PA to the urban areas roads, settlements;

PA size;



Time since PA establishment;

More effect modifiers may be recorded and extracted from the primary studies.

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## STUDY QUALITY ASSESSMENT

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Under study quality assessment we refer to aspects of study design important both for reducing susceptibility to bias and ensuring validity with respect to the question. Depending on the methodology of a study, two quality assessment strategies may be applied:

1) Quantitative studies: Quantitative studies will be assessed based on the score assigned to each of the following criteria: 1) appropriateness of control cases and presence of valid counterfactual, 2) controlled for and/or minimized confounding factors, 3) study design category (from highest to lowest score): randomized control trial, non-randomized control trial, BACI (before/after/control/impact) design, interrupted time series study, case control study, cohort study, case series, cross-sectional study, 4) methodology: clarity and completeness of reporting (Brooks et al. 2013). We expect that the (non)randomized control trial studies and full BACI design might be less represented in the PA literature (Geldmann et al. 2013), as it is difficult to meet these study design requirements in conservation policy assessment due to various reasons (non-random allocation of conservation interventions across the landscape, counterfactual thinking is not widespread in conservation assessment exercises, evaluation is usually not a built-in component of a conservation project design, etc. (Ferraro & Pattanayak 2006:483).

2) Qualitative studies: Qualitative studies will be assessed using Harden's methodology (Harden 2007) applied in Rees et al. (2009) and Pullin et al. (2012). This assessment tool uses eight study validity criteria focusing on 1) study design and methods (rigour of sampling, data collection and analysis); 2) findings (how well presented data support findings, quality of findings); 3) use of methods to assess the respondents' perspectives and experiences. A score range will be assigned to each of these criteria. A Qualitative Appraisal Tool (CASP 2006) may be combined for additional assessment details and to

provide guidance for a more structured quality appraisal exercise. This tool is a checklist composed of the ten questions connected to study rigour, credibility and relevance of findings.

Depending on the variability of study quality, decision for the study inclusion may be based on the overall summary score assigned to each study.

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## DATA EXTRACTION

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Data will be extracted from included studies and recorded in a spreadsheet with pre-determined coding. Extracted information across all included studies will be as follows

### **Study Characteristics:**

Objectives and focus of the study;

Study design and methodology for data collection;

Reported study biases ;

### **Governance characteristics:**

1) Scale of decision-making (variable with 3 levels: decision-making out of state (devolution), decision-making vested in lower level/local authorities (decentralization), centralized decision-making);

2) Individual versus multi-actor decision-making described through i) Diversification of stakeholders' categories (2 levels: one versus multi-actor); ii) Nature of stakeholders' participation (4 levels: pro-active, consultancy, passive, none);

3) Collaboration among stakeholders in decision-making described through i) Level of collaboration (3 levels: formal, informal, none); ii) Nature of collaboration (3 levels: horizontal (internal), vertical (external), multilevel);

### **Institutional, social, economical and political context in which PA governance is embedded:**

Resource ownership (state, local, private, mixed);

Level of resource access and use by the local actors measured through 1) IUCN PA management category (1 to 6); 2) Local community dependency on the forest

resources (3 levels: high, moderate, low);

Presence of a local leader (yes/no);

Source of PA funding (4 levels: international, national/governmental, local/communal, private);

National context: corruption and illegality (Governance index score), country development level (Human Development Index score), income inequality (GINI score);

Human population size around PAs (high, medium, low);

Proximity to the urban areas, roads, settlements (high, medium, low);

Time since PA establishment (in years);

PA size (in km<sup>2</sup>);

Type of ecosystem and climatic conditions (temperate, tropical, boreal);

**Comparator type (if any);**

**Outcome (independent variables):**

1) Attitudinal success measured through (level of changes/difference in) attitudes of local stakeholders towards focal PA governance, authority and/or management practices (3 levels: high, moderate, low);

2) Behavioural success measured through (level of changes/difference of) level of conservation-oriented behaviour necessary to decrease the threats to natural resources (3 levels: high, moderate, low);

3) Ecological success measured through (level of changes/difference in) deforestation rate, biodiversity level, maintenance of forest cover and forest density, condition, health (3 levels: high, moderate, low);

4) Spillover effects in surrounding social-ecological systems i.e. social, institutional and ecological changes/differences on the local level that may include leakage or policy side effects (3 levels: high, moderate, low);

Study conclusions including underlying factors of social / ecological change reported

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## DATA SYNTHESIS

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Synthesis will encompass narrative and summary findings of each study and it will be presented in a table and visualised graphically. Attitudinal, behavioural, ecological success and spillover effects will be estimated based on the aforementioned criteria of performance and inferred from the (valid) evidence reported in included studies (using descriptive levels: low, moderate, high).

In order to discern the underlying conditions and determinants of PA success, qualitative and quantitative information to be extracted from the empirical studies will be integrated by pre-determined coding (as shown above in the Section 3.4) and creation of ordinal/categorical variables that will be used in multivariate statistical analyses. Independent variables in the analyses will be 4 measures of success: attitudinal, behavioural, ecological and spillover effects. Dependent variables will be governance characteristics, institutional, economical, political and social setting (effect modifiers). The analyses will be done separately for each governance mode. Finally, comparisons will be done at the final phase and based on the regression results.

We will not infer conclusions about the comparisons between governance regimes if original studies had different counterfactual outcomes i.e. we will not contrast studies that estimated counterfactual of no protection versus counterfactual of a different governance mode. Data extraction and synthesis will be additionally refined during the review process.

In case of missing data in the included studies, we will contact authors and request relevant information.

This review will report methodologies for assessment of forest PAs governance effectiveness, data gaps and potential for future empirical research.

## References

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- Agrawal, A. & Gupta, K. (2005). Decentralization and Participation: The Governance of Common Pool Resources in Nepal's Terai. *World Dev.*, 33, 1101–1114.
- Andam, K., Ferraro, P., Pfaff, A., Sanchez-Azofeifa, G.A. & Robalino\*, J.A. (2008). Measuring the effectiveness of protected area networks in reducing deforestation. *PNAS*, 105, 16089–16094.
- Baral, N. & Stern, M. (2010). Looking back and looking ahead: local empowerment and governance in the Annapurna Conservation Area, Nepal. *Environ. Conserv.*, 37, 54–63.
- Berkes, F. (2006). From community-based resource management to complex systems: The scale issue and marine commons. *Ecol. Soc.*, 11.
- Berkes, F. (2007). Community-based conservation in a globalized world. *Proc. Natl. Acad. Sci. U. S. A.*, 104, 15188–93.
- Berkes, F. (2009). Evolution of co-management: role of knowledge generation, bridging organizations and social learning. *J. Environ. Manage.*
- Borrini-Feyerabend, G. (2003). Governance of protected areas: innovations in the air.... *Policy Matters*, 12, 92–101.
- Borrini-Feyerabend, G., Johnston, J. & Pansky, D. (2006). Governance of protected areas. In: *Manag. Prot. areas a Glob. Guid.* (eds. Lockwood, M., Worboys, G. & Kothari, A.). Earthscan, London, pp. 116–145.
- Bowler, D., Buyung-Ali, L., Healey, J.R.R., Jones, J.P.G.P.G., Knight, T. & Pullin, a. S.S. (2010). The Evidence Base for Community Forest Management as a Mechanism for Supplying Global Environmental Benefits and Improving Local Welfare. CEE Review 08-011(SR48). *Environ. Evid.*
- Brechin, S.R., Murray, G. & Mogelgaard, K. (2010). Conceptual and Practical Issues in Defining Protected Area Success: The Political, Social, and Ecological in an Organized World. *J. Sustain. For.*, 29, 362–389.
- Brechin, S.R., Wilshusen, P.R., Fortwangler, C.L. & West, P.C. (2002). Beyond the square wheel: toward a more comprehensive understanding of biodiversity conservation as social and political process. *Soc. & Natural Resour.*, 15, 41–64.
- Brooks, J., Waylen, K., Borgerhoff-Mulder, M. & Brosius, P. (2010). *The effect of non-local socio-political context on community-based conservation interventions: evaluating ecological, economic, attitudinal and behavioural outcomes. CEE protocol 09-021 (SR82). Collaboration for Environmental Evidence.*

- Brooks, J., Waylen, K.A. & Mulder, M.B. (2013). Assessing community-based conservation projects: A systematic review and multilevel analysis of attitudinal, behavioral, ecological, and economic outcomes. *Environ. Evid.*, 2, 2.
- Brooks, J.S., Franzen, M. a., Holmes, C.M., Grote, M.N. & Borgerhoff Mulder, M. (2006). Development as a conservation tool: Evaluating ecological, economic, attitudinal, and behavioural outcomes CEE review 05-014 (SR20). *Collab. Environ. Evid.*, 014, 0–32.
- Bruner, A., Gullison, R., Rice, R. & Fonseca, G. Da. (2001). Effectiveness of parks in protecting tropical biodiversity. *Science (80-. )*.
- Butchart, S., M, W., Collen, B., van Strien, A., Scharlemann, J., Almond, R.E.A., Baillie, J.E.M., Bomhard, B., Brown, C., Bruno, J., Carpenter, K.E., Carr, G.M., Chanson, J., Chenery, A.M., Csirke, J., Davidson, N.C., Dentener, F., Foster, M., Galli, A., Galloway, J.N., Genovesi, P., Gregory, R.D., Hockings, M., Kapos, V., Lamarque, J.-F., Leverington, F., Loh, J., McGeoch, M.A., McRae, L., Minasyan, A., Morcillo, M.H., Oldfield, T.E.E., Pauly, D., Quader, S., Revenga, C., Sauer, J.R., Skolnik, B., Spear, D., Stanwell-Smith, D., Stuart, S.N., Symes, A., Tierney, M., Tyrrell, T.D., Vié, J.-C. & Reg Watson. (2010). Global biodiversity: indicators of recent declines. *Science (80-. )*, 328, 1164–1168.
- CASP. (2006). Qualitative Appraisal Tool. Solutions for Public Health.
- Dudley, N. (2008). *Guidelines for applying protected area management categories*.
- Dudley, N. & Phillips, A. (2006). Forests and Protected Areas: Guidance on the use of the IUCN protected area management categories SEARCH 1.
- Eagles, P. (2008). Governance models for parks, recreation and tourism. In: *Transform. Park. Prot. Areas Policy Gov. a Chang. World* (eds. Hanna, K., Clark, D. & Slocombe, D.). Routledge, London, pp. 39–61.
- Ewers, R. & Rodrigues, A. (2008). Estimates of reserve effectiveness are confounded by leakage. *Trends Ecol. Evol.*
- FAO. (2010). *Global Forest Resources Assessment 2010: main report. FAO Forestry Paper 163*. Rome.
- Ferraro, P., Hanauer, M.M. & Sims, K.R.E. (2011). Conditions associated with protected area success in conservation and poverty reduction. *PNAS*, 108, 13913–13918.
- Ferraro, P. & Pattanayak, S. (2006). Money for nothing? A call for empirical evaluation of biodiversity conservation investments. *PLoS Biol.*, 4, e105.
- Gaston, K.J., Jackson, S.F., Cantú-Salazar, L. & Cruz-Piñón, G. (2008). The Ecological Performance of Protected Areas. *Annu. Rev. Ecol. Evol. Syst.*, 39, 93–113.

- Geldmann, J., Barnes, M., Coad, L., Craigie, I.D., Hockings, M. & Burgess, B. (2013). *Effectiveness of terrestrial protected areas in reducing biodiversity and habitat loss. CEE review 10-007. Collaboration for Environmental Evidence.*
- Graham, J., Amos, B. & Plumptre, T. (2003). *Governance Principles for Protected Areas in the 21st century. A discussion paper.* Ottawa.
- Granderson, A. a. (2011). Enabling multi-faceted measures of success for protected area management in Trinidad and Tobago. *Eval. Program Plann.*, 34, 185–195.
- Grimble, R. & Wellard, K. (1997). Stakeholder methodologies in natural resource management: A review of principles, contexts, experiences and opportunities. *Agric. Syst.*, 55, 173–193.
- Harden, A. (2007). The quality of qualitative evidence: a review assessment tools. In: Seventh Annual International Campbell Colloquium: 14-16 May 2007, London.
- Hawken, I.F. & Granoff, I.M.E. (2010). Reimagining Park Ideals: Toward Effective Human-Inhabited Protected Areas. *J. Sustain. For.*, 29, 122–134.
- Hutton, J., Adams, W.M. & Murombedzi, J.C. (2005). Back to the Barriers? Changing Narratives in Biodiversity Conservation. *Forum Dev. Stud.*, 32, 341–370.
- Koontz, T.M. & Thomas, C.W. (2006). What do we know and need to know about the environmental outcomes of collaborative management? *Public Adm. Rev.*, 66, 111–121.
- Kothari, A. (2006a). Community conserved areas: towards ecological and livelihood security. *Parks*, 16, 3–13.
- Kothari, A. (2006b). Community Conserved Areas: Editorial. *Parks*, 16, 1–2.
- Kothari, A. (2008). Protected areas and people: the future of the past. *Parks*, 17, 23–34.
- Lemos, M.C. & Agrawal, A. (2006). Environmental Governance. *Annu. Rev. Environ. Resour.*, 31, 297–325.
- Millennium Ecosystem Assessment. (2005). *Ecosystems and Human Well-being: General Synthesis.* Island Press, Washington.
- Murray, G.D. (2005). Multifaceted Measures of Success in Two Mexican Marine Protected Areas. *Soc. Nat. Resour.*, 18, 889–905.
- Nadasdy, P. (2003). Reevaluating the comangement success story. *Arctic*, 56, 367–380.
- Natcher, D.C., Davis, S. & Hickey, C.G. (2005). Co-Management: Managing Relationships, Not Resources. *Hum. Organ.*, 64, 240–250.

- Naughton-Treves, L., Holland, M. & Brandon, K. (2005). The role of protected areas in conserving biodiversity and sustaining local livelihoods SEARCH 1. *Annu. Rev. Environ. Resour.*
- Nelson, A. & Chomitz, K.M. (2009). *Protected Area Effectiveness in Reducing Tropical Deforestation. A Global Analysis of the Impact of Protection Status*. Washington, DC.
- Peters, G. (2000). Governance and Comparative Politics. In: *Debating Governance. Authority, Steering, Democr.* (ed. Pierre, J.). Oxford University Press, Oxford, pp. 36–53.
- Porter-Bolland, L., Ellis, E. a., Guariguata, M.R., Ruiz-Mallén, I., Negrete-Yankelevich, S. & Reyes-García, V. (2012). Community managed forests and forest protected areas: An assessment of their conservation effectiveness across the tropics. *For. Ecol. Manage.*, 268, 6–17.
- Pullin, A., Bangpan, M., Dalrymple, S., Dickson, K., Healey, J., Hockley, N., Jones, J., Knight, T. & Oliver, S. (2012). *Human well-being impacts of terrestrial protected areas. Systematic review protocol 11-009. Collaboration for environmental evidence*.
- Rees, R., Oliver, K., Woodman, J. & Thomas, J. (2009). *Children's views about obesity, body size, shape and weight: a systematic review. EPPI-Centre report no. 1707*. London.
- Rhodes, M. (2005). The Scientific Objectives of the NEWGOV Project: A Revised Framework. NEWGOV Consortium Conference: 30- 31 May 2005; Florence, European University Institute.
- Rodrigues, A., Andelman, S. & Bakarr, M. (2004). Effectiveness of the global protected area network in representing species diversity. *Nature*.
- Sánchez-Azofeifa, G.A., Daily, G.C., Pfaff, A.S.P. & Busch, C. (2003). Integrity and isolation of Costa Rica's national parks and biological reserves: Examining the dynamics of land-cover change. *Biol. Conserv.*, 109, 123–135.
- Schmitt, C.B., Belokurov, A., Besançon, C., Boisrobert, L., Burgess, N.D., Campbell, A., Coad, L., Fish, L., Gliddon, D., Humphries, K., Kapos, V., Loucks, C., Lysenko, I., Miles, L., Mills, C., Minnemeyer, S., Pistorius, T., Ravilious, C., Steininger, M. & Winkel, G. (2009). *Global Ecological Forest Classification and Forest Protected Area Gap Analysis. Analyses and recommendations in view of the 10% target for forest protection under the Convention on Biological Diversity (CBD). 2nd revised edition*. Freiburg, Germany.
- Secco, L., Pettenella, D. & Gatto, P. (2011). Forestry governance and collective learning process in Italy: Likelihood or utopia? *For. Policy Econ.*, 13, 104–112.



- Sikor, T., Barlosius, E. & Scheumann, W. (2008). Introduction: Public-private relations and key policy issues in natural resource governance. In: *Public Priv. Nat. Resour. Gov. A false dichotomy?* (ed. Sikor, T.). Earthscan, London, pp. 1–21.
- Thomas, J., Brunton, J. & Graziosi, S. (2010). EPPI-Reviewer 4.0: software for research synthesis. EPPI-Centre Software. London: Social Science Research Unit, Institute of Education, University of London.
- Waylen, K.A., Fischer, A., McGowan, P.J., Thirgood, Simon, J. & Milner-Gulland, E. (2010). The effect of local cultural context on community-based conservation interventions: evaluating ecological, economic, attitudinal and behavioural outcomes. CEE review 09-019 (SR80). *Collab. Environ. Evid.*, 09, 3 – 36.
- Wilshusen, P.R., Brechin, S.R., Fortwangler, C.L. & West, P.C. (2002). Reinventing a Square Wheel: Critique of a Resurgent “Protection Paradigm” in International Biodiversity Conservation. *Soc. Nat. Resour.*, 15, 17–40.
- World Bank. (2008). *Forests Sourcebook: Practical Guidance for Sustaining Forests in Development Cooperation*. Washington, DC.



## CHAPTER 2.2.

### WHAT EVIDENCE EXISTS ON THE ROLE OF GOVERNANCE IN THE CONSERVATION EFFECTIVENESS OF FOREST PROTECTED AREAS? KNOWLEDGE BASE AND EVIDENCE GAPS

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#### Background

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Understanding how governance processes and structures fit to complex social-ecological systems and in-situ forest conservation strategies such as protected areas (PAs) can be crucial for their effective management and for the improvement in the conservation outcomes (Vatn 2005; Rockström et al. 2009).

Governance can be defined in various ways (Giessen & Buttoud 2014a) but for the purposes of this study we define governance in PA context as “a set of processes, procedures, resources, institutions and actors that determine how decisions are made and implemented” (Secco et al. 2011:105). Currently, there is a wide range of governance styles in forest PAs. Based on the number and type of actors involved, responsibility, accountability and power sharing, governing regimes of forest PAs can be classified after (Borrini-Feyerabend 2003; Borrini-Feyerabend et al. 2006) as: 1) governance by government, 2) shared governance or co-management, 3) private governance and 4) governance by communities and indigenous people (see protocol Macura et al (2013) for more details on each of these modes).

There is the rapid growth of the forest conservation governance literature and variety of research approaches to governance analysis and evaluation (Giessen & Buttoud 2014b; Secco et al. 2014). However, knowledge synthesis on how types of local governance and decision-making modes may influence conservation outcomes of forest PAs is still lacking. This is mainly because the evidence on the joint relationships between governance arrangements and ecological or social outcomes is generally missing (Nolte et al. 2013). The research on this topic is still methodologically in a development phase and the causal effects are hard to isolate (Baylis et al. 2015). Consequently, there is no

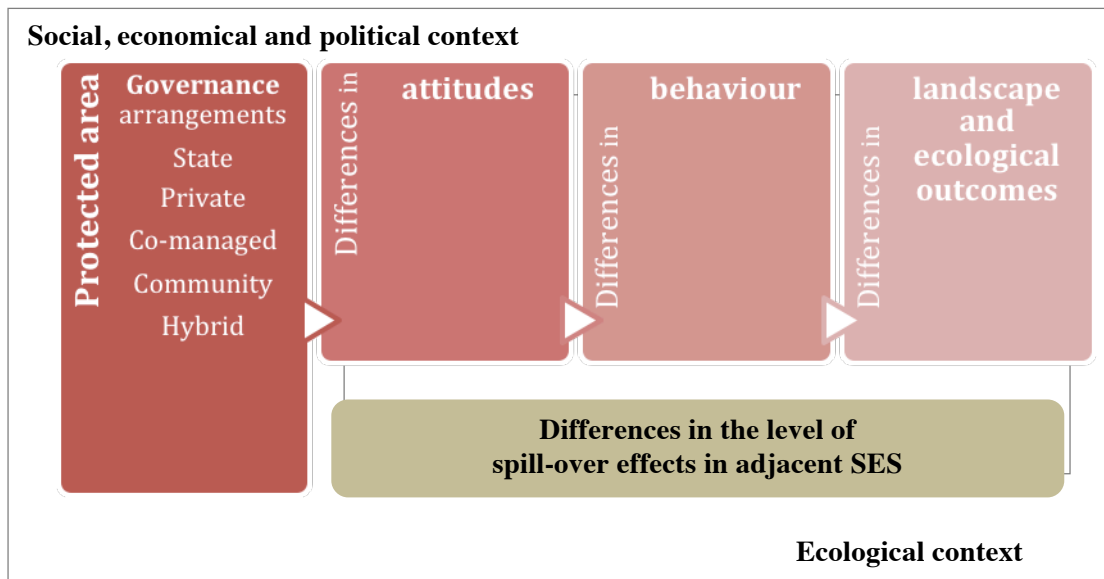
consensus on the effect of governance modes on conservation outcomes. Moreover, the existing reviews on this or similar topics mainly focus on either social (e.g. West et al. 2006) or ecological effects (Porter-Bolland & Ellis, 2012) separately, and they rarely include information on governance (except some more recent reviews (Pullin et al. 2013; Oldekop et al. 2015)). There is a great value in mapping the existing evidence, creating the knowledge base and identifying knowledge gaps in the literature on role of the governance in the conservation effectiveness of forest PAs in terms of both social and ecological effects. This is a first step in evidence synthesis and the evidence mapping can enable future syntheses exercises.

Here we present results of a systematic map conducted following Collaboration for Environmental Evidence Guidelines (2013). Systematic maps are overview studies that collect, categorize and present the existing evidence on a specific topic of policy or management relevance. They are objective, transparent and repeatable tools for policy makers, practitioners and researchers to 1) identify narrower policy and practice-relevant review questions or 2) evidence gaps (Grant & Booth 2009).

This study aims to describe and map the available qualitative and quantitative evidence from a large number and variety of sources, both peer reviewed and grey literature, and to collate existing evidence on the role of governance in effectiveness of forest PAs. Therefore, we attempt to contribute to the body of previous systematic reviews on effectiveness of PAs (Geldmann et al. 2013; Pullin et al. 2013) by not only collating evidence connected to “what works” but also to “when and why it works”.

In order to describe the current state of the evidence base on how different governance types affect or modify conservation outcomes in forest PAs we created and followed a simple framework (Figure 2.2.1). Based on a developed strategy published in the review protocol (Macura et al. 2013) we mapped the literature on the path from a conservation intervention with a specific governance type to attitudinal, behavioural or ecological outcomes or possible changes in the surrounding social-ecological systems (spill-over effects). The choice of these specific outcomes is based on the previous reviews (Brooks et al. 2006, 2013; Waylen et al. 2010) so the results can be comparable. Nevertheless, here we do not consider economical outcomes of forest PAs as this has

already been synthesised in Pullin et al (Pullin et al. 2013). Due to high complexity and variety of conservation practices and interventions, here we focus on forest PAs only (Macura et al. 2013).



**FIGURE 2.2.1** CONCEPTUAL FRAMEWORK WITH DIFFERENT GOVERNANCE ARRANGEMENTS AND FOUR TYPES OF MAPPED EFFECTS: ATTITUDES, BEHAVIOUR, LANDSCAPE/ECOLOGICAL/BIODIVERSITY CHANGES AND SPILL-OVER EFFECTS. SES STANDS FOR SOCIAL ECOLOGICAL SYSTEMS.

Governance arrangements considered in this study were state, private, community and co-managed PAs. We also included studies measuring informal forest PAs effectiveness (e.g. sacred groves). By effective conservation here we mean “positive and measurable effects of conservation policies and practices on biodiversity and target ecosystems, populations, species or habitats” (Macura et al. 2013:8)

### Objective of the map

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#### EVOLVING OBJECTIVE OF THIS RESEARCH

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We initially planned to conduct a full systematic review, but on preliminary appraisal of the literature we saw more value in mapping the existing evidence, describing its nature, size and knowledge gaps. We believe this is a more appropriate approach for the topic

area, which appeared too broad and divergent for a single systematic review exercise. This was not foreseen during the protocol preparation aimed at guiding systematic review synthesis, but only in the later stages of the reviewing process.

Consequently, this review is created in a form of a systematic map to catalogue and collate the evidence across a wide range of criteria, such as study location and design, methodology, type of intervention and comparator. We conducted mapping and coding of the relevant full text articles.

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## PRIMARY AND SECONDARY OBJECTIVES

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This study identifies, appraises and describes nature and distribution of the primary research to answer:

*What evidence exists on the role of governance in the conservation effectiveness of forest protected areas?*

Map question components are as follows:

Setting: Forest PAs

Perspective: 1) Local Community; 2) PA Authority/ Management staff

Phenomena of interest: 1) Governmental PAs; 2) Co-managed PAs; 3) Private PAs; 4) Community conserved areas; or 5) Hybrid governance forms.

Comparator: Different governance regimes, which can include other types of PAs or other types of forests (governed by communities, state or privates)

Outcomes: 1) Attitudinal effects measured through (difference/change in) attitudes of local stakeholders towards focal PA, authority and/or management practices 2) Behavioural effects measured through (difference/change in) level of conservation-oriented behaviour necessary to decrease the threats to natural resources 3) Ecological effects measured through (difference/change in) deforestation rate, biodiversity level, maintenance of forest cover and forest density, condition, health, etc.; and 4) Spill-over effects: social, institutional and ecological changes in surrounding social-ecological systems.

Despite change in objective from the systematic review to systematic map, the question components, except some modification in the comparator, remain the same.

Secondary objectives and map outputs are to:

- 1) Create interactive, searchable and evidence database on the role of governance in the effectiveness of PAs for use by researchers, practitioners, policy-makers and the public;
- 2) Show the extent and distribution of the current knowledge base
- 3) Identify evidence gaps according to: a) regions and countries; b) outcomes: ecological, social, spill-overs; c) interventions: governance modes
- 4) Provide preliminary and brief overview of the variations in the research quality and deficiencies in the methodology
- 5) Provide directions for improvement of the quality of evidence
- 6) Generate ideas for new research questions to inform future primary research or evidence syntheses

## Methods

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As this study is an evidence map rather than the full systematic review, the final methodology is different than the one published in the protocol (Macura et al. 2013). To reflect the current state of the evidence base, we adapted primary and secondary research objectives from the protocol and did not undertake full critical appraisal, data extraction and synthesis. Moreover, we made modifications and amendments to the inclusion criteria adapted to the new objectives. We also modified the title to reflect the current map content. Full explanation of the amendments to the inclusion criteria is written under section titled *“Amendments and clarifications to the inclusion criteria published in protocol”*.

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## SEARCHES

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### Search terms

To identify suitable search string, a scoping exercise was undertaken, a search string produced and published in the protocol. The terms of the full search string include keywords connected to setting (forest PA), phenomena of interest (PA management and governance regimes) and three types of outcomes. Details of the scoping exercise along with the final search string used to extract references from the ISI Web of Knowledge (WOK) database (and database settings used for searches) are available in the **Annex 1**.

The search was performed in two phases. The original search was conducted in 2012 and it was updated in March 2015. We attempted to decrease the sampling bias of published and unpublished literature by using several information sources for the first search. List of databases, search engines, specialist sources and search terms used to identify relevant literature was published in the protocol (Macura et al. 2013) and are listed again below with some minor adjustments (we excluded irrelevant websites and conducted search in two more publication databases). The updated search (March 2015) was conducted through WOK database only. We based this decision on the observations from conducting the first search that resulted in significant number of duplicates obtained through searches conducted in databases other than WOK where WOK had the highest number of search hits and appeared the most comprehensive database. We searched WOK database without lemmatization, all year ranges and in English language only.

All the search results were imported in EPPI-reviewer (Thomas et al. 2010) where duplicates were removed and their number was recorded.

### Publication Databases

The search included the following online databases:



1. ISI Web of knowledge
2. Scopus
3. PubMed
4. Agricola
5. Digital library of International Development Research Center
6. Scienceindex
7. Public Library of Science
8. Directory of Open Access Journals
9. COPAC
10. Social Sciences Research Network
11. Index to Theses Online
12. ProQuest (theses and journals)
13. CAB Abstracts
14. EconPapers
15. Digital Library Of The Commons

The search string was shortened in some cases depending on the database search facility (see the **Annex 2**).

#### Organisational websites search and specialist sources

Following organizational and specialist websites (47 in total) were searched for grey literature, using multiple (3 on average), simple and shortened search strings or single key terms, depending on the search facilities of the website and details are in the **Annex 3**.

1. Online Knowledge Base: Natural Resources Governance around the World:  
<http://www.agter.org/>
2. CGIAR System-wide Program on Collective Action and Property Rights:  
<http://www.capri.cgiar.org/>
3. CGIAR -a global agricultural research partnership: <http://www.cgiar.org/>
4. CATIE: [http://www.catie.ac.cr/Magazin\\_ENG.asp?CodIdioma=ENG](http://www.catie.ac.cr/Magazin_ENG.asp?CodIdioma=ENG)
5. The Community-Based Natural Resource Management Network:

- <http://www.cbnrm.net/>
6. CIFOR- Center for International Forestry Research: <http://www.cifor.org/>
  7. Forest, Trees and People Program: <http://www.cof.orst.edu/org/istf/ftpp.htm>
  8. RECOFCT -the Center for People and Forests: <http://www.recoftc.org>
  9. International Society of Tropical Foresters:  
<http://www.istf-bethesda.org/index-english.html>
  10. FAO Forestry: <http://www.fao.org/forestry/FON/FONP/cfu/cfu-e.stm>
  11. FAO Document repository: <http://www.fao.org/documents/en/search/init>
  12. FAO Catalogue online: <http://www.fao.org/>, <http://www4.fao.org/faobib/>
  13. Community Forestry International:  
<http://www.communityforestryinternational.org/>
  14. Conservation International: <http://www.conservation.org>
  15. Cooperation Commons: Interdisciplinary study of cooperation and collective action. <http://www.cooperationcommons.com/>
  16. Cultural Survival:  
<http://www.culturalsurvival.org/current-projects/universal-periodic-review>
  17. Canadian Forest Service: <http://cfs.nrcan.gc.ca/publications>
  18. The Eldis Communities: <http://community.eldis.org/>
  19. ConserveOnline: <http://conserveonline.org/>
  20. USAID - Development Experience Clearing House database:  
<http://dec.usaid.gov/index.cfm>
  21. UK Department of International Development: <http://www.dfid.gov.uk>
  22. Environmental change institute, Oxford University:  
<http://www.eci.ox.ac.uk/publications/index.php>
  23. Eldis: <http://www.eldis.org/>
  24. European Tropical Forest Research Network (ETFRN): <http://www.etfrn.org>
  25. First Peoples Worldwide: <http://www.firstpeoples.org/>
  26. Forest Trends: <http://www.forest-trends.org/publications.php>
  27. Forests Protection Portal: <http://forests.org/>
  28. International Fund for Agricultural Development (IFAD): <http://www.ifad.org/>
  29. International Institute for Environment and Development: <http://www.iied.org>
  30. Institute on Governance: <http://iog.ca/>

31. IUCN World Commission on Protected Areas:  
<http://www.iucn.org/about/union/commissions/wcpa/>
32. International Union of Forest Research Organizations (IUFRO):  
<http://www.iufro.org/publications/>
33. World's Environmental Library:  
<http://www.nzdl.org/fast-cgi-bin/library?a=p&p=about&c=en>
34. World Wildlife Fund For Nature: <http://wwf.panda.org>
35. Poverty and Conservation: <http://povertyandconservation.info/en/bibliographies>
36. Protected areas and governance group-site:  
<http://protectedareasandgovernance.groupsites.com>
37. Rainforest Portal: <http://www.rainforestportal.org/>
38. Oxford Centre for Tropical Forests: <http://www.tropicalforests.ox.ac.uk>
39. United Nations: <http://www.un.org/en/>
40. United Nations Development Programme: <http://www.undp.org/>
41. Global Environmental Facility (GEF):  
[http://web.undp.org/gef/gef\\_library.shtml](http://web.undp.org/gef/gef_library.shtml)
42. GEF -Small Grants Programme: <http://sgp.undp.org/>
43. UNEP-WCMC World Conservation Monitoring Centre: <http://www.unep-wcmc.org/>
44. United Nations Environmental Programme: <http://www.unep.org>,  
<http://ekh.unep.org/>
45. Wildlife conservation Society: <http://www.wcs.org>
46. World Bank: <http://web.worldbank.org>
47. Nature Conservation Research Centre: <http://www.ncrc-ghana.org/>

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## ESTIMATING THE COMPREHENSIVENESS OF THE SEARCH

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Comprehensiveness of the search in the database was checked through the bibliographic and Internet searches:

- a) Supplementary - Bibliographic search

We searched manually through bibliographies of 10 relevant key reviews to check if all the relevant articles were identified in the previous searches. We included missing relevant articles. The results of this search are in the **Annex 4**.

#### b) Internet search

We used Google Scholar ([www.scholar.google.com](http://www.scholar.google.com)) to check the comprehensiveness of the search. We used 4 different search strings, as the original search string was too long. For each string we screened first 160 hits (this is empirically-informed cut-off point based on the decreasing relevance of the hits). The results of this search are in the **Annex 5**.

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### ARTICLE RETRIEVAL

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We retrieved full text articles digitally (as PDF files) and where needed, we used subscriptions of Bangor and Padova Universities. Where we have not had access to the articles, we contacted authors directly when possible (via email or ResearchGate).

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### ARTICLE SCREENING AND STUDY INCLUSION CRITERIA

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According to the inclusion criteria presented below, the first author screened and included studies through three stages. First, titles, thereafter the abstracts and finally, the full-text articles were assessed against the inclusion criteria. Grey literature was screened directly at the full text level, as there are frequently no abstracts in these publications.

In order to check the consistency of inclusion, all three authors independently reviewed a small set of abstracts (78). Inclusion decisions were compared and all disagreements were discussed. Inclusion criteria were clarified and improved before continuing with the screening procedure of remaining abstracts. The identical procedure was applied for the full-text screening on a sample of 12 articles.

We applied the following inclusion criteria while screening studies:

Relevant population: forest PAs with or without human populations

Relevant interventions/phenomena of interest: State, co-managed or joint, private and community modes of governance as well as informal forms of governing through local institutions (e.g. sacred groves).

Relevant comparators: comparisons among governance regimes, that are 1) changed over time in a single PA; 2) PAs with different governance regimes; 3) forests with defined governance regime.

Relevant outcomes:

- 1) Changes or differences in attitudes of local stakeholders towards focal PA governance, authority and/or management practices;
- 2) Changes or differences in level of conservation-oriented behaviour reported to decrease the threats to natural resources;
- 3) Changes or difference in deforestation rate, biodiversity level within a forest ecosystem, maintenance of forest cover and forest density, condition, health (including fires) or any other biodiversity indicator;
- 4) Social, institutional and ecological changes around PA and on the local level that may increased pressures on resources outside a focal forest PA (leakage or policy side effects)

Language: English only.

Publication Date: No date restrictions were applied during the inclusion.

Studies that could not be obtained are listed in the **Annex 6**. Excluded studies are listed along with reasons for exclusion in the **Annex 7**.

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#### AMENDMENTS AND CLARIFICATIONS TO THE INCLUSION CRITERIA PUBLISHED IN THE PROTOCOL

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While in the protocol the number of outcome types per study was stated to be not less than two per study, we disregarded this criterion as most of the studies had only one outcome.

We focused only on studies that were conducted at the local PA scale, and studies on regional and national scales, e.g. analysing national-level conservation policy and their outcomes, were rejected.

Studies describing PA establishment (or conflicts prior to establishment) were not included. Moreover, studies on introduction of new institutional mechanisms and outreach projects (such as establishment of local community management committees, integrated conservation and development projects) were frequently missing required outcomes (despite of sufficient details on the processes and governance arrangement) and therefore excluded. We included studies on integrated conservation and development projects only if they are formulated as a specific co-management arrangement between PA managers and local people and we excluded them if they are presented as purely an incentive or compensation project.

Articles on the informal PAs, such as sacred groves, are added to the map. Although they might not fit into the PA definition as state governments rarely recognize them, there is potential in learning from the case of persistence or deterioration of informal and traditional institutions (governed through taboos or religious beliefs) in protecting the forest resources (Colding & Folke 2001). This is especially relevant in situations where informal external rules are not easily enforced (Jones et al. 2008). Nevertheless, very frequently such studies provide botanical inventories of sacred groves only and are not designed with the appropriate comparator to show the comparative value of such conservation modes and in such cases they could not be included in this map.

Studies on mangrove PAs were included too in accordance with the IUCN guidelines on the definitions of forest PAs (Dudley 2013).

We extended comparator definition. Namely, studies with comparator other than formal PAs were also included. These comparators were other types of forests under various governance arrangements (communities, state or private) and this is noted in the map.

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## STUDY CODING

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Articles selected for full text inclusion were exported from EPPI reviewer to a spreadsheet where we applied coding of the reported studies.

Coding was undertaken using the full-text and predefined keywords generated from the primary question and connected to the various aspects of study setting and design, including the information on the article, type of methodology used, type of governance, description of outcomes and comparators. Some of the keywords based on the topics reported in the articles were identified and added to the database during the mapping process. The coding tool with definitions of codes is described in the **Annex 8**.

Each line in the database represents a single study. Articles that report part of the bigger study (same group of authors, research spanning over same years and with the same research location) have been entered as separate lines in the database, but they are marked as “linked studies” and connected with the same study ID number. Moreover, if the article is not a stand-alone article, but just gives the contextual information to the main study, this is marked as a “background study”.

The first author coded all the studies and the other two authors checked coding consistency by reviewing coding decisions on a small sample of included studies (7). All disagreements were discussed and coding consistency was adjusted accordingly.

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## CRITICAL APPRAISAL

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The database includes general comments on the internal validity of the studies and the potential biases in the methodology. External validity was not assessed. Specifically, we coded four different variables: 1) the level of methodological detail (low, medium and high), 2) appropriateness of comparator (descriptive category); 3) type of measurements of ecological or behavioural outcomes (subjective and perception based or objective, measured with specific instruments), 4) study design.

A subset of studies (7) was critically appraised and coded by all three authors and all disagreements regarding coding of critical appraisal were resolved and clarified.

Table 2.2.1 provides an overview of the critical appraisal coding system. More detailed definitions of the critical appraisal variables and their coding system are in the **Annex 8**. We extracted the characteristics of the studies that might be useful for judgement of reliability in future evidence syntheses, but we have not undertaken the full quality appraisal.

**TABLE 2.2. 1** ELEMENTS OF CRITICAL APPRAISAL AND THEIR CODING. (STUDY DESIGNS CATEGORISATION ADAPTED FROM (HARRIS ET AL. 2006; LANGERICH 2015))

<p><b>1. Study design</b></p>	<p><b>Case study:</b> in-depth non-experimental qualitative study of a single location/protected area/local community within, usually studied over time in a real life context, using documents, interviews, observations. Frequently reports on unusual, extreme or rare cases</p> <p><b>Case series or Time series:</b> quantitative non-experimental study in multiple time periods, outcomes measured during the intervention. If measurements before and after intervention – <b>Before-After (BA)</b> design</p> <p><b>Cross-sectional study (Control-impact (CI)):</b> quantitative non-experimental study conducted in one point of time (e.g. survey), provides a snapshot. Not clearly established if intervention preceded the measured outcomes. Has non-randomly selected control groups.</p> <p><b>Controlled before-and-after study (Before-After-Control-Impact (BACI)):</b> quasi-experiment with controls, measure of outcomes before and after the intervention</p> <p><b>Controlled after only study:</b> quasi-experiment with controls, measure of outcomes after the intervention ONLY</p> <p><b>Sequential mixed method:</b> qual&gt;quant OR quan&gt;qual</p> <p><b>Concurrent mixed method design:</b> qual and quant at the same time</p>
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<b>2. Comparator appropriateness</b>	Is comparator appropriate for governance assessment? Is it relevant for the stated aims and conclusions of the study? Other methodological details? Describe
<b>3. Methodological detail</b>	<b>LOW</b> =no sufficient details on data collection and/or data analysis procedures, method selection not justified, <b>MEDIUM</b> = no important methodological details missing, selection of methods justified and fits the research question; <b>HIGH</b> =very detailed explanation of the data collection and analysis procedures, info on ethical approval included, study limitation, confounding and biases commented upon
<b>4. Measurements of ecological outcomes</b>	Subjective/perception based or self-reported (=0); Objective (=1). E.g.: changes in the forest cover assessed through analysis of satellite images versus perception of the changes in forest cover reported by the local people);

## Results

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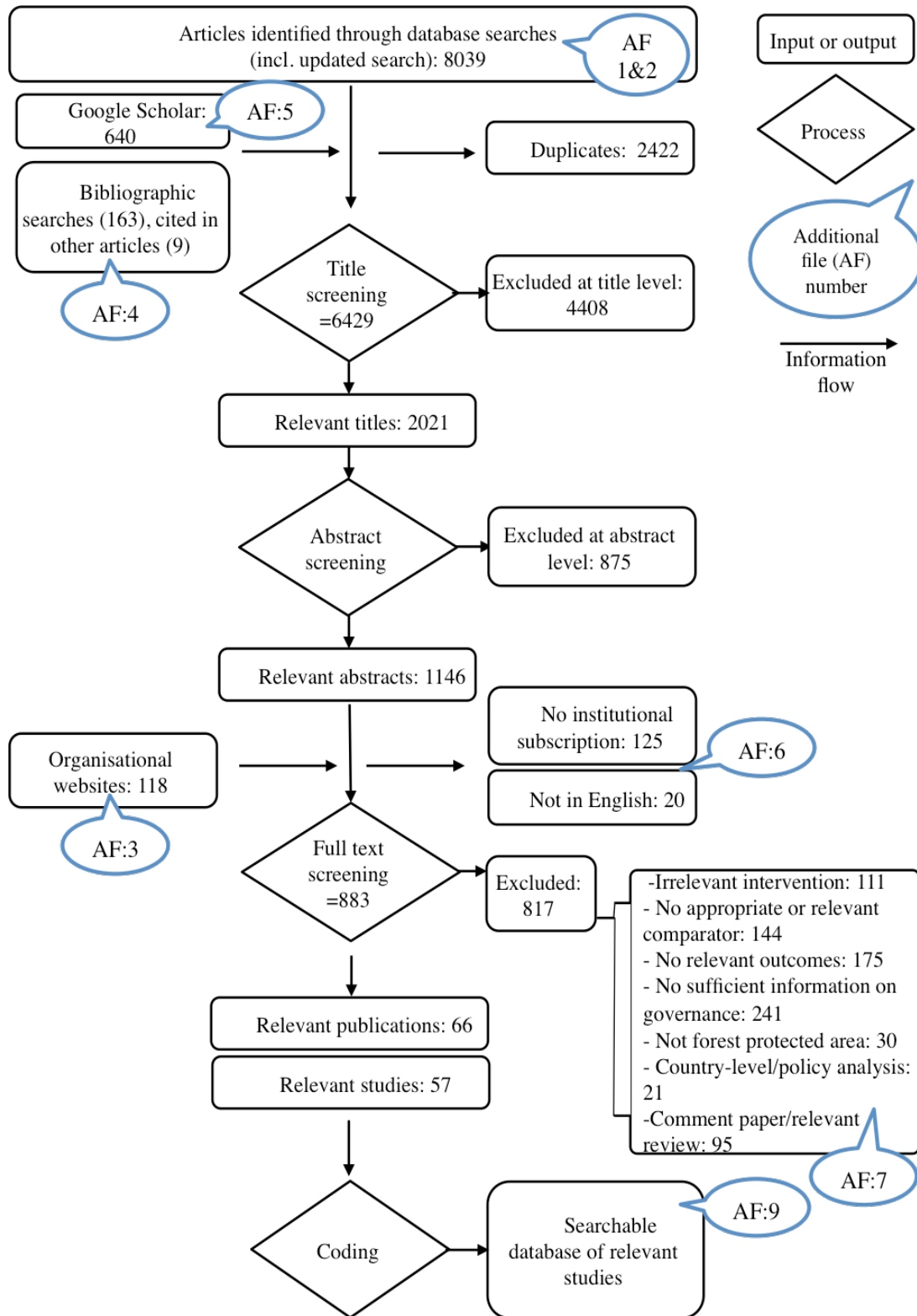


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### EVIDENCE IDENTIFICATION, RETRIEVAL AND SCREENING

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All steps in evidence identification, retrieval and screening, along with the numbers of included and excluded studies at different stages of the mapping process are depicted in Figure 2.2.2.



**FIGURE 2.2.2** FLOW DIAGRAM OF MAPPING STAGES FROM SEARCHING, IDENTIFICATION OF RELEVANT LITERATURE AND CODING. LOCATIONS OF THE OUTPUTS OF SPECIFIC MAPPING STAGES PLACED IN THE ANNEX FILES (AF) ARE ALSO DEPICTED.

Searches of academic literature databases, undertaken in July and November 2012 and updated in March 2015 identified 8039 potentially relevant articles (this includes 1256 potentially relevant titles from the updated search). Additional sources, such as bibliographic checking (163), references extracted from other articles (9) and Google Scholar search (640) yielded additional 812 articles. After duplicate removal (2422), 6429 articles were screened at the title level out of which 2012 titles were identified as relevant and were screened at abstract level. 1146 abstracts were identified for the full-text screening, while 875 abstracts were excluded. Moreover, searching through organizational websites resulted in additional 118 potentially relevant articles (duplicates deleted: 1). We screened 1119 articles at the full-text level and we could not assess 145 full-text articles due to lack of institutional subscription (125) or because publication were not in English (20).

At the full-text screening step we excluded 817 articles. Reasons for exclusion were: not a primary research study (e.g. relevant review without empirical data), (95), country-level analysis (e.g. a national level forest conservation policy assessment) (21), no appropriate comparator (comparator lacking or its simple inside/outside comparison) (144), irrelevant intervention (e.g. agroforestry) (111), lack of relevant outcomes (e.g. economic costs of PAs) (175), insufficient information on governance (i.e. no detailed explanation on governing and management bodies), (241), non-forest PA (30).

In total, we coded 66 articles that correspond to 57 studies. To be a part of a single study, articles had to be authored by the same group of authors and have the same research location where research is conducted within similar time period.

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#### SYSTEMATIC MAP DATABASE

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A searchable systematic map database was created aimed at describing the scope of the current research, evidence type and location. A link to the downloadable database (.xlsx format) is provided in the **Annex 9**. The map can be searched through different keywords and attributes on the article or study level, to provide insights of the

knowledge base size and gaps (in terms of geographical location, governance type, outcome, methodology) and to be a source of questions for future systematic reviews.

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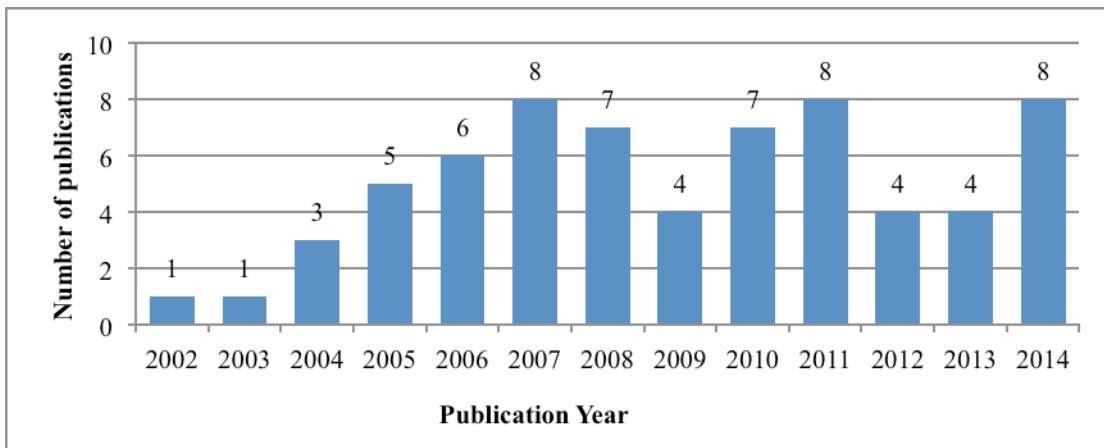
## DATABASE DESCRIPTION AND FINDINGS

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Below is the descriptive summary of the database. We left out from this summary less important coded information such as PAs sizes and year of establishment.

We included 9 background publications that could not be stand-alone studies but served as a contextual support to the main publication in the study by providing background on governance processes or describing additional outcomes.

The oldest included article published in 2002. 46.97% of all the included relevant articles were published from 2010 to 2014. Figure 2.2.3 shows the yearly increase of published relevant articles.

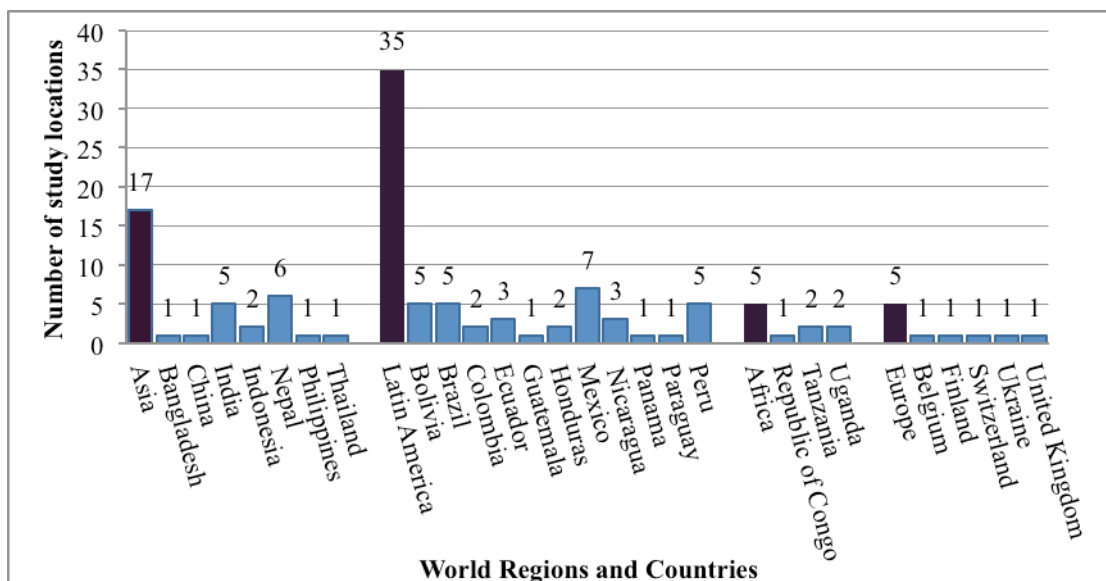


**FIGURE 2.2.3** NUMBERS OF ARTICLES INCLUDED IN THE MAP BY PUBLICATION YEAR (TOTAL NUMBER OF INCLUDED ARTICLES IS 66).

Academic authors published majority of the articles included in this map (60.6%, 40 out of 66) and this was followed by a combined authorship between academic and NGO-affiliated authors (22.72%, 15). Most of the included publications were peer-reviewed (98.5%, 65 out of 66), out of which 84.8% were journal articles. The majority of the studies included in the map applied quantitative methodology (34 studies; 59.6%) and mix-method (15; 26.3%), while qualitative studies were represented in a lesser extent

(8; 14%). One out of 57 included studies was a simulated experiment (Vallino 2014), four were quasi-experimental studies and the rest were observational studies.

Research locations of the included observational and quasi-experimental studies were placed in 26 countries. Study locations were biased towards Latin America (35 study locations) and Asia (17), while only few studies were located in Europe (5) and Africa (5). Mexico was the most studied country (7 studies) followed by Nepal (6), India (5), Bolivia (5) and Brazil (5) (Figure 2.2.4). Most of the studies were located in a single country (50), while only five studies had included two countries, and only one study showed cases from three countries.



**FIGURE 2.2.4** NUMBER OF STUDY LOCATIONS PER COUNTRY AND PER CONTINENT/REGION. LOCATIONS WITHIN MULTI-SITE STUDIES ARE COUNTED SEPARATELY

In 28 studies (out of 56 observational and quasi-experimental studies; 50%) the information on IUCN management categories was not available. In some studies, this information could be obtained only for some PAs in the sample. This is because IUCN management categories were not reported (neither in the publication nor on protectedplanet.net), or studied forests could not be categorised (e.g. sacred groves and other informal PAs). Where this information was available, IUCN management categories of studied PAs were various: from II to VI (only one publication was dealing

with PAs under management category I), implying high variability of resource access and strictness levels.

There is a high variability in sample sizes. Out of 56 observational and quasi-experimental studies, 15 focused on only one PA, 8 studies focused on 2 PAs. The rest of the studies (33 or 59%) encompassed three or more (formal and informal) PAs in the analysis, including adjacent forest patches of different governance, ownership or tenure arrangement. The highest number of PAs compared in a studies was 163 (Armenteras et al. 2013) and 292 (Nolte et al. 2013)

### **Variety of reported outcomes**

Most of the studies reported only one outcome (45) predominantly measuring only ecological effects (38). Nine studies reported two outcomes out of which 5 studies focused on both social and ecological effects and the rest measured social effects only. Three included studies reported three outcomes (ecological, behavioural and attitudinal). Spill-over effects or “neighbourhood leakage” (Gaveau et al. 2009) were not captured by our map. Studies that were reporting on the potential spill-over effects were missing information on governance and were excluded. Majority of reported outcomes were categorized as ecological (46), followed by behavioural (15) and attitudinal (11) (Table 2.2.2).

**TABLE 2.2.2** NUMBER AND KIND OF REPORTED OUTCOMES PER STUDY (TOTAL NUMBER OF MAPPED STUDIES IS 57).

<b>Studied outcome types</b>	<b>Ecological</b>	<b>Attitudes</b>	<b>Behaviour</b>	<b>Spill-over</b>	<b>Total no. of studies</b>
<b>Four</b>	0	0	0	0	0
<b>Three</b>	3	3	3	0	3
<b>Two</b>	5	6	7	0	9
<b>One</b>	38	2	5	0	45
<b>Total</b>	<b>46</b>	<b>11</b>	<b>15</b>	<b>0</b>	<b>57</b>

Ecological outcomes reported were: land use change assessed through forest cover change, annual deforestation rate and fragmentation (patch area); level of forest regeneration; biodiversity assessment through stand inventories and biodiversity richness/abundance and biomass, community structure (density and composition, occurrence of endemic, threatened species and medicinal species), fire.

Attitudinal outcomes reported: attitudes and relationship (level of trust or satisfaction) of local people towards management authorities, PA policies (rules), conservation practice and biodiversity, perception of PA management effectiveness.

Behavioural outcomes reported were: compliance and collaboration (voluntary conservation activities, fire watching, protection of resources and other types of collective action), conflicts with PA authorities (e.g. (Norgrove & Hulme 2006): mobilization of large groups/politicians, feigning ignorance, not turning up for meetings, letting roads become overgrown, bribing park staff and moving boundary markers under cover of darkness), illegal activities (encroachment, hunting, fire) or non-conservation oriented behaviour (firewood consumption, livestock breeding, hunting); occupation changes.

### **Governance modes**

Included studies were analysing and comparing all four governance types, including state, community, private (incl. NGO-governed) and co-governed PAs with various and often complex combinations of land tenure types, involvement of external actors and power sharing. More detailed information on governance characteristics, such as nature of stakeholder participation, level of decentralization, level and nature of collaboration among actors was frequently lacking in the majority of the studies and these variables were not coded (as initially planned (Macura et al. 2013)).

The majority of studies (51) included state governance type in a comparative analysis. A study by Mehring and colleagues (2011) dealt with a state PA that includes

community conservation, with negotiated conservation agreements and was classified under state PA governance.

Forty-two studies encompassed some form of community governance and this included forests managed for religious purposes such as sacred groves (e.g. (Bhagwat et al. 2006)), indigenous reserves and territories (e.g. (Armenteras et al. 2013)), extractive reserves (e.g. (Ruiz-Pérez et al. 2005)), community concessions (e.g. (Bray et al. 2008)), community or decentralized forests (e.g. (Hayes & Persha 2010)) or communal lands such as *ejidos* in Mexico (e.g. Rueda, 2010).

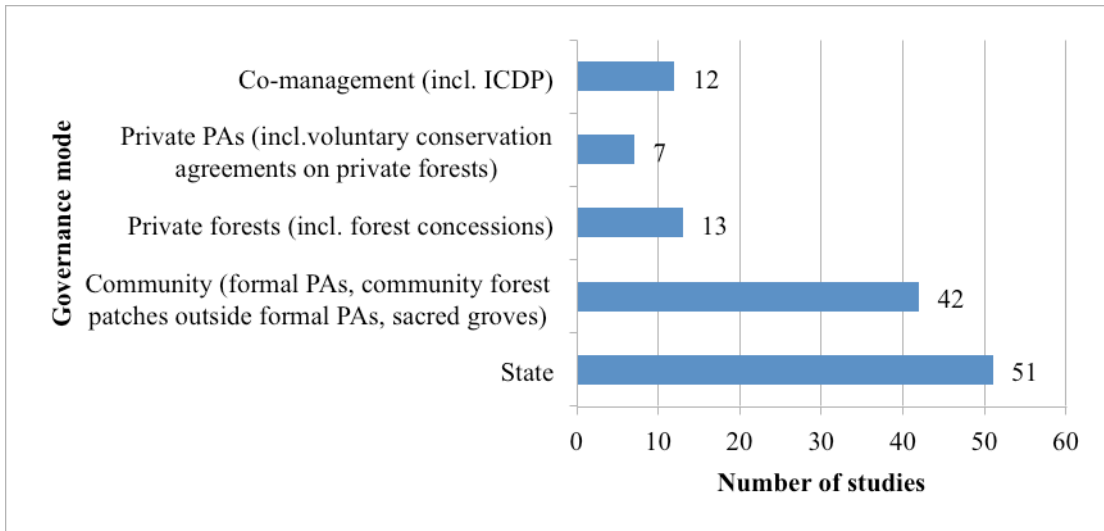
Twenty studies included some form of governance by private actors out of which six studies inquired private PAs owned by an individual, a company, NGOs or non-for-profit trust foundation (Quintana & Morse 2005; van Gils & Ugon 2006; Clercq & Wulf 2007; Sánchez-Azofeifa et al. 2009; Urquiza-Haas et al. 2011; Vuohelainen et al. 2012). A study by Mönkkönen et al (2010) investigated voluntary conservation agreements on the private forests in Finland. The rest of the studies included mostly forest concessions (managed not only for conservation purposes) that were used as a comparator to other conservation governance regimes.

Twelve studies included co-managed PAs or some other form of participatory conservation out of which two studies (Gubbi et al. 2009; Chowdhury et al. 2014) described effects of integrated conservation and development projects within state PAs.

Some studies could not easily be classified under our four governance categories. Annapurna conservation area in Nepal has a complex governance setting with community-led committees inside a national PA, managed by a NGO/trust (Baral & Stern 2011). Quintana and Morse (2005) included a state-run PA with private land ownership, and this was coded as state governance. Vallino (2014) simulated external law enforcement, application of internal rules and open access scenarios in conservation and forest management.

Figure 2.2.5 gives an overview of the governance modes in the included studies.



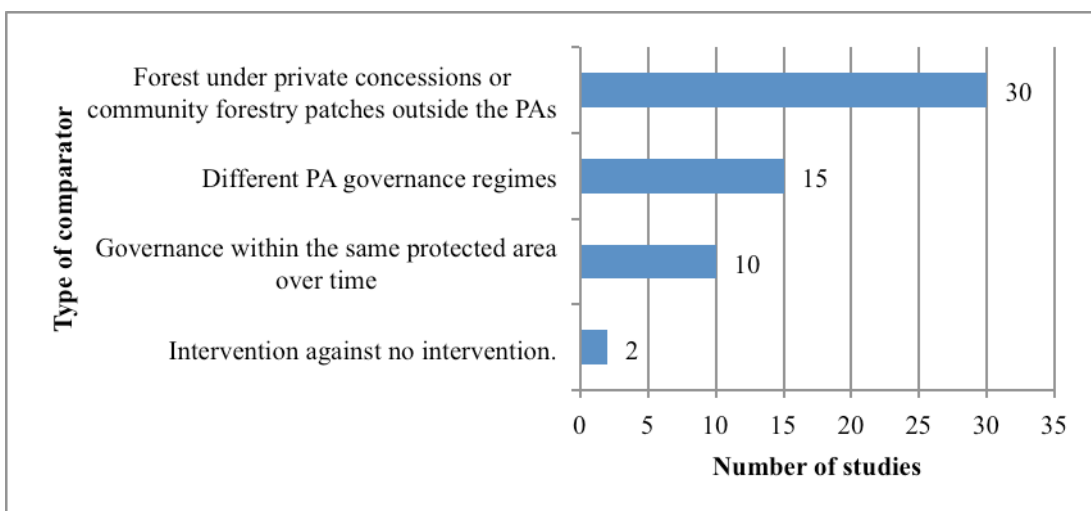


**FIGURE 2.2.5** GOVERNANCE MODES IN INCLUDED STUDIES (PAS AND NON-PAS), COARSELY GROUPED (N=57)

### Comparator types

Out of 57 studies, 10 studies compared governance within the same PA over time, 15 studies compared different PA governance regimes; and 2 studies compared intervention against no intervention. 30 studies compared PAs with various governance regimes against similar forestry areas under private concessions, or community forestry patches outside the PAs.

Figure 2.2.6 provides an overview of the nature of comparators and Table 2.2.3 shows all the included studies, mapped outcomes, comparators and governance types.



**FIGURE 2.2.6** NATURE OF STUDY COMPARATORS IN INCLUDED STUDIES (N=57).

**TABLE 2.2.3** OVERVIEW OF THE MAPPED GOVERNANCE MODES, OUTCOMES AND COMPARATORS. GOVERNANCE MODES ARE CODED AS FOLLOWS: STATE (=1), PRIVATE (=2), NGO (=3), COMMUNITY (=4), CO-MANAGEMENT (=5), HYBRID/OTHER (DESCRIBE). COMPARATORS ARE CODED AS FOLLOWS: GOVERNANCE CHANGE OVER TIME IN THE SAME PA (=1); GOVERNANCE COMPARED TO OTHER GOVERNANCE REGIME IN DIFFERENT PAS OR TO AN OTHER GOVERNANCE TYPE WITHIN THE SAME PA DURING SAME TIME PERIOD (=2), OR IN DIFFERENT FOREST GOVERNANCE REGIMES DURING SAME TIME PERIOD (3); OTHER (DESCRIBE). OUTCOMES ARE CODED AS ECOLOGICAL (=1); ATTITUDES (=2); BEHAVIOUR (=3); SPILL-OVER (=4).

Study ID	Short Reference	Protected area name	Outcomes	Detailed Outcome	Governance mode	Comparator
101	Armenteras DR et al. 2009	Various in Colombian Guyana Shield: Chiribiquete, Macarena, Nukak, Puinaway. Tuparro, Barranco Colorado, Barranquillita, Cano Mesetas-Dagua y Murcielago, El itilla, Cano Bachaco Guaripa, La Hormiga y Guacamayas Maipore, Lagos del Dorado, Lagos del paso, Bacat-Arara, Vuelta del Alivio, Yabilla II, Barranco Ceiba y Lag, Cano Jabon, Cuenca Media y alta del rio Inirida, Nukak Maku, Parte alta del rio Guainia, Remanso Chorro Bocon, Rios Cuiari e Isana, Tonina-Sejal-San Jose, La Fuga, La Sal, Llanos de Yari (Yaguara II), Piaroa de Cachicamo, Puerto Nare, Puerto Viejo y puerto Esperanza, Tucan de Caño Giriza La Palma	1	Land cover changes between 1985 and 2002 (%)	1 and 4 (national and indigenous reserves)	2 (incl. inside/outside comparison)

<b>102</b>	Bajracharya SB, 2005	Annapurna Conservation Area	1, 2, 3	1) Ecological: Density, basal area, species diversity and species evenness of all the trees $\geq$ 10 cm DBH; wildlife abundance changes; 2) Behaviour: resource use and hunting behaviour (count and sighting), 3) Attitudes: attitudes towards conservation (percentage agree)	4	1: Other: local people's perceptions of change (1), also compared with adjacent areas under traditional forms of land use (but no information on governance there)
<b>103</b>	Baral N et al., 2011	Annapurna Conservation Area, various community forests	1, 2	1) Ecological: improvement of the state of natural resources and effective conservation efforts (scale and percentage agree); 2) Social: Trust towards administering bodies and feeling of their importance (scale 1-5 and %)	Other: 1, 3, 4: community-led committees inside national PA managed by a NGO/trust compared to state managed community-led committees outside PA	2
<b>104</b>	Bhagwat S et al. 2005	Sacred groves in Kodagu District, Karnataka	1	Trees, birds, and macro-fungi: Diversity, species distribution and attributes: pairwise similarity in species composition, comparison between sites in habitat preferences, occurrence of endemic and threatened species, and useful and medicinal species.	1, 4 (informal community based governance (sacred groves)), surrounding landscape with coffee plantations	3

<b>105</b>	Bray D et al. 2008	Calakmul Biosphere Reserve (CBR, Mexico) and Maya Biosphere Reserve (MBR, Guatemala)	1	Mean annual deforestation rate (%)	1, 4 (community concessions)	3
<b>106</b>	Chowdhury R et al. 2006	Calakmul Biosphere Reserve	1	Land cover change (in km <sup>2</sup> ) and persistence (Percent of cover class in date 1 that transitioned (or not) in date 2)	1 (including within and around the Reserve comparisons), 2, 4 ( <i>ejidos</i> )	3
<b>107</b>	De Clercq et al. 2007	Various - not stated	1	Mean change in spatial forest cover pattern (ha) and fragmentation	1, 3	2
<b>108</b>	Dressler WH et al. 2010	Puerto Princesa Subterranean River National Park	3	Behavioural change (Sweden farmers/ indigenous versus paddy farmers/migrants) under different governance regimes	1, 4, 5 (decentralization and devolved governance)	1
<b>109</b>	Gubbi S et al. 2008	Periyar Tiger Reserve	2	Attitudes towards conservation and towards PA (scores)	1 (incl.5 through Integrated Conservation and Development project)	Other: no intervention versus intervention
<b>110</b>	Hayes T. 2007	Río Plátano Biosphere Reserve (RPBR, Honduras) and Bosawas Biosphere Reserve (BBR, Nicaragua)	1, 2, 3	1) Ecological/ 2) behaviour: Agricultural expansion (encroachment activities) produced by mestizo migration (Land cover change for period 1995-2001 in ha); 3) Attitudes: attitudes towards the rules (% agree)	1 (RPBR), 4 (indigenous, BBR)	2

<b>111</b>	Hayes T et al. 2010	Río Plátano (Honduras), Bosawas (Nicaragua); Baga II, Baga I, Sagara (Tanzania)	1, 3	Conservation outcomes scores composed of: 1) ecological/2) behaviour: a) Mesoamerican case: deforestation trends (encroachment level), b) Tanzania: forest structure measures (basal area, stem density, and mean tree DBH), species composition, incidence of illegal logging	1, 4, 5	3 (Tanzania: not PA)
<b>112</b>	Johnson KA et al. 2004	Lagunas de Montebello National Park (LMNP)	1, 2	1) Ecological: vegetative cover type, regeneration (1/0), and pests (in <i>Pinus spp.</i> ) (1/0), extent of groundcover, human activity, and indication and degree of burns (0-3); 2) Attitudes: relationship with external authorities	1, 4	2
<b>113</b>	Stokes EJJ et al. 2010	Nouabale-Ndoki National Park (NNNP), Lac Télé Community Reserve (LTCR) and some Forestry Management Units (FMUs)	1	Abundance of elephants (dung density (Dung piles/km <sup>2</sup> ) and individual density (Inds/km <sup>2</sup> ), gorillas and chimpanzees (nest density (Nests/km <sup>2</sup> ) and individual density (Inds/km <sup>2</sup> ))	1, 4 and joined state/private/NGO governance of forest management units	3

114	Kubo H et al. 2010	Gunung Halimun-Salak National Park	2, 3	1) Attitudes: perceptions, attitudes, trust and 2) Behaviour (stated, not measured) of both field staff and local people towards conservation and park (percentage of agree)	1 and "participatory" (educative and consultative participation)	1
115	Licona M et al. 2011	Biosphere Reserve composed of Bahuaja-Sonene National Park (core) with Tambopata National Reserve (core) and a buffer zone; Native Community of Infierno	1	Ungulate numbers (white-lipped peccary; collared peccary; lowland tapir; red brocket deer)	1, 4	3
116	Forrest JL et al. 2008	Madidi National Park (MNP), Madidi Integrated Management Area (MIMA), Tacana Indigenous Territory (TCO), forestry concessions	1	Rate of forest cover change over different management regimes (annual per cent change)	1, 2 (private concessions), 4 (indigenous),	3
117	Mehring M et al. 2011	Lore Lindu forest Biosphere Reserve	3	Perceptions of resource extraction (scale)	Other: 1 with community conservation agreements negotiated with the help of NGOs	1
118	Mena CF et al. 2006	Cuyabeno Wildlife Reserve (and adjacent Patrimonial forests)	1	Rate of forest cover change (ha, %)	1 and 4 (communities manage and have usufruct rights, land is under state ownership)	3 (PA versus patrimony (community) forest (outside))
119	Mgumia FH et al. 2003	8 Sacred groves (miombo woodlands): Mmeta I, Kalomo, Msago I, Mbeleka I, Ndisha, Mmeta II, Mbeleka II and Msago II and Uganda State Forest Reserve (USFR)	1	Stem density (1/ha), stem basal area (m <sup>2</sup> /ha), species richness, Shannon-Wiener index, evenness, number of plant families,	1, 4 (sacred grove)	3

<b>120</b>	Monkkonen M et al. 2009	Various Voluntary Conservation Sites, Managed Forests, Private Forests	1	Biodiversity: dead wood (DBH, length), lichens and fungi	Other: Private: Voluntary Conservation Agreements (for compensation), private managed forests	Other: Private forest management with and without voluntary conservation programme (compensation based)
<b>121</b>	Mugisha AR et al. 2004	Protected areas with a community-based conservation approach: (1) Murchison Falls (MF), (2) Kibale, (3) Queen Elizabeth (QE), (4) Lake Mburo (LM), (5) Bwindi, (6) Mgahinga and (7) Mount Elgon (ME). PAs with a conventional management approach: (8) Karuma, (9) Bugungu, (10) Semuliki, (11) Kigezi, (12) Katonga, (13) Pian-Upe (PU), (14) Bokora, (15) Matheniko and (16) Kidepo Valley (KV).	1, 2, 3	Threat reduction assessment method/perceptions of conservation performance and outcomes,: 1) Ecological: deforestation; 2) Behaviour: illegal activities, 3) Attitudes: attitudes towards management staff and other practices (percentage agree, scales)	1, 4	2



122	Nagendra H 2002	Royal Chitwan National Park and other adjacent 2 locations	1	Measured: tree and sapling species richness, species diversity, density, DBH and height; Perceptions: vegetation density and of species diversity (perceptions of a forester, scale); Forest change: density of tree cover, shrub and bush cover, ground cover: (local people perceptions, scale)	1 (national park and national forests), 4 (community forests)	3
123	Nagendra H et al. 2004	Celaque National Park (CNP), Royal Chitawan NP (RCNP)	1	Rate of forest cover change (stable, regrowth, deforestation %) in the core, buffer and 5 km surrounding area.	Other: 1) State no participation, ejidos and private land owners inside park and 2) State with participation in the buffer zone (started in 1995) with state tenure	2
124	Nagendra H et al. 2008	Royal Chitwan National Park	1	Land cover change over time (% deforested, % regrowth, % degraded, %reforestation, % stable); forest fragmentation: Mean patch area (ha). Mean patch nearest neighbour distance (m), Mean patch shape index, Patch density (1/ha)	1, 4, 5 ((1) a national park; (2) a designated park buffer involving participatory forest management programs; (3) scattered patches of designated community forest; and (4) large areas of adjacent landscape made up of mostly private landholdings under agricultural practices.)	3

<b>125</b>	Nautiyal S et al. 2007	Nanda-Devi Biosphere Reserve and surrounding forests	1	Tree species inventory and forest structure: Density (1/ ha) and basal cover m <sup>2</sup> /ha of tree, tree seedlings and shrub species), vegetation index values, temporal vegetation dynamics (%)	1 (GCF, PAF), 4 (TCF/Sacred forests, CCF),	3
<b>126</b>	Negroes N et al. 2011	Cantao State Park (CSP), Santa Fe Ranch(SFR)	1	Species richness/relative abundance index (mammal) and activity (mammals and birds)	1 (public PA), 2 (private forest fragment)	3
<b>127</b>	Nepstad D et al. 2006	Various - Brazilian Amazon	1	The ratio of deforestation (average annual deforestation rates from 1997 to 2000 within 10-km-wide strips of land located along the inside and out- side of the reserve perimeter) and fire inhibition (fire density (number of fires per square kilometre in 1998) within 20-km-wide strips along the inside and outside of the reserve perimeter).	1, 4 (indigenous)	3 ( incl. inside - out)
<b>128</b>	Newton AC 2011	New Forest National Park	1	Biodiversity (number of large mammals), Declines and losses of different species group (descriptive)	1, 4	1

129	Oliveira PJ et al. 2007	Various national parks, indigenous territories, forest concessions (all names not stated)	1	Annual rates of forest damage extent and intensity -disturb and deforested (km <sup>2</sup> /y),	1, 2 (concession production forests), 4 (Indigenous land and reserves for tribes in voluntary isolation),	3
130	Quintana J et al. 2005	Mbaracayu Natural Forest Reserve (private) (MNFR) and San Rafael Managed Resource Reserve(state) (SRMRR)	2, 3	1) Attitudes: relationships between the management bodies of the reserves and other stakeholders (descriptive), attitudes towards reserve (descriptive), 2) Behaviour: conflicts (descriptive)	1 (state as managers, private landowners), 3 (NGO as a management authority and landowner)	2
131	Rao BR et al. 2011	Sacred groves (Sadasivakona (SDK), Singirikona (SGK), Kailasakona (KLK), Bupathayyakona (BTK), and Talakona (TKN)) and Reserve forests (RF1-5) in Eastern Ghats	1	Species richness and density(count), basal area (cm), site disturbances: cut stumps, fire, grazing, lopping, invasive species (score)	1 (reserved forests), 4 (sacred groves)	3
132	Rueda X 2010	Calakmul Biosphere Reserve and other <i>ejidos</i>	1	Deforestation rate (km <sup>2</sup> )	1, 4 ( <i>ejidos</i> -communal agricultural land)	3
133	Sanchez-Azofeifa GA et al. 2009	Chamela-Cuixmala Biosphere Reserve and surrounding <i>ejidos</i>	1	Forest cover (difference) between CCBR and <i>ejidos</i> (%)	2, 4 ( <i>ejidos</i> )	3
134	Stocks A et al. 2007	Bosawas Biosphere Reserve (BBR)	1	Spatial and temporal differences in forest cover (km <sup>2</sup> )	2 (colonists), 4 (indigenous)	2

135	Thaworn R et al. 2010	Sri Nakarin Dam National Park (SNDNP), Chalerm Rattanakosin Forest Reserve (CRFR)	3	Change of behaviour: from various conflicts (resistance, encroaching) to collaboration (protection, voluntary conservation groups, fire watchers, etc.)	1, 5	2
136	Ting Z et al. 2012	Bai-shuijiang National Natural Reserve	3	Difference in dependency on forest resource: Firewood consumption, non-timber forest product value, livestock breeding (2006-2010), households' firewood consumption, livestock breeding (site comparison).	1, 5	1 (before-after: with and without community involvement through community-based co-management project)
137	Urquiza-Haas T et al. 2011	Sian Khan Biosphere reserve and other <i>ejidos</i> and private forests (El Zapotal Private Reserve; Tezoco Nuevo ejido; Yodzonot Laguna, Otoch Ma'ax Yetel Kooh protected area, Valladolid ejido; X-Conha ejido, forestry polygon 1, polygon designated for agricultural activities 2; Las Palmas private property; Sian Ka'an-Uaymil, Sian Ka'an Biosphere Reserve; Uaymil protected area; Uninhabited private properties; Tierra Negra ejido]	1, 3	1) Ecological: Encounter rates/abundance of mammal and bird species, 2) Behaviour: hunting pressure (perceptions and direct sighting of hunting tools -scale),	2, 3, 4 ( <i>ejidos</i> /communal land-holding)	3

<b>138</b>	Van Gils H et al. 2006	Carrasco Ichilo National Park	1	Proportion (%) of converted closed forest (CCF) between 1986 and 2002 within each land tenure regime	1, 3, 4	2
<b>139</b>	Vuohelainen A J et al. 2012	Reserva Nacional Tambopata (RNT), Comunidad Nativa Infierno (CNI), Comunidad Nativa Palma Real (CNPR), Comunidad Nativa Boca Pariamanu (CNBR), Shihuahuaco (5), Picaflor Research Centre (PRC), Amarumayo (7), Reserva Ecologica Inkaterra (REI), Reserva Ecologica Taricaya (RET), and Reserva Ecologica Paraiso Amazonico (REPA).	1	Land use change/deforestation (ha/year, %)	1, 2,3, 4	2
<b>140</b>	Bodmer R et al. 2008	Pacaya-Samiria National Reserve	1	Increase in number of mammal species: 1997 (before co-management) and 2004; The per cent change in wildlife densities (%): 1996-2004	1 (state, before), 5 (co-management, after)	1
<b>141</b>	Ruiz-Pérez M et al 2005	Alto Jurua Extractive Reserve (AJER), National Park of Serra do Divisor (NPSD), indigenous lands	1	Land-use change: percentage of deforestation per year (%) (Fig.3)	1 (national park), 4 (community, trust, indigenous, extractive reserve) and a rural development project (INCRA)	3
<b>142</b>	Wallner A et al. 2007	UNESCO Biosphere Entlebuch (UBE) and the Carpathian Biosphere Reserve (CBR)	2	Perceptions of locals regarding two parks (descriptive)	1, 4 (local management board)	2

143	Baral N et al. 2007	Bardia National Park (BNP), Sukla Phanta Wildlife Reserve (SPWR)	2, 3	1) Attitudes towards conservation (percentage agrees), 2) Behaviour: Frequency of resources harvested (%)	1 incl. 5 (through user groups - with two different levels of participation/functionality of user groups and different levels of NGO influence)	2
144	Norgrove L et al. 2006	Mount Elgon National Park	3	"overt" and "covert" resistance to the park policies: mobilization of large groups/politicians, feigning ignorance, not turning up for meetings, letting roads become overgrown, bribing park staff and moving boundary markers under cover of darkness	1 incl. 5 (state law enforcement including participatory management)	1
145	Armenteras DG et al. 2013	Various in NW-AMAZON (names mostly not stated): National PAs and natural reserves, indigenous reserves, integrated-management districts	1	Fire occurrence and intensity (mean number of fires, fire radiative power per quadrant), differences in the edge effect (percentage of fires in each management type for 1 km distance bins both inside and outside the forest edge)	1 (national/state), 4 (indigenous)	3

146	Chowdhury M et al. 2014	Rema- Kalenga Wildlife Sanctuary	2, 3	1) Attitudes towards conservation, FD and co-management project (percentage agree, scale 1-5); 2) Behaviour: changes of occupation from day-labour and NTFP collection to agriculture	1 with 5 (through Integrated Conservation and Development project)	1
147	Holland MB et al. 2014	Various - not stated	1	Forest cover change (% by year)	1 (protected areas, forest reserves and patrimony forests), 2 (private/colonisation area), 4 (indigenous)	3
148	Mueller R et al. 2012	Various - not stated	1	Prevention potential of 3 causes of deforestation: small agriculture, cattle ranching or mechanised agriculture (modeling, logit)	1 (national parks, integrated management), 2 (forest concessions), 4 (indigenous territories)	3
149	Nolte C et al. 2013	Various - not stated	1	Gross Forest Cover Loss: 2000–2005 (%); 2005–2010 (%); Deforestation 2001–2005 (%) and 2006–2010 (%)	1, 4, sustainable use zones	3
150	Oldekop JA et al. 2013	Sumaco Biosphere Reserve and community forests	1, 3	1) Ecological: fern and leaf litter frog species richness; forest cover: NDVI, NIR, gap fraction; 2) Social: Establishing community reserves, monitoring and sanctions according to established rules (descriptive, scores- table 1).	1, 4 (community forests)	3

<b>151</b>	Osuri AM et al. 2014	Sacred groves in Kodagu, Karnataka	1	Species inventory (categorical: no forest, open/disturbed, closed canopy), trends in aboveground biomass (Trends in the ratio of Landsat ETM+ band 4 to band 5), changes in the extent of the sacred grove network (perception)	1 (state-managed forests), 4 (sacred groves)	3
<b>152</b>	Paneque-Galvez J et al. 2013	Beni Biological Station with indigenous territories, forest concessions and private lands	1	Trends (ha) and annual change rates, gain, losses and swap (%) in forest cover and trends in forest fragmentation (core-edge changes)	1, 2 (concessions), 4 (indigenous territories: Tsimane and multi-ethnic TCO inside state-owned PA (30%))	3
<b>153</b>	Pfaff A et al. 2014	Various in Acre (names not stated)	1	Deforestation trend (% after covariate matching) in two periods separately: 2000-2004 and 2004-2008	1, 4, integrated landscape	3 and unprotected versus protected
<b>154</b>	Scullion JJ et al. 2014	Various in Madre de Dios Area	1	Land-cover change (% ha), impacts of overlapping land use policies (% reduction in the ecosystem conversion)	1, 4 and 2 (no conservation)	3



155	Vallino 2014	NA (experimental/modelled study)	1	<p>Green patches, total biomass. Green patches = number of patches with biomass &gt; 0 at the end of the simulation divided by the total number of patches that had biomass &gt; 0 at the start of the simulation.</p> <p>Total biomass = sum of the biomass of each patch at the end of the simulation divided by the sum of the biomass of each patch at the start of the simulation.</p>	Other: open access, external law enforcement, internal rules	2
156	Vergara-Asenjo G et al. 2014	Various in Panama	1	(Mature) forest cover change (%) and avoided deforestation over different land tenures (% of treated pixel between 1992–2008 and 2000–2008, covariate matching)	1, 4 (indigenous/comarcas) and their combinations and overlaps totalling 6 tenure regimes): 1) legally established comarcas, no overlap with protected areas (C); (2) overlap between legally established comarcas and protected areas (C-Over); (3) claimed lands, no overlap with protected areas (Cl); (4) overlap between claimed lands and protected areas (Cl-Over); (5) nationally protected areas, no overlap with indigenous territories (PA); and (6) other lands, no protection (OL)	3

157	Vidal O et al. 2014	Monarch Butterfly Reserve	1	Forest cover change/deforestation and degradation (ha) by large and small scale logging and climate related (floods, strong winds, drought, and fire)	1, 2, 4 ( <i>ejidos</i> )	2
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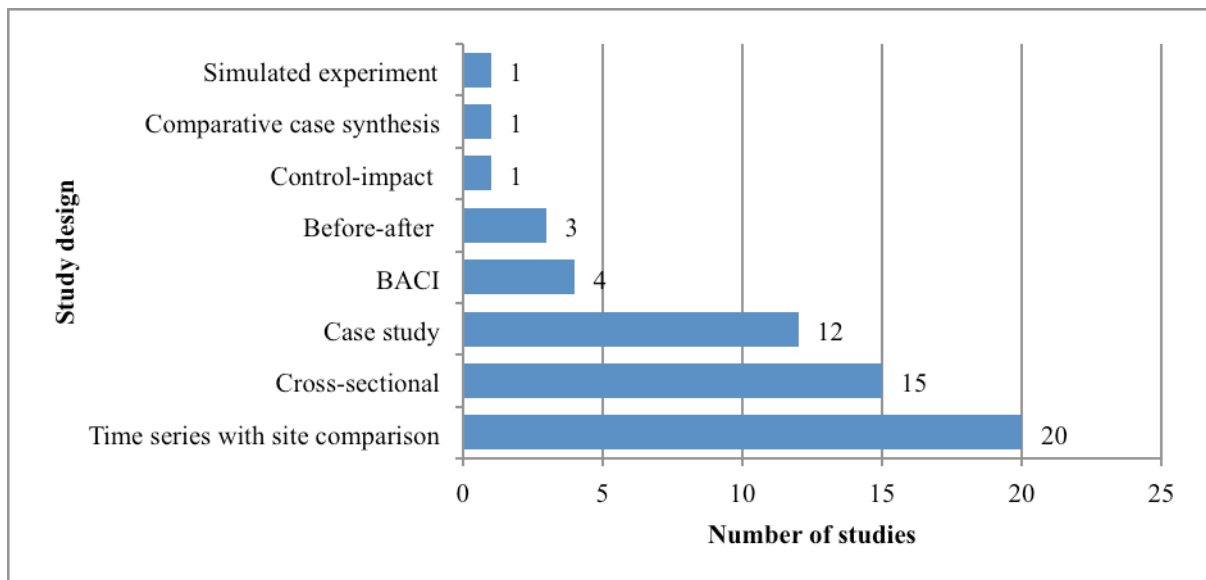
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## MAPPING THE QUALITY OF THE STUDIES RELEVANT TO THE QUESTION

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### a. Study design

Twelve studies were classified as a case study. One study was described as a comparative case synthesis (Hayes & Persha 2010) and one as an simulated experiment (Vallino 2014). Twenty studies could be categorised as time series with the site comparison. Three studies were designed as “before-after” (Bajracharya et al. 2005; Bodmer et al. 2008; Chowdhury et al. 2014). Fifteen studies had cross-sectional study design (site comparison in one time point). One study was designed as control-impact (Gubbi et al. 2009). Only four studies had before/after/control/impact (BACI) design (Ting et al. 2012; Nolte et al. 2013; Pfaff et al. 2014; Vergara-Asenjo & Potvin 2014). Study design details are in Figure 2.2.7.

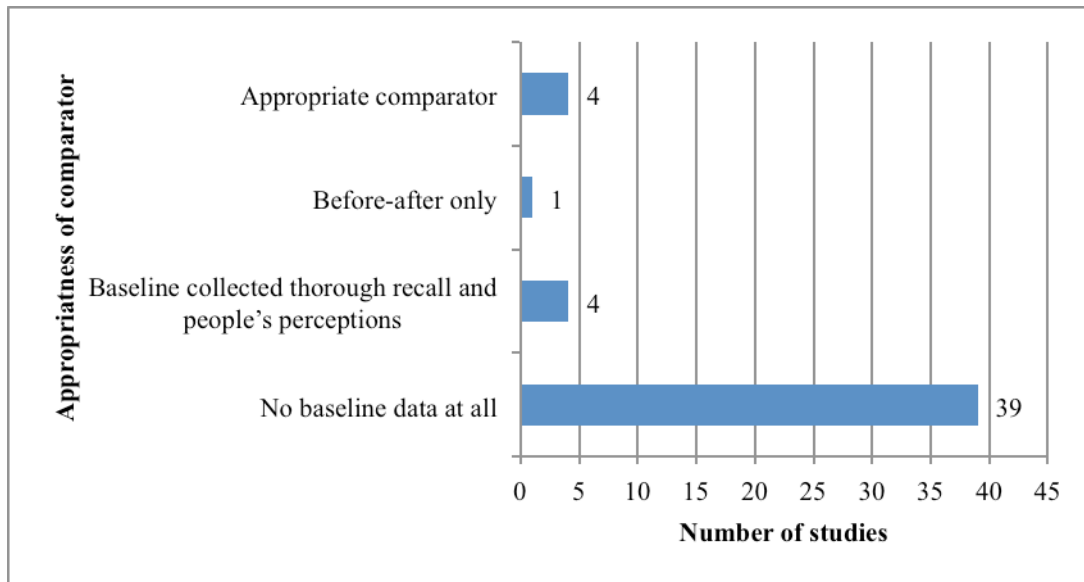


**FIGURE 2.2.7** STUDY DESIGN IN THE INCLUDED STUDIES (N=57)

### b. Appropriateness of comparator

Out of 48 observational and quasi-experimental quantitative and mix-method studies, 39 (81.25%) had no baseline data at all and they were either simple site comparisons or time-series (Figure 2.2.8). Four studies (8.33%) had baseline collected thorough recall and people’s perceptions (Nagendra 2002; Norgrove & Hulme 2006; Kubo & Supriyanto 2010; Chowdhury et al. 2014). One study had simple before-after

comparator in a single PA (Bodmer et al. 2008). Only four (8.33%) studies had appropriate comparator, used matching methods to create counterfactual and control for observational bias (Ting et al. 2012; Nolte et al. 2013; Pfaff et al. 2014; Vergara-Asenjo & Potvin 2014)



**FIGURE 2.2.8** APPROPRIATENESS OF COMPARATOR IN INCLUDED QUANTITATIVE AND MIXED-METHODS OBSERVATIONAL AND QUASI-EXPERIMENTAL STUDIES (N=48)

#### c. Level of methodological details

Most of the studies (47) had medium level of methodological detail with sufficient details on data collection and analysis procedures, and justified selection of methods. Nevertheless, most of the studies lacked explanation of study limitations and have not commented upon potential biases in data collection, analysis or reporting. Three included studies had low level and seven studies had high level of methodological detail.

#### d. Objectivity of measurements

Out of 46 studies reporting ecological outcomes, 38 studies used objective measurements of ecological outcomes, 4 studies used subjective measurements to report ecological outcomes (self-reported, observation or perception –based). Three more studies used mixed subjective and objective measurements to report different ecological outcomes. One study simulates the outcomes through agent-based modelling.

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### MAPPING LIMITATIONS

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#### *1) Crossing qual-quant divide*

This evidence map is biased towards quantitative data. This is mainly because the research question was leaning towards this type of the evidence.

Available qualitative studies were mostly in-depth case studies, mostly describing various forms of park-people conflicts, predominantly on the state-community power continuum. Most of these studies could not fit to the inclusion criteria as they were focusing solely on the governance or institutional processes and without reporting required outcomes.

On the other hand, quantitative studies frequently lack explanation of contextual variables that can be important for more complete understanding of the local-level PA effects.

#### *2) Mapping complex interventions*

Collating evidence on complex interventions with many interrelated and independent components might be a challenge, especially when it comes to common definitions, categorization and finally synthesis. Depending on the national conservation governance arrangement, some PAs had multiple and overlapping institutional arrangements and governance styles within a single PA. For example studies by Baral and colleagues (Baral & Stern 2010; Baral et al. 2010) describe the case of Annapurna Conservation Area in Nepal, where PA land is owned by the state, management is given to NGO/trust, and there are local community committees. Similarly, In Mexico, mapped studies focus on effects of different tenure regimes within and around PAs (e.g. state PAs with *ejidos* (communal lands)) on the state of the biodiversity or land use change (e.g. Cortina-Villar et al. 2012). In other cases in Central and South America, studies

overlap between indigenous territories and state-owned PAs. Typically, PAs entail zones with different levels of strictness and resource access by local communities (for example between core and the buffer zones), which also might have different effects on relevant outcomes.

In some examples authors mention “governance”, but they seem to refer to the management categories or the level of strictness and resource access (e.g. Pfaff et al. 2014).

There was insufficient information on type of the actors involved in PA governance, their responsibilities, governing rules and level of power sharing to understand the governance mode in the study according to our definition (241/29.5% studies were excluded at full-text screening stage for this reason).

These examples reflect complex realities on the ground and point to difficulties in isolating and assessing conservation governance effects, but also to challenges in collating evidence with such heterogeneity and without common (governance) definitions.

### *3) Risk of evidence omission*

We included studies that assess effect of PAs relative to community or private concessions. However, we might have failed to include studies that focus on the community or private forestry, but had PA as a comparator. This might have happened at the initial levels of evidence screening (at title and abstract) as comparator is less explicit in the title or abstract. Consultation with the stakeholders and experts while conducting full systematic review can help in mitigating this bias.

Moreover, some important evidence might have been missed through exclusion of the non-English literature (20). Accuracy of the map (and of potential evidence synthesis) could have been higher with this type of evidence.

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## LIMITATIONS IN THE EVIDENCE BASE ON THE GOVERNANCE ROLE IN CONSERVATION EFFECTIVENESS

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### *1) Acknowledging and reporting the role of governance*

Majority of screened full-text articles (93%) did not have all the necessary pieces of evidence to be included in the map.

It was not possible to code in detail different governance styles and map information on nature of participation, level of decentralization, number of actors and their responsibilities, which would allow for testing our hypotheses from the Protocol (see (Macura et al. 2013)).

There are two reasons for this. Studies that described institution and governance system in detail were lacking sufficient details on relevant outcomes and were rejected (e.g. Chandrakanth et al 2004 ) (175 or 21.4% studies were excluded with this reason). These kinds of studies frequently focus on intermediate variables such as level of participation, but without robust measures of conservation policy outcomes which is also noted in literature on decentralization in forestry (see:(Andersson & Gibson 2007)).

In other cases, when research entailed relevant outcomes (e.g. forest cover change or biodiversity assessment), there was no (or insufficient) information on the governance arrangements.

However, the studies lacking information on governance might not be aiming and were not possibly designed to evaluate role of the governance in conservation effectiveness.

Studies mostly include state and community (including both informal and formal) forests and PAs but they focus less on the private and co-managed forests and PAs (Figure 2.2.5).

## *2) Reported outcome types*

Majority of the articles focused on only one, specifically ecological, type of outcome (e.g. land cover change studies that focus on deforestation rate only). Nevertheless, conclusions of these kinds of studies on PA effectiveness can give incomplete or biased picture as PAs are deeply embedded in social, economical and political spheres of society as well (Brechin et al. 2010)

Moreover, we could not locate a study that addresses spill-over effects or policy side effect in connection to the PA governance. These kinds of studies would be beneficial for comprehensive understanding of the conservation governance effects in on the bigger scales. Our definition of the spill-over outcome was too vague. Moreover, measurement of spill-over effects require baseline data which is frequently missing or hard to obtain in the PA-related research as majority of conservation interventions were never designed to be evaluated (Ferraro & Pattanayak 2006)

## *3) Study Designs, comparator and attribution problem*

Frequently, studies had information on outcomes and governance, but have not had comparison against which a specific governance arrangement could be evaluated (144/17.6% studies were excluded at full text stage with this reason).

The majority of included studies (52.6%) compare PAs to adjacent forests outside of PAs but this cannot tell us anything about relative effectiveness of different PA governance modes.

Attribution, isolating and accurately estimating effect of intervention and assuring flow of causality from intervention to the outcome, is one of the central questions in the evaluation (Leeuw & Vaessen 2009). Majority of the included studies have not had baseline data. This is perhaps because conservation programmes and policies were never designed to be evaluated (Ferraro & Pattanayak 2006). Similar to observations in other relevant reviews (Geldmann et al. 2013; Pullin et al. 2013), in this map only small number (4) of included studies had appropriate comparator and BACI design that could



control for spatial and time-variant bias and attribute effects of intervention to the actual outcomes and not to some other modifiers. Time-series or spatial comparison designs can attribute effects to the intervention only if there are no other factors explaining the change in effects or when only intervention influence ground conditions- which is in complex conservation scenario almost impossible.

Moreover, studies rarely exclude alternative scenarios that might have influenced measured outcomes, or do not use qualitative data to build and support causal reasoning and make theories of change (Baylis et al. 2015). Counterfactual thinking or “what would have happened if there had been no intervention?” crucial for answering effectiveness questions is yet to be mainstreamed in conservation programme and policy evaluations (Ferraro & Pattanayak 2006; Ferraro 2009; Miteva et al. 2012; Ferraro & Hanauer 2014; Baylis et al. 2015)

#### *4) Geographical spread of research*

Research located in northern parts of North America (USA, Canada), in Australia, north and west Asia, were not captured by this map at all, while Europe and Africa are covered but only in a small extent.

## Conclusions

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The results call attention to the research gaps in the field of natural resource and conservation governance and provide input for future evidence synthesis.

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## IMPLICATIONS FOR PRACTICE AND POLICY

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Here we give an overview of the state of the evidence base in terms of the quantity and quality of studies captured in the review.

As in other examples of systematic reviews in conservation (Pullin et al. 2013) and decentralization and community forest management (Bowler et al. 2010; Samii et al.

2014), evidence base in this map is small, in the sense of size, quality and geographical spread, and without enough explanatory power to answer the specific effectiveness questions.

Most of the studies do not exclude alternative explanations or control for non-random assignment of conservation interventions. Instead, they apply simple site comparisons or use time-series when comparing different governance regimes, very rarely using regression or matching methods, do not control for selection bias or exclude alternative explanation. Recent calls for more rigid evaluations and methodological breakthroughs in conservation evaluation methods adapted from impact assessment (Baylis et al. 2015) should help to strengthen the evidence base on the role of governance in the conservation effectiveness of forest PAs.

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## IMPLICATIONS FOR SYNTHESIS

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The research question of this map could be broken into smaller parts and each governance type could be assessed separately to better understand the magnitude of effects of one specific governance arrangement over the other in PAs or outside, with community forests, depending on the country context. With this map as a start, the synthesis should not be too time- or resource –consuming. Full data extraction, full critical appraisal and quantitative or qualitative synthesis should be added. Before start such exercise, this map should be updated with the new evidence.

While conducting evidence synthesis, reviewers need to be careful when extracting and synthesizing data from different counterfactual scenarios. Namely, one cannot compare outcomes obtained from comparison between state PA and community forests with the comparisons between state PAs and no intervention. These are two different counterfactuals and if not clearly separated, these comparisons would give a wrong picture of intervention effects to policy makers (thanks to P. Ferraro for clarifying this point during review of the protocol)

Finally, reviewers have to acknowledge complexity, develop common broader definitions, provide context through qualitative data and policy documents, develop theories underpinning complex governance interventions and be transparent at all stages of the review (especially about lack of consensus) in order to capture evidence. Lessons can be learned from attempts to provide guidance on evidence synthesis of complex interventions in medicine (Shepherd et al. 2009).

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## IMPLICATIONS FOR RESEARCH

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Based on our observations of the methodological rigour of current research we provide the following summary of shortcomings of the current evidence base in terms of knowledge gaps and the need for primary research:

1. While conducting analysis of intervention effects in complex socio-ecological systems such as PAs, research has to take into account local context and governance modes that might modify effect of the intervention. Therefore it is necessary to have more PA effectiveness studies with more detailed governance information, specifically how decisions are made and implanted, the role of different actors and their responsibilities and accountability. The role of governance in PAs effectiveness should be assessed relative to local dynamics (see (Dressler et al. 2006)) and researchers have to develop in-depth understanding of institutional, contextual and historical diversity to be able to conduct more rigorous analysis and decompose governance processes into elements that can be more easily analysed (see for example multilevel, nested framework for analysing outcomes achieved in socio-ecological systems (Ostrom 2007)).
2. More reliable study designs that rely on causality, include baseline data, and exclude alternative scenarios are necessary. There is a need for better and more rigorous study designs and collection of baseline data. Research designs with appropriate choice of comparator and elimination of alternative explanations have to be prioritized to isolate effects of governance modes in the complex ground realities.

This is especially applicable for land use change studies where satellite images only cannot tell the story of the PA effects without in-depth studies of local institutions as well as national political context. If this is not possible, researchers have to understand and acknowledge these limitations.

3. Higher level of methodological explanation and more details in the reporting of the research is needed to enable appraisal of reliability.
4. Incorporating measures of both social and ecological outcomes will give a more nuanced and complete picture of different PA effects, acknowledging synergies and trade-offs in conservation (Hirsch 2010).
5. Large-n comparative studies that can show lessons from different countries and continents within similar (economical, ecological or social) contexts including sufficiently detailed information on local governance, institutions and actors are necessary.
6. Small and localised studies on governance processes that include rigorous outcomes are needed to fill the evidence gaps.
7. Longer- term studies with good baseline information are needed.
8. Collaborative research teams to capture complexity of social-ecological systems such as forest PAs, looking at institutions as well as social and ecological outcomes of PAs when comparing governance arrangements would be welcome. Forestry Resources and Institutions (IFRI) methodology and research (<http://www.umich.edu/~ifri>) is a good example of this point.
9. As in review by Bowler and colleagues (Bowler et al. 2010), we would recommend standard outcome measures of various conservation success to be able to compare between the studies.
10. Stronger evidence is needed on the effectiveness of private or co-managed PAs in comparison to other PA governance types
11. Research on spill-over effects of forest PAs conditional on their governance type is necessary to have a more holistic picture of complex linkages between social and human systems

Here we attempt to generate research questions that to fill in current research gap:

- What are the effects of private protected areas on social and ecological outcomes when compared to other types of protected areas?
- What are the effects of co-managed protected areas on social and ecological outcomes when compared to other types of protected areas?
- Which governance modes (state, private, community or co-managed) might cause comparatively higher spill-over effects in the context of forest protected areas?

## References

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- Andersson, K. & Gibson, C. (2007). Decentralized governance and environmental change: local institutional moderation of deforestation in Bolivia *SEARCH 1. J. Policy Anal. Manag.*
- Armenteras, D., González, T.M. & Retana, J. (2013). Forest fragmentation and edge influence on fire occurrence and intensity under different management types in Amazon forests. *Biol. Conserv.*, 159, 73–79.
- Bajracharya, S.B., Furley, P. a. & Newton, A. (2005). Effectiveness of Community Involvement in Delivering Conservation Benefits to the Annapurna Conservation Area, Nepal. *Environ. Conserv.*, 32, 239–247.
- Baral, N. & Stern, M. (2010). Looking back and looking ahead: local empowerment and governance in the Annapurna Conservation Area, Nepal. *Environ. Conserv.*, 37, 54–63.
- Baral, N. & Stern, M.J. (2011). A comparative study of two community-based conservation models in Nepal. *Biodivers. Conserv.*, 20, 2407–2426.
- Baral, N., Stern, M.J. & Heinen, J.T. (2010). Growth, Collapse, and Reorganization of the Annapurna Conservation Area, Nepal: an Analysis of Institutional Resilience. *Ecol. Soc.*, 15.
- Baylis, K., Honey-rosés, J., Börner, J., Corbera, E., Ezzine-de-blas, D., Ferraro, P.J., Lapeyre, R., Persson, M., Pfaff, A. & Wunder, S. (2015). Mainstreaming impact evaluation in nature conservation. *Conserv. Lett.*, 1–17.
- Bhagwat, S.A., Kushalappa, C.G., Williams, P.H. & Brown, N.D. (2006). The Role of Informal Protected Areas in Maintaining Biodiversity in the Western Ghats of India. *Ecol. Soc.*, 10, 8.

- Bodmer, R.E., Puertas, P. & Fang, T. (2008). Co-managing Wildlife in the Amazon and the Salvation of the Pacaya-Samiria National Reserve in Peru. In: *Wildl. Soc. Sci. Hum. Dimens.* (ed. Esther, D.). Island Press, Washington, DC, pp. 104–142.
- Borrini-Feyerabend, G. (2003). Governance of protected areas: innovations in the air.... *Policy Matters*, 12, 92–101.
- Borrini-Feyerabend, G., Johnston, J. & Pansky, D. (2006). Governance of protected areas. In: *Manag. Prot. areas a Glob. Guid.* (eds. Lockwood, M., Worboys, G. & Kothari, A.). Earthscan, London, pp. 116–145.
- Bowler, D., Buyung-Ali, L., Healey, J.R.R., Jones, J.P.G.P.G., Knight, T. & Pullin, a. S.S. (2010). The Evidence Base for Community Forest Management as a Mechanism for Supplying Global Environmental Benefits and Improving Local Welfare. CEE Review 08-011(SR48). *Environ. Evid.*
- Bray, D.B., Duran, E., Ramos, V.H., Mas, J.F., Velazquez, A., McNab, R.B., Barry, D. & Radachowsky, J. (2008). Tropical deforestation, community forests, and protected areas in the Maya Forest. *Ecol. Soc.*, 13, 56.
- Brechin, S.R., Murray, G. & Mogelgaard, K. (2010). Conceptual and Practical Issues in Defining Protected Area Success: The Political, Social, and Ecological in an Organized World. *J. Sustain. For.*, 29, 362–389.
- Brooks, J., Waylen, K.A. & Mulder, M.B. (2013). Assessing community-based conservation projects: A systematic review and multilevel analysis of attitudinal, behavioral, ecological, and economic outcomes. *Environ. Evid.*, 2, 2.
- Brooks, J.S., Franzen, M. a., Holmes, C.M., Grote, M.N. & Borgerhoff Mulder, M. (2006). Development as a conservation tool: Evaluating ecological, economic, attitudinal, and behavioural outcomes CEE review 05-014 (SR20). *Collab. Environ. Evid.*, 014, 0–32.
- Chandrakanth, M.G., Bhat, M.G. & Accavva, M.S. (2004). Socio-economic changes and sacred groves in South India: Protecting a community-based resource management institution. *Nat. Resour. Forum*, 28, 102–111.
- Chowdhury, M.S.H., Gudmundsson, C., Izumiyama, S., Koike, M., Nazia, N., Rana, M.P., Mukul, S.A., Muhammed, N. & Redowan, M. (2014). Community attitudes toward forest conservation programs through collaborative protected area management in Bangladesh. *Environ. Dev. Sustain.*, 16, 1235–1252.
- Clercq, E. de & Wulf, R.R. de. (2007). Relationship between forest fragmentation and management of nature reserves in Flanders. In: *Proc. 3rd IASME/WSEAS Int. Conf. Energy, Environ. Ecosyst. Sustain. Dev. Ag. Nikolaos, Greece, July 24-26, 2007.* pp. 132–136.

- Colding, J. & Folke, C. (2001). Social taboos: “invisible” systems of local resource management and biological conservation. *Ecol. Appl.*, 11, 584–600.
- Collaboration for Environmental Evidence (CEE). (2013). *Guidelines for Systematic Review and Evidence Synthesis in Environmental Management. Version 4.2.*
- Cortina-Villar, S., Plascencia-Vargas, H., Vaca, R., Schroth, G., Zepeda, Y., Soto-Pinto, L. & Nahed-Toral, J. (2012). Resolving the conflict between ecosystem protection and land use in protected areas of the sierra madre de chiapas, Mexico. *Environ. Manage.*, 49, 649–662.
- Dressler, W.H., Kull, C. a. & Meredith, T.C. (2006). The politics of decentralizing national parks management in the Philippines. *Polit. Geogr.*, 25, 789–816.
- Dudley, N. (2013). *Guidelines for Applying Protected Area Management Categories. Gland, Switzerland: IUCN. WITH Stolton, S., P. Shadie and N. Dudley (2013). IUCN WCPA Best Practice Guidance on Recognising Protected Areas and Assigning Management Categories and Governance Ty. System.*
- Ferraro, P. & Pattanayak, S. (2006). Money for nothing? A call for empirical evaluation of biodiversity conservation investments. *PLoS Biol.*, 4, e105.
- Ferraro, P.J. (2009). Counterfactual Thinking and Impact Evaluation in Environmental Policy. In: *Environ. Progr. policy Eval. New Dir. Eval. 122* (eds. Birnbaum, M. & Mickwitz, P.). Wiley Interscience, 7, pp. 75–84.
- Ferraro, P.J. & Hanauer, M.M. (2014). Advances in Measuring the Environmental and Social Impacts of Environmental Programs. *Annu. Rev. Environ. Resour.*, 39, 495–517.
- Gaveau, D.L. a., Epting, J., Lyne, O., Linkie, M., Kumara, I., Kanninen, M. & Leader-Williams, N. (2009). Evaluating whether protected areas reduce tropical deforestation in Sumatra. *J. Biogeogr.*, 36, 2165–2175.
- Geldmann, J., Barnes, M., Coad, L., Craigie, I.D., Hockings, M. & Burgess, N.D. (2013). Effectiveness of terrestrial protected areas in reducing habitat loss and population declines. *Biol. Conserv.*, 161, 230–238.
- Giessen, L. & Buttoud, G. (2014a). Defining and assessing forest governance. *For. Policy Econ.*, 49, 1–3.
- Giessen, L. & Buttoud, G. (2014b). Defining and assessing forest governance. DIVISION 9.05 on Forest Policy and Gvernance. IUFRO.
- Van Gils, H.A. & Ugon, A.V.L.A. (2006). What drives conversion of tropical forest in Carrasco Province, Bolivia? *Ambio*, 35, 81–85.

- Grant, M.J. & Booth, A. (2009). A typology of reviews: An analysis of 14 review types and associated methodologies. *Health Info. Libr. J.*, 26, 91–108.
- Gubbi, S., Linkie, M. & Leader-Williams, N. (2009). Evaluating the legacy of an integrated conservation and development project around a tiger reserve in India. *Environ. Conserv.*, 35, 331–339.
- Harris, A., McGregor, J., Perencevich, E., Furuno, J., Zhu, J., Peterson, D. & Finkelstein, J. (2006). The Use and interpretation of Quasi-Experimental Studies in Medical Informatics. *J Am Med Inf. Assoc.*, 13, 16–23.
- Hayes, T. & Persha, L. (2010). Nesting local forestry initiatives: Revisiting community forest management in a REDD+ world. *For. Policy Econ.*, 12, 545–553.
- Jones, J.P.G., Andriamarivololona, M.M. & Hockley, N. (2008). The importance of taboos and social norms to conservation in Madagascar. *Conserv. Biol.*, 22, 976–986.
- Kubo, H. & Supriyanto, B. (2010). From fence-and-fine to participatory conservation: Mechanisms of transformation in conservation governance at the Gunung Halimun-Salak National Park, Indonesia. *Biodivers. Conserv.*, 19, 1785–1803.
- Langerich, E. (2015). Lesson 6: Ecological Studies, Case-Control Studies. Epidemiological Research Methods [WWW Document]. URL <https://onlinecourses.science.psu.edu/stat507/06/intro>
- Leeuw, F. & Vaessen, J. (2009). Address the attribution problem. In: *Impact Eval. Dev. NONIE Guid. impact Eval.* World Bank, Washington, DC, pp. 21–34.
- Macura, B., Secco, L. & Pullin, A.S. (2013). Does the effectiveness of forest protected areas differ conditionally on their type of governance? *Environ. Evid.*, 2, 14.
- Mehring, M., Seeberg-Elverfeldt, C., Koch, S., Barkmann, J., Schwarze, S. & Stoll-Kleemann, S. (2011). Local institutions: Regulation and valuation of forest use—Evidence from Central Sulawesi, Indonesia. *Land use policy*, 28, 736–747.
- Miteva, D., Pattanayak, S.K. & Ferraro, P.J. (2012). Evaluation of biodiversity policy instruments: what works and what doesn't? *Oxford Rev. Econ. Policy*, 28, 69–92.
- Mönkkönen, M., Ylisirniö, A.-L. & Hämäläinen, T. (2009). Ecological efficiency of voluntary conservation of boreal-forest biodiversity. *Conserv. Biol.*, 23, 339–347.
- Nagendra, H. (2002). Tenure and forest conditions: community forestry in the Nepal Terai. *Environ. Conserv.*
- Nolte, C., Agrawal, A., Silvius, K. & Soares-Filho, B. (2013). Governance regime and location influence avoided deforestation success of protected areas in the Brazilian Amazon. *PNAS*, 110, 4956–4961.



- Norgrove, L. & Hulme, D. (2006). Confronting conservation at Mount Elgon, Uganda. *Dev. Change*, 37, 1093–1116.
- Oldekop, J., Holmes, G., Harris, W. & Evans, K. (2015). A global assessment of the social and conservation outcomes of protected areas. *Conserv. Biol.*, in press.
- Ostrom, E. (2007). A diagnostic approach for going beyond panaceas. *Proc. Natl. Acad. Sci. U. S. A.*, 104, 15181–7.
- Pfaff, A., Robalino, J., Lima, E., Sandoval, C. & Herrera, L.D. (2014). Governance, Location and Avoided Deforestation from Protected Areas: Greater Restrictions Can Have Lower Impact, Due to Differences in Location. *World Dev.*, 55, 7–20.
- Porter-Bolland, L. & Ellis, E. (2012). Community managed forests and forest protected areas: An assessment of their conservation effectiveness across the tropics. *For. Ecol. ....*
- Pullin, A.S., Bangpan, M., Dalrymple, S., Dickson, K., Haddaway, N.R., Healey, J.R., Hauari, H., Hockley, N., Jones, J.P.G., Knight, T., Vigurs, C. & Oliver, S. (2013). Human well-being impacts of terrestrial protected areas. *Environ. Evid.*, 2, 19.
- Quintana, J. & Morse, S. (2005). Social interactions and resource ownership in two private protected areas of Paraguay. *J. Environ. Manage.*, 77, 64–78.
- Rockström, J., Steffen, W., Noone, K., Persson, Å., Chapin, F.S., Lambin, E., Lenton, T.M., Scheffer, M., Folke, C., Schellnhuber, H.J., Nykvist, B., de Wit, C. a., Hughes, T., van der Leeuw, S., Rodhe, H., Sörlin, S., Snyder, P.K., Costanza, R., Svedin, U., Falkenmark, M., Karlberg, L., Corell, R.W., Fabry, V.J., Hansen, J., Walker, B., Liverman, D., Richardson, K., Crutzen, P. & Foley, J. (2009). Planetary boundaries: Exploring the safe operating space for humanity. *Ecol. Soc.*, 14.
- Rueda, X. (2010). Understanding deforestation in the southern Yucatan: Insights from a sub-regional, multi-temporal analysis. *Reg. Environ. Chang.*, 10, 175–189.
- Ruiz-Pérez, M., Almeida, M., Dewi, S., Costa, E.M.L., Pantoja, M.C., Puntodewo, A., de Postigo, A.A. & de Andrade, A.G. (2005). Conservation and development in Amazonian extractive reserves: the case of Alto Juruá. *Ambio*, 34, 218–223.
- Samii, C., Lisiecki, M., Kulkarni, P., Paler, L. & Chavis, L. (2014). *Effects of Decentralized Forest Management (DFM) on Deforestation and Poverty in Low and Middle Income Countries: a systematic review. CEE 13-015a. Collaboration for Environmental Evidence.*
- Sánchez-Azofeifa, G.A., Quesada, M., Cuevas-Reyes, P., Castillo, A. & Sánchez-Montoya, G. (2009). Land cover and conservation in the area of influence of the Chamela-Cuixmala Biosphere Reserve, Mexico. *For. Ecol. Manage.*, 258, 907–912.

- Secco, L., Pettenella, D. & Gatto, P. (2011). Forestry governance and collective learning process in Italy: Likelihood or utopia? *For. Policy Econ.*, 13, 104–112.
- Secco, L., Da Re, R., Pettenella, D.M. & Gatto, P. (2014). Why and how to measure forest governance at local level: A set of indicators. *For. Policy Econ.*, 49, 57–71.
- Shepperd, S., Lewin, S., Straus, S., Clarke, M., Eccles, M.P., Fitzpatrick, R., Wong, G. & Sheikh, A. (2009). Can we systematically review studies that evaluate complex interventions? *PLoS Med.*, 6.
- Thomas, J., Brunton, J. & Graziosi, S. (2010). EPPI-Reviewer 4.0: software for research synthesis. EPPI-Centre Software. London: Social Science Research Unit, Institute of Education, University of London.
- Ting, Z., Shivakoti, G.P., Haiyun, C. & Maddox, D. (2012). A survey-based evaluation of community-based co-management of forest resources: a case study of Baishuijiang National Natural Reserve in China. *Environ. Dev. Sustain.*, 14, 197–220.
- Urquiza-Haas, T., Peres, C. a. & Dolman, P.M. (2011). Large vertebrate responses to forest cover and hunting pressure in communal landholdings and protected areas of the Yucatan Peninsula, Mexico. *Anim. Conserv.*, 14, 271–282.
- Vallino, E. (2014). The Tragedy of the Park: an Agent-based Model of Endogenous and Exogenous Institutions for Forest Management. *Ecol. Soc.*, 19, 35.
- Vatn, A. (2005). *Institutions and the Environment*. *Econ. Aff.* Edward Elgar, Cheltenham, UK.
- Vergara-Asenjo, G. & Potvin, C. (2014). Forest protection and tenure status: The key role of indigenous peoples and protected areas in Panama. *Glob. Environ. Chang.*, 28, 205–215.
- Vuohelainen, A.J., Coad, L., Marthews, T.R., Malhi, Y. & Killeen, T.J. (2012). The effectiveness of contrasting protected areas in preventing deforestation in madre de dios, peru. *Environ. Manage.*, 50, 645–63.
- Waylen, K.A., Fischer, A., McGowan, P.J., Thirgood, Simon, J. & Milner-Gulland, E. (2010). The effect of local cultural context on community-based conservation interventions: evaluating ecological, economic, attitudinal and behavioural outcomes. CEE review 09-019 (SR80). *Collab. Environ. Evid.*, 09, 3 – 36.
- West, P., Igoe, J. & Brockington, D. (2006). Parks and Peoples: The Social Impact of Protected Areas. *Annu. Rev. Anthropol.*, 35, 251–277.

## CHAPTER 3

### POTENTIAL FOR SOCIAL CONNECTIVITY IN LANDSCAPE-SCALE TIGER CONSERVATION OF CENTRAL INDIA

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#### Introduction

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Protected areas (PAs) are not managed in vacuum (DeFries et al. 2010). They are embedded in wider landscapes, include people, institutions and revolve around global and local politics (Brechtin et al. 2002; Kashwan 2013). In human-dominated landscapes, biodiversity conservation often competes with human livelihoods, agriculture or industrial development. Sectoral approaches to reconcile these competing needs are predominant, but are recognised as inadequate (Sayer 2009). Landscape-scale thinking and establishment of social “synapses” across sectoral boundaries are argued to increase landscape multi-functionality necessary for aligning interests of conservation with other societal needs (Sayer et al. 2013).

Landscape-scale conservation is grounded in the prescriptions of landscape and restoration ecology and conservation biology (Lindenmayer et al. 2008) mostly through creation of strong connectivity or “corridors” between individual PAs. This approach has been especially applicable in conservation of wide-ranging large carnivores, such as tigers, whose survival depend on the availability and size of the expansive habitat and cannot be constrained within a single isolated PAs or within jurisdictional boundaries (Yumnam et al. 2014). However, prioritization of ecological connectivity is complemented by more holistic understanding of landscapes as arenas of complex interactions among humans and their environments (Vaccaro & Norman 2008; Sayer et al. 2013). In tropical human-dominated landscapes, forested areas are embedded in diverse social and cultural local contexts (DeFries et al. 2010). PAs and their corridors may be understood as embedded elements in wider social-ecological systems (SES), which are complex, non-linear, interconnected and unpredictable (Folke et al. 2005). Scientists acknowledge that this complexity cannot be successfully managed without

collaboration of local people, multiple agencies, state and non-state actors that shape, work and live in those landscapes (Nagendra & Ostrom 2012).

Proponents of a landscape approach have outlined major challenges of a shift from sectoral approaches to aligning “social and ecological connectivity” and cross-sectoral collaboration (Kininmonth & Bergsten 2015). The main push of landscape-scale approaches is for a shift from “ecosystem networks that are disconnected and fragmented by the actions of people” to “ecosystems that are connected by people through flows of information or materials” (Janssen et al. 2006). A shift can be helped along by intensifying collaborative interactions among actors: trust building, higher information flows and knowledge sharing to help consensus building (Heikkila & Gerlak 2005; Bryson et al. 2006; Ansell & Gash 2008; Brondizio et al. 2009; Wyborn & Bixler 2013). Sayer et al (2013) further underlined importance of negotiated and transparent change logic with clarification of rights and responsibilities among actors for successful landscape approaches.

A shift to a landscape-scale approach involves collaboration among different agencies in the landscape as well as greater support of forest dwellers dependent on the forest corridors for their livelihoods. Thus, working on the landscape scale requires conservation practitioners to use different skills from the ones traditionally deployed in PA-centric approaches (Sayer 2009). Change must be accompanied by cognitive shifts from silo to systemic thinking (Sterling et al. 2010; Waylen et al. 2015). Managers, along with the other actors in the landscape, are encouraged to develop patience, flexibility, humility and be open to change (Wyborn 2012). Finally, landscape scale conservation has to be supported by a dynamic institutional context that can foster inclusive collaborative and nested governance systems (Wyborn & Bixler 2013). Thus, comprehensive understanding of the change towards landscape level conservation does not only need knowledge of ecological landscape functions and structure, but also a comprehensive analysis of existing social and institutional structures, historical and political drivers, relations of power and trust among landscape actors (Vaccaro & Norman 2008)

Recent studies have proposed greater landscape connectivity for tiger survival in India and in other tiger range countries (Linkie et al. 2006; Rathore et al. 2012; Joshi et al.

2013; Sharma et al. 2013; Yumnam et al. 2014; Gubbi et al. 2015). With few exceptions (e.g. (Gubbi et al. 2015)), these studies do not consider what ecological connectivity at the landscape level might mean in social, institutional or political terms.

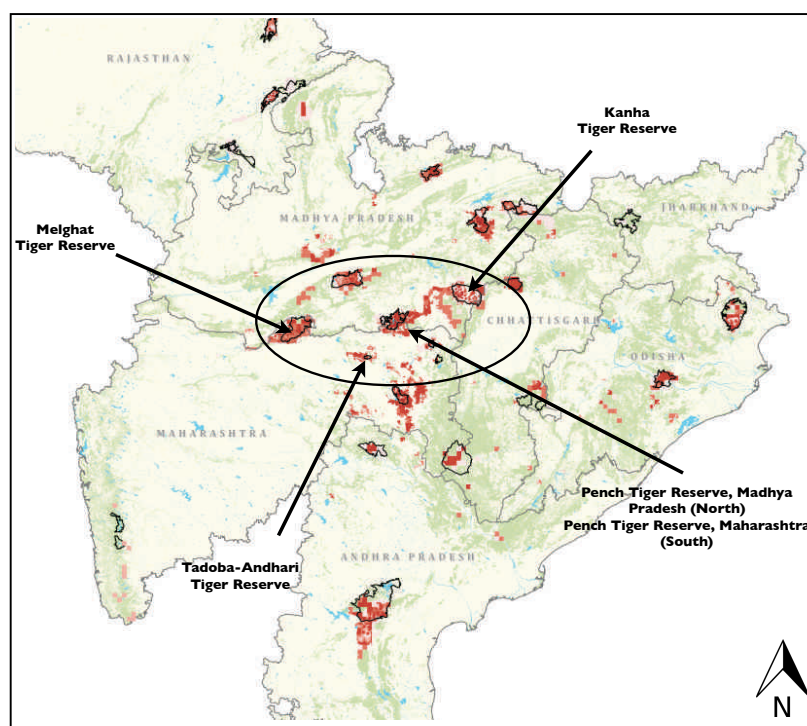
In this study, we analyse the shift to a landscape conservation approach, broadly using the case of central Indian Tiger reserves. Given changes in discourses and policy in India towards a more integrated management approach, we ask whether, and to what extent, conservation actors in central India are prepared for the shift towards landscape-level conservation. In particular, we analyse which institutional, historical and organisational factors could enable or constrain this shift. Tiger conservation has historically been perceived to be a function of the state forest departments (FD). With new challenges of creating landscapes conducive to large carnivore conservation, our main concern is which challenges this main actor will have to experience with rise of the new landscape conservation paradigm. We are further interested in interaction between FD and local forest dwellers who rely on forest corridors for their livelihoods and have been caught in between larger conservation and development concerns through shift to landscape thinking.

India is one of the 13 tiger-range countries, with the highest human population density and comparatively lowest forest cover, yet with the highest number of tigers in wild (2226 at present (Jhala et al. 2015)).

Tiger conservation is an ideal example of current conservation challenges, especially in the context of developing tropical countries. Tiger conservation has a global conservation priority, which is spurred by a high potential for complete extinction due to vanishing habitats, small prey base and extensive poaching. There is also a high potential for private gain from tiger conservation (for example from tourism) and rights and survival of millions of forest-dependent people are at stake (Rastogi et al. 2012).

We focus our analysis on actors around Melghat, Pench and Tadoba-Andhari TRs in Maharashtra and Pench and Kanha TRs in Madhya Pradesh. These TRs located in the central Indian highlands are one of the best-managed reserves in India (according to the latest management evaluation exercise (NTCA 2015a)). They are interconnected with forest corridors used by tigers in variable extents (Sharma et al. 2013). **Figure 3.1**

shows location of these reserves located in the heart of recently designated Central Indian & Eastern Ghat Landscape complex (Jhala et al. 2011). Area of central Indian highlands represents itself a suitable case study. This area has been studied by other scholars recently (Jhala et al. 2007; Sharma et al. 2013; Yumnam et al. 2014). Moreover, WWF-India has proclaimed it as one of the critical conservation regions for tigers in India (WWF-India 2015a, 2015b). Yet so far, researchers and conservationists have not focused on the institutional aspects of landscape-scale conservation.



**FIGURE 3.1** CENTRAL INDIAN & EASTERN GHAT LANDSCAPE COMPLEX WITH MELGHAT, PENCH AND TADоба-ANDHARI TRS, MAHARASHTRA AND PENCH AND KANHA TRS, MADHYA PRADESH. BLACK LINES ARE BOARDERS OF TRS AND OTHER PAS. DIFFERENT SHADES OF RED DOTS REPRESENT TIGER DENSITY GRADIENT IN OCCUPIED HABITAT (HIGHER DENSITY =DARKER SHADE). STRONG CONNECTIVITY BETWEEN PENCH AND KANHA TRS IS VISIBLE. FIGURE SOURCE: JHALA ET AL. (2015)

Previous studies give only partial answers to our research questions since they mainly focus on collaborative forest governance, but without direct reference to wildlife conservation. Kumar and Kant (2005, 2006) study factors of organisational resistance to

Joint Forest Management (JFM). Matta et al (2005) and Sood and Gupta (2007) have similar focus. Another downside of former studies is that most of them only account for the perspective of FD, while views of external actors such as scientists or NGOs are not included. Moreover, these authors focus only on constraints to collaboration, but do not suggest what can enable collaboration. For example, Ebrahim (2004) compares JFM and irrigation policy through an account of institutional preconditions to collaboration, but no organisational issues are accounted for. Fleischman (2012) analyses behaviour and organisational structure of FD to understand why implementation of policies fail, but like previous authors, he focuses on the forestry sector and JFM only.

We use data generated from interviews with a range of actors in Indian tiger conservation and report perceptions of different state and non-state actors with regards to 1) political context and institutional structure in which interactions between FD and other landscape actors are imbedded; 2) internal organisation of the managing agency (FD) that might influence collaboration; and 3) the nature of relationships among FD and other actors and how these interactions affect the collaboration on landscape-scale conservation efforts. Here we give only a preliminary analysis of the governance and its potential for a change as this is on-going research.

## Methodology

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We employed a combination of purposeful and snow-ball sampling to select interviewees. First, we identified a main list of interviewees connected to central Indian tiger conservation, including NGOs, consultants, policy makers, scientists and representatives of the state forest departments (purposeful sampling). After interviews were conducted, we asked interviewee for contacts of other relevant actors in order to locate actors that are not easily reachable through official websites or documents (e.g. local NGOs), to understand networks and map main players in tiger conservation of central India (snow-ball sampling). The list of the interviewees was iteratively updated based on the increasing knowledge of the actors and emerging concepts from the interviews. A total of 29 interviews with the key informants were then conducted between April and June, 2013. Interviews are listed in **Table 3.1**. Participants were fully informed about the nature and the scope of the study, aims, methods and the uses of the

data to be collected. Informed voluntary consent was sought prior to the interview. Confidentiality is respected and interviewee names are kept anonymous. Participant Information Sheet and the Consent Form used for this research are provided in **Annexes 10 and 11**.

Interviews were structured in different thematic sub-sections in order to understand tiger reserve conservation governance, management practices, institutions, policy frameworks, and perception of governance and conservation history. All interviews were conducted in English in the states of Maharashtra: in Pune and Nagpur; in New Delhi and at the Wildlife Institute of India, Dehradun. Additionally, five tiger reserves were visited in Maharashtra (Pench, Tadoba-Andhari, Melghat) in June 2013 and in Madhya Pradesh (Kanha and Pench) in the period January to May 2014.

All the interviews were fully transcribed and transcripts of interviews were coded using RQDA software (Ronggui 2010). Our analysis was guided by a grounded theory approach (Glaser & Strauss 1967). We applied open coding, followed by axial coding reflecting relationships discovered in interview content.

**TABLE 3.1** OVERVIEW OF INTERVIEWED ACTORS, THEIR ROLE IN THE LANDSCAPE AND ADMINISTRATIVE LEVEL OF ACTIVITIES.

<b>Interviewees (29)</b>	<b>Level of activity</b>
NGOs = 5 (17.8%)	Federal, State and Local
Experts = 5 (14.3%): Consultant (3), Environmental lawyer (1), University professor/consultant (1)	Federal and State
State Forest Departments and Indian Forest Service = 9 (32.1%)	State (Maharashtra and Madhya Pradesh) (7) and local TR-level (2)
Policy makers = 2 (7.1%) Ministry of Environment, Forests and Climate Change, National Tiger Conservation Authority	Federal
Scientists = 8 (28.6%) (Wildlife (6) and Social (2))	Federal/National



## Case Study

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Tiger conservation in India cannot be considered separately from forest management history, including the legacies of colonial forestry and the struggle of forest dwellers' over forest rights and access to forests. In this section we consider the legacy of tiger conservation approaches, and the predominance of “fortress conservation” implemented through the actions of the FD, even after favourable participatory conservation and development policies were enacted.

Approaches to tiger conservation adopted by the FD have been criticized as exclusionary conservation, governed by a distant central authority without participation of local people (Rastogi et al. 2012). Based on the scientific argument that tigers need large human-free areas to survive and reproduce, the exclusionary approach was favoured in core zones of state tiger reserves (TRs), which were to remain free from human settlement and harvesting activities. Significantly, this policy has been operationalized in part through the voluntary relocations of villages in reserve core areas while TRs remained open to research and tourism.

National Tiger Conservation Authority (NTCA) is the main governing body for Project Tiger, a tiger conservation programme launched in 1974 as a centrally sponsored scheme by the Prime Minister Indira Gandhi. NTCA, a statutory body of Ministry of Environment, Forests and Climate Change (MOEF&CC) provides a supervisory and coordinating role for tiger conservation implemented through the wildlife wings of state forest departments in 18 tiger states, and an expanding network of TRs (48 at present). The 1972 Wildlife Protection Act (WPA) is the main legal tool for establishing protected areas under which the central government may declare an area a national park or a wildlife sanctuary. This act facilitated an increase in the Indian PA network, including the tiger reserve system. However, the WPA with its two Amendments (2002 and 2006), must be interpreted simultaneously with the 1927 Indian Forests Act, the 1980 Forest Conservation Act, the 1986 Environment Protection Act, the 2002-2016 National Wildlife Action Plan and the 1988 National Forest Policy that together form the legal grounding for forest and wildlife conservation in India (TERI 2015). Although enacted during colonial rule, the 1927 Indian Forests Act forms the basis for modern forestry and conservation in India, including the “establishment and demarcation of

forest boundaries, trespass, cutting and control of movement of forest products” (Springate-Baginski & Blaikie, 2007). It also consolidates the power of forest officials for regulation of the use of public lands (Ebrahim 2004). The 1980 Forest Conservation Act does not allow for conversion of forests to non-forest land cover and so increases the power of the central government over forest resources. The 1986 Environment Protection Act gives central government the power to restrict operation and establishment of industries harmful for the environment. It can serve as an instrument for protection of the corridors and forests outside of the protected areas through the declaration of eco-sensitive zones (that must be declared within a 10km radius around a protected area) to restrict industrial activity (TERI 2015). Policy change is being driven by a variety of actors. The Supreme Court of India has a significant role in governance of forests and wildlife, giving more power to the centre and curtailing rights of the state governments when needed (TERI, 2015).

The state FDs, as implementing agency of MOEF&CC, were founded during British rule in 1865. British colonial rulers established centralised forest management with scientific forestry, and also created the hierarchical organizational structure of the FD (Kumar & Kant 2006). Despite of changing roles of the FD through its history, there has been an insignificant change of FD organizational structure from colonial times to the present (Kumar & Kant 2005).

The FD has a territorial wing with a mandate of forest management and timber extraction, and a wildlife wing with the primary aim of forest and biodiversity conservation. The Indian Forest Service (IFS) (established during colonial times as the Imperial Forest Service) is one of three civil services in India today, recruited and trained (for two years) by the central government (IFS 2012). Two thirds of all the top posts in a state FD are filled by the central level IFS officers. State level cadre takes one third of the top state level positions on the promotion basis (Fleischman 2012).

Higher-level forest officials include a state FD head - Principal Chief Conservator of Forests, below which is the Chief Conservator of Forests, Conservator of Forests and finally, Divisional Forest Officers (operational at a district level). In TRs, at the top is a Field director, under whose responsibility are Additional Conservators of Forest, below which are Divisional Forest Officers (responsible for a division). Lower level or “front-

line” staff are: Range forest officer or Ranger (responsible for a range), Deputy rangers, Foresters <sup>10</sup>or Round Forest Officer (responsible for a round) and finally, beat guards (responsible for beat – the smallest administrative unit further composed of the smallest forest units called compartments). Every beat guard usually has one or two temporary workers at his disposal. Temporary workers come from the local villagers.

The higher level officers and TR administration are placed in the urban centres (e.g. Mumbai and Nagpur for Maharashtra Forest Department), while lower level staff is located directly in the TRs. Between higher level officers and lower level FD staff, there are frequently large gaps not only in the spatial terms, but also in the social status driven by elitism, differences in education, experience, language and background (Sood & Gupta 2007). The main legislation and historical turning points are listed in the **Table 3.2**.

**TABLE 3.2** EVOLUTION OF FORESTRY AND CONSERVATION POLICIES (AT THE FEDERAL LEVEL) AND TURNING POINTS. PHASES ARE DENOTED ACCORDING TO PATNAIK (2007) SOURCES: (GUHA 1983; GUHA & GADGIL 1989; GADGIL & GUHA 1992; MENON 2007; PATNAIK 2007)

<b>Pre-colonial rule</b>		Decentralised indigenous forest management
<b>Colonial rule</b> 1800-1947	1806	Royalty rights over teak in Malabar and East India Company
	1865	Forest Department
	1865 and 1878	<b>Indian Forest Acts</b> Claims over the forests, restriction of the old customary rights, forests classified as Reserved and Protected
	1927	<b>Indian Forest Act</b> Forests demarcated into Reserved, Protected and Village. Basis for the state forest management today.
	1947	<b>Independence</b>
I phase: Revenue maximisation	1952	<b>National Forest Policy</b> Main goal: forest revenue maximisation.

<sup>10</sup> I use “Forester” here to denote rank of a forest officer, whereas “forester” refers to FD staff in general, regardless of ranking

and industrial development		
II phase:  Exclusive, strict conservation of resources	1972	<b>Wildlife Protection Act</b> Government has a right to declare any area as a wildlife sanctuary or national park. Basis for wildlife conservation today. Strict exclusionary policy
	1980	<b>Forest Conservation Act</b> Stops diversion of forest land for non-forestry purposes Reduction to de-reserve a forest and to divert of the forests for non-forestry purposes
	1986	<b>Environment (protection) Act</b> Not directly connected to the conservation of biodiversity within protected areas, but might serve as an instrument for protection of the <b>corridors</b> and forest outside of the protected areas, that are connecting Tiger reserves in the landscape - through establishment of eco-sensitive zones
III phase:  People approach	1988	<b>The National Forest Policy</b> People's involvement in the development and protection of forests. Inclusions never fully applied
	1996	<b>Panchayats (Extension to Scheduled Areas) Act (PESA)</b> Gram Sabhas entitled to self-govern their resources (cultural identity, community resources, etc.) in the Scheduled areas <sup>11</sup>
	2002	<b>Biological diversity Act:</b> The <b>National Biodiversity Authority</b> established in 2003 to implement the provisions under the Act. <b>State Biodiversity Boards</b> created along with <b>Biological management committees</b> (for each local body).
	2003	<b>Wild Life Protection Act, Amendment:</b> A new category of protected areas, <b>Community Reserves</b> included
	2004 and	<b>Local tiger extinctions: 2004 in Sariska TR, 2005 in Panna TR.</b> <b>Sariska</b> triggered many policy and practice changes including

<sup>11</sup> V and VI Schedule of the constitutions refer to the areas and tribal communities in need of the special protection due to disadvantaged conditions

	2005	creation of Tiger Task Force, followed by Amendment of the Wildlife Act, scientific monitoring (camera traps), NTCA creation, call for more local people inclusion
	2005 - 2006	First Management Effectiveness Evaluation of Tiger Reserves (after that conducted every 4 years)
	2005	<b>Mahatma Gandhi National Rural Employment Guarantee Act:</b> 100 days of guaranteed wage employment to every household in rural India and enhances livelihood security (sometimes rural population employed in Tiger reserves)
	2005	<b>Right to Information Act:</b> Request information from a public authority with a reply within 30 days. Every public authority required to computerise records for wide dissemination and to pro-actively publish information
	2006	<b>The Scheduled Tribes and Other Traditional Forest Dwellers (Recognition of Forest Rights) Act:</b> Traditional rights (to land) asserted to the tribal population and other forest dwellers. This rectifies historical injustice towards marginalized forest dependent people
	2006	<b>Wild Life Protection Act, Amendment:</b> Statutory status to <b>the National Tiger Conservation Authority and the Tiger and Other Endangered Species Crime Control Bureau (Wildlife Crime Control Bureau)</b> . This is done upon recommendation of <b>Tiger Task Force</b> from 2005, after Sariska Tiger Reserve lost all its tigers.
	2008	<b>Forest Right Act Rules Notification</b>
	2013	Tourism ban: tourism in the core zones of tiger reserves banned and subsequently allowed again but with the controlling access. After this event NTCA released the guidelines on tourism regulation in tiger reserves, decreasing the number of vehicles and restricting the areas for tourism

More recently, however, an inclusive conservation agenda has been pursued in the inhabited buffer zones and corridors of TRs (NTCA 2015b). In contrast to 1952 Forest

Policy, which had the main purpose of maximising forest revenue, the 1988 National Forest Policy adopted a conservation-oriented tone. This policy was the first to call for greater participation, decentralized and livelihoods oriented natural resource management (Patnaik 2007; Véron & Fehr 2011). In forests outside PAs and TRs, this was translated on the ground through implementation of co-management programme referred as Joint Forest Management (JFM). The first co-management initiatives originated in 1970s in West Bengal (Balooni 2002) and these successful practices were translated into the Government of India JFM guidelines issued to all states in 1990.

In the buffer zones of the PAs and TRs, integrated conservation and development (also referred to as eco-development) projects began to be implemented in the 1990s. In central India, eco-development initiatives were initially financed (from early 1990s to 2004) through World Bank/GEF loan-cum-grant. While eco-development projects contain some participatory components, this strategy was never meant to include people in decision-making processes related to conservation. Rather, this programme has been understood as an attempt to wean people off reliance on natural resources extracted from core zone of the PAs (see also Chapter 4 of this thesis, and Véron & Fehr 2011).

One of the turning points in tiger conservation, is the 2004 event frequently called “Sariska debacle”, when tigers in Sariska TR in Rajasthan became locally extinct. The main reason for tiger loss was reported to be poaching, but assisted by (retaliated) local villagers which reminded scientists and policy makers how local people and their support are of paramount importance for wildlife conservation (Tiger Task Force 2005; Rastogi et al. 2012). A Tiger Task Force (TTF) assembled by the Prime minister, in their report called for more inclusion of local people in conservation, TTF recommendations also spurred many policy and institutional changes: NTCA was given statutory status and the Wildlife Crime Control Bureau was established. Moreover, scientists got better access to TRs; their engagement was increased with a scientific monitoring system established to more accurately track and estimate tiger numbers.

Since the events at Sariska, there have been calls for a management shift to landscape-scale tiger conservation with greater participation of local people, sectoral integration and integrated land management, strengthening FD capacity for collaborative management (Tiger Task Force 2005; Planning Commission 2011). As a response,

scientists identified 6 large tiger landscape complexes in 18 Indian tiger states (Jhala et al. 2011) and NTCA requested all TRs to create new management plans (Tiger Conservation Plan, TCP) with corridor management plans included. Out of 48 TRs in India, NTCA approved 27 TCPs (NTCA 2015c)

The central Indian landscape complex (including the eastern Ghats) is one of the 6 identified large tiger landscape complexes in India and it is composed of 19 tiger reserves and other protected areas, spreading over the States of Madhya Pradesh, Chhattisgarh, Jharkhand and parts of Rajasthan, Maharashtra, Odisha and Andhra Pradesh (Jhala et al. 2011). The connectivity between these reserves is of varying strength and there are only 3 functional tiger meta-populations with relatively good connectivity in this large landscape which are located in central Indian highlands, namely Pench-Kanha-Achanakmar, Satpura-Melghat and Tadoba-Chandrapur (Jhala et al. 2011).

The forest patches that serve as corridors are still not in the legal domain of PAs in India, and they are vulnerable to conversion to other land uses (Yumnam et al., 2014) such as mining, highways, railways and agriculture (Vattakaven 2010; Fernandez 2012). The central Indian landscape is one of the most fragmented landscape complexes, and so emphasis on landscape-scale conservation instead of protected-area centric conservation is considered very important for tiger conservation there (Yumnam et al. 2014). In the central Indian highlands, only Kanha and Melghat have TCP approved, and are yet to be fully enforced (NTCA 2015c).

## Results

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Here the results organised around different themes from our interview data is shown. We describe perceptions around TRs and their conservation model, perceptions about forest department, and implementation potential. We finish with the interactions between FD, NGOs and local people. **Table 3.3** provides a snapshot of the actors in Maharashtra state at the time of the fieldwork.

**TABLE 3.3.** ACTORS IN THE LANDSCAPE AROUND TIGER RESERVES IN MAHARASHTRA. A SNAPSHOT OF THE SITUATION DURING THE FIELDWORK(2013).

Actor name	Actor Group	Roles & Interests
Villagers	Resource Users	Access rights to forest in buffer zone, main occupation: agriculture and labour.
Tourist sector	Resource users	Private resorts around TRs, tourist resort owners, tourist guides, drivers
Honorary Wildlife Warden (local NGO)	Monitoring, leadership	Anti-poaching, facilitation of communication between FD and local community, etc.
Local, National and Federal NGOs	Resource monitoring, awareness rising, FD capacity building,	Wildlife research, tribal support, monitoring, consultation, anti-poaching
FD (Maharashtra state)	Local managers	Implementation, management and monitoring
<i>Maharashtra Forest Development Cooperation</i>	Resource users	State agency, Eco-tourism activities in TRs
Researchers	Resource monitoring	Wildlife research – Wildlife Institute of India, Universities, Centre for Wildlife Studies
Government - national	Regulator	Maharashtra Ministry of Forests: management and conservation of the forest and wildlife
Government - federal	Regulator	MOEF&CC

SOURCE: OWN ELABORATION.

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## TIGER RESERVES IN CENTRAL INDIA

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### **Theme: Success and the drivers**

Interestingly and despite various internal and external threats (habitat fragmentation, scarcity of prey species, poaching) threats to tiger survival (see review by: Rastogi et al. 2012), all interviewees acknowledged that without tiger reserves there would be no tigers in India today. Thus, the legitimacy of tiger reserves in achieving large carnivore conservation was not in question. Moreover, interviewees perceived improvements in tiger conservation and PA management over the years. This was accompanied by more



funding directed to TRs, management evaluation exercises conducted every 4 years, scientific monitoring by camera trapping and, overall, more research in TRs.

Additionally, the awareness of conservation importance at the federal and district government levels was perceived to be important for improvement (higher level FD officer, Pune, April 2013). Moreover, the perception of pride at the state level is very important for a willingness to change or improve management practices: “*I think that's important that state takes pride that: ‘We are going to be the best in managing wildlife!’*” (wildlife scientist, Dehradun, May 2013). Nevertheless, other scientist warned that pride and emotionally driven conservation might lead to lock-in and reinforce tiger-centric conservation, excluding other values while following the vision of only few powerful actors, without holistic understanding of conservation goals (wildlife scientist, Dehradun, May 2013).

Although tiger numbers show constant increase (Jhala et al. 2015) the perceived failure in tiger conservation was that of creation of isolated and disconnected TRs, unable to protect dispersing tigers outside of PAs:

*[Tiger reserves] are becoming good nurseries, where the tiger population has increased, but then, the tiger needs space and when it is going out [of tiger reserves] - where is it going? What's happening to the tigers that are going out? Are we in the position to manage those areas? Probably that is the only problem that we are facing right now. Tiger reserves as such -as isolated islands -have succeeded (Higher-level FD officer, Pune, April 2013).*

Indeed, a 2010 tiger assessment confirmed decreases in the tiger occupied area outside of tiger reserves with loss of habitat quality and extent (Jhala et al. 2011, 2015). The lack of a long-term landscape vision, and still little knowledge about the ecological system was perceived to be one of the causes:

*Because tiger numbers have been shown increase, but because we never had a vision or ecological understanding of larger landscape and things like that, we've created islands of tiger populations, which may not serve its own. Even the best Park like Kanha, we have packed with too many*

*tiger and we don't even know whether they are doing ecological role correct or not. So, we don't even know that structure well, dynamics or structure (wildlife scientist, Dehradun, May 2013).*

### **Theme: Conservation Model and Participation**

The fortress conservation model is perceived to predominate among interviewees, even though there is awareness among scientific staff and NGOs that more inclusive alternatives exist. Integrated conservation and development and provision of forest rights, even where legally possible, remained limited to FD legal understandings and has not led to significant change in interaction patterns between FD and local people:

“They [FD] think that in Tadoba, using [...] local people, allowing them to be tourist guides, that is participation. That is not participatory management!” (social scientist, Nagpur, April 2013).

As such, other participants in tiger conservation perceive the FD to hold fast to a narrow vision of participation by local people in tiger conservation.

*Even if a law has changed for example, even the FD today does not know what the existing law is about [...] in reality, at the local level, it is a tribal or local forest dweller who is interacting with the forest guard. Between the forest guard and all, nothing has changed [...] because you see the department still thinks that you go out with the stick and whoever is entering the forest, you throw him out. And if you have to throw him out (environmental lawyer, New Delhi, May 2013).*

The FD was perceived to prioritize the lives of tigers over human life, sparking anger on the part of local people:

*If one tiger dies, there are ten jeeps that can go out. If a human kill happens [by tiger], a ranger may come after 2-3 hours. He [FD officer] will say: “OK, how much? You can take these 5000 rupees and we'll look at your compensation later”. And [local people] never get that money. How long do you think [local] people will tolerate this? They're getting impatient (social scientist, Nagpur, May 2103).*

On the other side, a landscape-scale approach is conceptualized to have many conservation-related benefits and guarantee long-term tiger survival, but it also can lead to a better balance between conservation and development. It is perceived that through an integrated landscape approach, managers would avoid focusing on tiger numbers as the only currency, and stop disregarding all the other complex ecological functions. This would be beneficial not only for the tiger, but also for livelihood security of people in human-dominated yet forested landscapes of central India (wildlife scientist, Dehradun, May 2013).

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#### THE FOREST DEPARTMENT: LEGACIES AND WORKING CULTURE

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Landscape-scale interventions and strengthening of corridors to connect fragmented tiger populations were spurred by local tiger extinctions and concerns of lack of space for dispersing tigers (wildlife scientist, Dehradun, May 2013). We have noted above that the FD was perceived to be in a weak position regarding inclusion of local socio-economic concerns and participation of local people in tiger management. Here, we describe organisational characteristics that can better explain FD attitudes towards collaboration and local inclusion.

#### **Theme: the FD and policy implementation**

The FD is still perceived to be slow to respond and implement existing policies on the ground in terms of older participatory collaborative policies:

*The Supreme Court, NGOs within India are influencing policy to some extent now. Therefore, I still don't think that policy's an issue. Policy is quite OK. Only if you can implement that policy, a whole lot of change can be brought on the ground. And then we can go back to policy: do we need to make and modify it a little more, do we need to incorporate some other stakeholders in it? That's a second generation issue. But we are not through the first generation itself. We have JFM since 1990. So I don't think we achieved as much as we could have through that existing policy. So I think it's OK at the policy level. Implementation and attitude [are the important issues] (social scientist, Nagpur, May 2013).*

In addition, concerns were raised over implementation of newly developed tiger conservation plans:

*Each TR has a management plan. Now the management plan transcends beyond the TR and there are landscape plans. So that is the requirement for sanctioning of the federal funds: unless a TR has a landscape management plan, federal funding should not be made available to the TR in question [...] So those plans are all in place now. Now, whether those plans are implemented or not, that is another thing. So, this is the beginning and over the years hopefully it'll get more and more professional and things should get only better.*(wildlife scientist, Dehradun, May 2013).

However, legacy problems predominate in terms of implementation of new policies and law: “*We are fighting 21st century problems with tools from 20th century and mind-set from 19th century*” (IFS officer, Dehradun, May 2013).

### **Theme: the FD mentality and Legacies**

State Forest Departments in Central India were perceived by scientists and policy makers to be unified, well-organised and disciplined, with a strong feeling of “brotherhood”, which had the potential to make cooperation within the department easier (wildlife scientist, Dehradun, May 2013).

However, a key barrier to effective implementation of policy was perceived to be the hierarchical organization of the FD:

*The policy has changed but policy implementers have not changed. It is changing. I won't say they haven't changed at all, but it is so gradual. And then there is some change at the top level sometimes. There is some very little change, but we talk about decentralization, but there is no decentralization within the department. So decision taken from here on, ‘we are going to protect with the people’ - the guard doesn't know, the ranger doesn't know, the forester doesn't know* (social scientist, Nagpur, April 2013).

Sometimes, inertia of the FD can be rooted in internal power structures and organizational hierarchy as noted by a local NGO member:

*happens when the staff comes into the forest, he reports 'this happened' and when he tries to take the action, he doesn't have support of his senior officers. So, once or twice he tries. After some time sometimes [...] he will lose his motivation, he said 'I'll never get any benefit'. Sometimes he will get scolded: 'Why do you have to bring up these problems?', so after a few years, the senior officers don't want to be troubled (NGO, Pune, April 2013).*

With rapid change in society, technology, and increasing threats to conservation, the FD was perceived not to be keeping up the pace. A higher-level forest officer observed that increasing complexities in which TRs were presently managed required more skills, knowledge or specific and dedicated staff for specific tasks, and adequate technological equipment (higher-level forest officer –territorial wing, Nagpur, May 2013).

Several internal and nested sources of this inertia were noted, including working culture, training, rotation and tenure lengths, willingness and capacity to learn.

The way of thinking and the working culture of FD were perceived to be rooted in the training of higher-level forest officers that further shaped their interaction with other actors and capacity to implement policy. Training was perceived to be the main reason why forest officers were less informed and not well adapted to the present threats and local challenges (wildlife scientist, Dehradun, May 2013; Higher level forest officer-wildlife, Nagpur, June 2013). An appropriate level of training was perceived to be either lacking for the lower level staff or too uniform and out-dated for higher-level staff. With training that relied mostly on forestry curricula, with little reference to modern conservation and participatory approaches, implementation of inclusive and collaborative policies easily ran into difficulties:

*Because that is how the forest department has been trained and it continues to be trained in that way: We protect forest from the people, not with the people. It's 65 years after independence, but we do not know*

*that the British had a different objective for forest use [than we have]*  
(social scientist, Nagpur, May 2013).

Practice of rotation and short tenure length (3 years on average) started during the colonial period to prevent bonding of foresters and locals (Fleischman 2012). This practice was retained to the present and rotation of the top managers in the reserves was perceived to occur too often. In Maharashtra, staff rotation occurred every 2 to 3 years, however in some TRs in Madhya Pradesh the tenure period went to 5 years (wildlife scientist, Dehradun, May 2013). Many different NGO actors and scientists perceived that through frequent changes of personnel between very different positions (i.e. even from territorial wing to wildlife), rotation was observed to create loss of acquired skills and organizational knowledge, however, it was also seen to prevent local elite capture: it is a mechanism to remove unsuccessful managers from top positions more quickly (NGO, New Delhi, May 2013).

Promotions are only based on seniority, and it is not common for officers to be dismissed (Fleischman 2012). In such conditions, a wildlife scientist interviewed perceived that some managers were reluctant to learn and so there was no propensity to change, although the scientist amended that the situation had been improving:

*[...] sometimes when you repeat the same thing, you feel comfortable with it and you don't want to change. Nobody wants change! So it was comforting situation for them [managers] and they're not bothering with what's happening. They were more interested in just reporting or managing something without understanding it* (wildlife scientist, Dehradun, May 2013).

The FD showed resistance to change, both in terms of way of doing and way of thinking while implementing policies. This resistance was perceived to come from organisational structure and culture: out-dated training, granted promotions on seniority basis and short tenures, resulting in little incentive to learn and adapt to new challenges. This finally leads to inability to successfully implement new policies or programmes and might pose a challenge for interactive relations and opening towards collaboration with new actors for landscape-scale conservation.

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## INTERACTION BETWEEN THE FOREST DEPARTMENT AND OTHER ACTORS IN THE LANDSCAPE

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Here we show interactions of FD with the other actors in the landscape: scientists, NGOs and locals to understand vertical linkages between the actors.

### **Theme: Cooperation and coordination**

There were large differences in perception among actors in terms of the ability of the FD to carry on decentralized relationships with other actors and cooperate across sectors. A scientist noted:

*Intersectoral cooperation [...] is a challenge anywhere in this world. Every department has an ego, each individual has its ego. Crossing those barriers and bringing everything together is quite a skill needed by a manager. I think that's where we need to develop the skill of these managers (wildlife scientist, Dehradun, May 2013).*

There was a perceived need for coordination among different departments in the landscape and the State Board of Wildlife chaired by the state Prime Minister orchestrates this:

*[...] From agriculture department, from animal husbandry department, from mining department. So once you have committee under the chairmanship of the chief minister who is overall in charge for the entire state, then this inter-ministerial or interdepartmental issues can be effectively addressed or resolved. (wildlife scientist, Dehradun, May 2013)*

However, realities on the ground still appeared uncoordinated, and silo thinking predominated. The FD was frequently in conflict with other departments. Coordination involving different sectors in local agricultural development attracted criticism on the grounds that spatial competition between different actors, and between domesticated animals and wildlife were becoming a problem. An FD interviewee from Maharashtra explained these conflicting mandates of different departments:

*[At the Tiger reserve level, there] are actors, other government departments who are working directly and indirectly. For example there is the animal husbandry department. Their mandate is to [...] give the goat, sheep and other various cattle that is distributed among the villagers free of cost to improve their livelihood [...] But if these cattle, goat, sheep enter in the tiger reserve, what will happen then - two important factors. One is it [livestock] will compete with the herbivores. It will ultimately dwindle resources there [inside tiger reserve] we could increase the grasslands, we could increase the water availability, but now, same thing is being shared by these cattle, goat, sheep. So there is direct competition with the herbivores and domestic animals. Not only that, many times domestic animals are not immunized properly. So what will happen? There are some common diseases - like foot and mouth and many others. Diseases will be transmitted from domestic animals to wildlife. And then a lot of mortalities and other things can happen and has happened in many parks [...] and naturally, again the resource will deplete, it will impact the tiger[...] (Higher-level officer, Nagpur, May 2013)*

### **Theme: Retaining control**

Nevertheless, the FD might actually reinforce these conflicts while struggling to retain control over the land and resources:

*We still think that the FD is the only agency who is going to save tiger [...] The FD is the primary agency that can save or that has the responsibility of saving that, but along with this forest agency there are lot of other departments: say rural development, health department, animal husbandry department is very critical for tiger conservation. Why I'm saying, because despite our best efforts we cannot make all the TRs free of human settlements, even if we make core Critical Tiger Habitat free of human settlements, in the buffer people will continue live and we need to make space for tigers in those buffer areas so in order to do that we need to look at development of those villagers - how best we can help*



*these people, ok, that's why you bring in the rural development, you bring in the animal husbandry department because everywhere people who are living major problem is competition with the livestock. So, disease transmission is another thing, FD cannot go and inoculate all the things* (wildlife scientist, Dehradun, May 2013, 14627:16574)

The FD was frequently critiqued by scientists and NGOs for its reluctance to receive input from others. A local NGO perceived FD to an inflexible agency and a poor problem solver (NGO, April, 2013, Pune). The FD was seen to have the “mentality” of ultimate power in the territory: “I’m the boss of this area, others are all inferior to us” but this attitude frequently depended on the individual behaviour of the manager (wildlife scientist, May 2015, Dehradun).

Moreover, from the attitude of power and control also stems the perceived reluctance to receive inputs from local NGOs as this might affect power balance or simply might mean more (unwanted) work for the FD. As stated by an environmental lawyer and several NGO interviewees, pointing to any FD malpractice leads to exclusion of NGO actors from a TR which creates deeper power asymmetries and affects transparency and trust levels

### **Theme: Trust towards NGOs**

Trust issues ran both ways, with FD staff expressing concerns about people working against them. The case of NGOs creating narratives to attract the attention of funding agencies was raised. An FD officer talked about how he perceived NGOs to be sitting in air conditioned hotel rooms and conducting workshops where they blame the government and generate “new” problems to attract even more money from funders as a FD interviewee said (higher level officer, Maharashtra Forest Corporation, Nagpur, May 2013). “They use tiger as a commodity” (higher forest officer, Pune, April, 2013). There was a concern that NGO staff did not represent local communities, and that the majority of NGO personnel came from cities removed geographically from protected areas (higher level officer, Maharashtra Forest Corporation, Nagpur, May 2013). Many different state and non-state wildlife-oriented NGO interviewees stated how pro-tribal NGOs are perceived as a danger for people-park relationships.

Distrust sometimes existed between FD and wildlife-oriented NGOs as well. This played out in terms of poor horizontal communication of problems on the ground: “when we [wildlife-oriented NGO] give a recommendation [...] that just stays at that level, unless the officer is really good, unless he [forest officer] says: ‘you tell us, you’ve done research’” (NGO, Pune, April 2013). NGO staff were thus sometimes perceived to be poorly informed in comparison to FD officers about local realities related to tiger conservation, and this : “Sometimes officers are saying: ‘...we [FD] have been here, we know more than you’” (NGO, Pune, April 2013).

In some cases where such poor relationships have been built, the FD has excluded other actors from having a voice in management: “So, if I tell him, they will not allow us to work there. So, we know what is happening, but they are not ready to admit. I mean they are not interested first of all” (NGO, Pune, April 2013). The threat of exclusion in some cases may encourage NGOs not to speak out about problems:

*If you shout too much against FD, you may not be allowed to enter the park at all so therefore you can be punished for ever, so therefore the whole tendency is not to annoy them. So therefore you will find that most wildlife groups have been very silent on the most of wildlife issues because they fear that if they shout they won't be allowed to enter into the park. They keep quiet (environmental lawyer, New Delhi, May 2013).*

### **Theme: Local people and FD**

There was basic agreement that local communities were important actors in tiger conservation:

*We don't have wildlife because there's protection. We have wildlife because the other stakeholders don't want the wildlife to go, especially in central India. So I think the department realizes now that these stakeholders play an important part, and it's a give and take. So now, the local communities are considered as an important sector (NGO, Nagpur, May 2013).*

There was an understanding that inclusion of local people was an increasingly urgent issue: “this is the only thing that is left to do, and we have no other option” (NGO, Nagpur, May 2013).

However, authority of the FD dominated in relationships between the FD and locals. Authority was often perceived to be used towards enforcement and exclusion policies with regard to management of protected areas. Authority was seen to be manifested in ground level staff with a “mentality” of enforcement, and exclusion: “most of them [FD] avoid people, so they think that people are the problem. That mentality has to be changed” (NGO, Nagpur, May 2013). As quoted earlier, instead of friends, the FD might be creating “conservation foes”, as their focus on giving priority to tiger over local benefits, or bringing tourists in the TRs while curtailing local rights might foster feelings of resentment and injustice for locals. This was tied to observed adverse impacts on wildlife through retaliation (social scientist, Nagpur, May 2013). A scientist noted that this dissonance between local priorities and conservation was spurred by imposition of a foreign set of values:

*I still know that lot of people are talking that: ‘all those [local] people may not know anything so we will decide for them’. So tiger conservation is important for society, although people currently may not agree to it, but we know that it is right. (wildlife scientist, Dehradun, May 2013).*

Based on interactions with the FD and history of conflict, local communities were perceived by FD personnel and scientists to be distrustful (higher level FD officer, Nagpur, May 2015) and suspicious (social scientist, Nagpur, May, 2013) towards FD.

However, there was still an understanding on the part of FD staff that local people needed time to build trust and to understand new roles being adopted by the FD:

*People have never been given this idea that the forest officer will come and work with you. People have been talking: ‘if you see the forest guard, run away’. Now we are saying, ‘no, if you see the forest guard, come meet there, put your problem there’. So this is a very slow process. It may take years to get there. Last 10 years we are working but still I'm*

*100% sure that we have not been able achieve the expected result which we were expecting, through good relationship work (Higher-level FD officer, Nagpur, May 2015).*

It is perceived that the predominant sentiment of local people towards the FD is still mainly fear: “Locals might feel fear of FD, but there is no respect for FD as it is the only department who does not provide any service” (wildlife scientist, Dehradun, May 2013).

There has been significant pressure from the locals, not to expand the existing TR network, or size of individual PAs, due to the perception that the FD has poorly handled the socio-economic dimensions of conservation but also because of changing perceptions of local people:

*Because their [local people] true aspirations have changed, nobody wants tiger reserve sizes to increase. There are very tough laws if you're around a national park and sanctuaries, within 5 km, 10 km there should not be any development which is contrary to conservation. So that imposes a restriction on people's economic benefits. So there are a lot of things that are there that people don't support. Actually a lot of alienation has happened with conservation (wildlife scientist, Dehradun, May 2013).*

Difficulties in implementing landscape-level conservation can be related to sharing territorial authority and power, difficulties in crossing sectoral boundaries and lack of meaningful communication. The FD seems to be interested in retaining territorial authority not only inside core zones of PAs where it has a legal right to an exclusionary approach, but even in buffer zones where it is obligated to pursue an inclusive agenda. This presents some difficulties in achieving a balance of protection and responding to other landscape drivers affecting conservation outcomes.

## Discussion

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A landscape approach that includes tiger conservation and PA management is argued to have more “common entry points” for different landscape actors and could also serve as a source of a consensus among them (Sayer et al. 2013). Based on our interview data we identified main themes presented above, accordingly we identified three main points problematizing the shift towards landscape-level conservation on the part of the FD: 1) difficulties in changing and implementing new practices strongly rooted in FD organisational culture and structure; 2) lack of information flow and trust between FD and other actors; and 3) poor history of FD in integrating and internalising multiple functions other than pure forest protection, such as issues of local livelihoods and development. This will be further discussed in the following sections.

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### CHANGING FD VALUES AND BEHAVIOUR

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Values and goals of foresters are still under-researched area and organisational characteristics of public agencies that manage parks are (too) often disregarded from the picture of landscape-level approaches and collaborative management (Lawrence 2007). With our research, corroborated by other empirical findings from the Indian context, we found that 1) traditional, hierarchical and inflexible organizational structure (Kumar & Kant 2006; Sood & Gupta 2007) 2) rooted in the century-old tradition of implementing exclusive approaches (Rastogi et al. 2012), 3) emphasis on rational scientific principles over local knowledge, and 4) a strong focus on strengthening control over land (Véron & Fehr 2011) influence landscape collaboration potential.

Although landscape conservation plans are now required by the central government and NTCA, foresters encounter many difficulties in implementing such an approach. For example, foresters are often asked to implement participatory policies and decentralize power to other actors, but they themselves do not have training in participatory activities and they have not yet experienced decentralization in their own organisations (Lawrence 2007). These cognitive and institutional issues (and their interactions) were perceived to highly influence resistance to change and prevent from opening up towards collaboration in other contexts (Waylen et al. 2015). Therefore, internal organizational changes are needed to alter foresters’ ways of thinking and modes of action. In order to

adapt to ever-increasing demands of new policies, higher expectations of policy-makers, and respond to increasing management complexities of social-ecological systems, interviewees external to the FD agreed that the FD was in need of reform.

As perceived by many interviewees, “good officers” and their leadership role on the ground, as well as their interest and self-motivation were instrumental for a shift to landscape level conservation. However, the current organizational structure and a rather inflexible organizational environment, besides the internal power relations, insufficient knowledge and silo thinking might be a further impediment to leadership. Interviewees suggested a few problem-solving strategies: carefully planned tenure length and voluntary postings that may be able to spur intrinsic-motivation and better protection from unwanted political influence. Moreover, if training of higher-level officers better reflects the need for a collaborative and holistic approach with respect to conservation, managers may be the ones to facilitate social connectivity across landscape.

Special attention has to be given to the ground level staff. They are the ones who implement policies and interact with local people. Therefore, their training and capacity building has to reflect policy change. This has been also noted elsewhere (Sood & Gupta 2007; Fleischman 2012). A challenge to development of capacity of ground level staff is the communication gap between ground and top levels of the FD due to cultural and social (status, education) and physical (cities vs. forests) distances. This easily prevents change and adaptability. Bi-directional flow of information is needed and top managers can fill these gaps with good leadership skills.

Leadership and a clear vision are recognised by various interviewees to be important for better conservation outcomes. It was frequently perceived that there are passionate visionaries within the FD as well as within policy-makers at both the federal and the state levels. It remains to be seen, however, whether these actors can realize the potential of collaboration in delivering desirable conservation and livelihood outcomes across landscapes important for connectivity of tiger habitat.

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#### IMPROVING INFORMATION FLOW AND TRUST

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More open organizational structure with flows of information through the FD chain of command in both ways, might also help in learning how to take or filter needed

information from other (state and non-state) actors in the landscape (such as NGOs) and facilitate crossing sectoral boundaries necessary for a shift to landscape doing and thinking.

Social connectivity and communication across landscape is frequently constrained by the differences in “frames” that exist among actors including different “languages”, values and emotions or what Vaccaro and Norman (2008) call the “cultures of nature”. Frames are ways through which people see reality (Mostert et al. 2007). Our results clearly show how different landscape actors, FD, NGOs and locals, have different perception of tiger conservation priorities and aims. Acknowledging different frames can help actors in “opening up” (Stirling 2008) debate to different perspectives, improve trust and increase respect between potential collaborators, spur social learning in the landscape (Mostert et al., 2007).out-dated

If there is meaningful horizontal and vertical communication among actors and a common vision is negotiated and agreed upon, the efforts of different actors could be more easily coordinated to have meaningful direction. Therefore, there is a need for common platforms to exchange ideas, facilitate communication and share a common vision as well as bridge different cultures at different levels of governance. This is a challenging task because of much diversity of values and a wealth of negative past experiences. One crucial issue for communication processes and hence, another precondition for tiger conservation in and outside PAs, is the provision of arenas for trust building among different actors who operate at different levels.

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#### WORKING WITH LOCAL PEOPLE IN THE CORRIDORS

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By holding to exclusive modes of governance and retaining territorial authority, the FD has stifled collaboration. Other actors engaging with local communities have noted persistence of conflicts at the local level, and NGOs engaged with local communities have found themselves on the margins. Others have brought forth evidence of retrenchment of the FD into a top-down, self-contained structure. Some researchers claim that inclusive policy implementation led to recentralization while decentralization was supposed to be happening (Ribot et al. 2006; Véron & Fehr 2011) as, among other factors, there was no proper change in FD attitudes towards people-oriented policies

(Rishi 2007). Researchers attempted to explain this through organisational resistance coming out of the colonial legacy of the FD (Guha & Gadgil 1989; Kumar & Kant 2005). Our research corroborates these chains of reasoning. More recent studies with respect to the implementation of The Scheduled Tribes and Other Traditional Forest Dwellers (Recognition of Forest Rights) Act (FRA) draw similar conclusions and add to the debate on FD resistance to change in relationships with local people and their forest rights (Springate-Baginski et al. 2012; Kashwan 2013; Kumar et al. 2014). For example, Springate-Baginski et al (2012) show how the Andhra Pradesh FD has been obstructing policy reform and implementation of the FRA, demonstrating significant opposition to the rights-based approach.

A consensus on corridors among FD and locals might not be easily achieved. The alienation and conflicts between people, parks and foresters have historical roots in colonial rule and unsettled and constantly curtailed forest rights that turned forest dwellers into “encroachers” on their own land (Guha & Gadgil 1989; Macura 2010; Rastogi et al. 2012). Corridors, if not planned with consensus of local people that inhabit them, might be seen as infringement of local rights, which in turn might decrease needed local support for tiger conservation (Rastogi et al. 2014). It may also create “sub-cultures of resistance” against the implementing agency (Mukherjee 2009). Conflicts could be further sparked if implementation of FRA fails in the corridor forests.

### Concluding thoughts

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FD frequently has to simultaneously implement conflicting policies, including those pertaining to forest management, wildlife conservation, monitoring, law enforcement, tourism-related issues, and participatory projects. To this list is now being added collaboration with other actors in the landscape. Nevertheless, these public servants are still biased towards policing and their bureaucratic role. Therefore, there is a need to build well-trained staff of FD for addressing local people rights and needs. This has also been emphasized elsewhere (Sood & Gupta 2007)

Coordination with various state actors, especially the ones that have an influence on FD-local people interactions (e.g. revenue and animal husbandry departments), is



needed for successful efforts in landscape level conservation. NGOs might be strong enough to push for the policy change, but also foster communication between different players and have a bridging role in the landscape (Berkes 2009).

Decoupling social-ecological systems and “breaking down fences” (Hoole & Berkes 2010) is ultimately a coordinated multi-actor effort.

## References

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- Ansell, C. & Gash, A. (2008). Collaborative governance in theory and practice. *J. public Adm. Res. theory*.
- Balooni, K. (2002). Participatory Forest Management in India, An Analysis of Policy Trends amid “Management Change.” *Policy Trend Rep.*, 88–113.
- Berkes, F. (2009). Evolution of co-management: role of knowledge generation, bridging organizations and social learning. *J. Environ. Manage.*
- Brechin, S.R., Wilshusen, P.R., Fortwangler, C.L. & West, P.C. (2002). Beyond the square wheel: toward a more comprehensive understanding of biodiversity conservation as social and political process. *Soc. & Natural Resour.*, 15, 41–64.
- Brondizio, E.S., Ostrom, E. & Young, O.R. (2009). Connectivity and the Governance of Multilevel Social-Ecological Systems: The Role of Social Capital. *Annu. Rev. Environ. Resour.*, 34, 253–278.
- Bryson, J., Crosby, B. & Stone, M. (2006). The design and implementation of cross-sector collaborations: Propositions from the literature. *Public Adm. Rev.*, 17–18.
- DeFries, R., Karanth, K.K. & Pareeth, S. (2010). Interactions between protected areas and their surroundings in human-dominated tropical landscapes. *Biol. Conserv.*, 143, 2870–2880.
- Ebrahim, A. (2004). Institutional Preconditions to Collaboration: Indian Forest and Irrigation Policy in Historical Perspective. *Adm. Soc.*, 36, 208–242.
- Fernandez, A. (2012). *How coal mining is trashing tigerland*.
- Fleischman, F. (2012). *Public servant behavior and forest policy implementation in Central India*.
- Folke, C., Hahn, T., Olsson, P. & Norberg, J. (2005). Adaptive Governance of Social-Ecological Systems. *Annu. Rev. Environ. Resour.*, 30, 441–473.

- Gadgil, M. & Guha, R. (1992). *The Fissured Land*. Oxford University Press., New Delhi.
- Gubbi, S., Mukherjee, K., Swaminath, M.H. & Poornesha, H.C. (2015). Providing more protected space for tigers *Panthera tigris*: a landscape conservation approach in the Western Ghats, southern India. *Oryx*, 1–8.
- Guha, R. (1983). Forestry in British and Post-British India A Historical Analysis. *Econ. Polit. Wkly.*, 18, 1882–1896.
- Guha, R. & Gadgil, M. (1989). State Forestry and Social Conflict in British India. *Past Present*, 123, 141–177.
- Heikkila, T. & Gerlak, A. (2005). The Formation of Large-scale Collaborative Resource Management Institutions: Clarifying the Roles of Stakeholders, Science, and Institutions. *Policy Stud. J.*, 33.
- Hoole, A. & Berkes, F. (2010). Breaking down fences: Recoupling social-ecological systems for biodiversity conservation in Namibia. *Geoforum*, 41, 304–317.
- IFS. (2012). Introduction [WWW Document]. URL <http://ifs.nic.in>
- Janssen, M.A., Bodin, Ö., Anderies, J.M., Elmqvist, T., Ernstson, H., Mcallister, R.R.J., Olsson, P. & Ryan, P. (2006). Toward a Network Perspective of the Study of Resilience in Social-Ecological Systems. *Ecol. Soc.*, 11, 15.
- Jhala, Y. V, Gopal, R. & Qureshi, Q. (2007). *Status of the Tiger and Co-Predators in the Central Indian Landscape. A Preliminary Report*.
- Jhala, Y. V., Qureshi, Q. & Gopal, R. (2015). *Status of Tigers in India, 2014. National Tiger Conservation Authority, New Delhi and The Wildlife Institute of India, Dehradun*.
- Jhala, Y. V., Qureshi, Q., Gopal, R. & Sinha, P.R. (2011). *Status of tigers, co-predators and prey in India, 2010. National Tiger Conservation Authority, Govt. of India, New Delhi, and Wildlife Institute of India, Dehradun. TR 2011/003. Gov. India, Natl. Tiger Conserv. Auth.*
- Joshi, A., Vaidyanathan, S., Mondol, S., Edgaonkar, A. & Ramakrishnan, U. (2013). Connectivity of tiger (*Panthera tigris*) populations in the human-influenced forest mosaic of Central India. *PLoS One*, 8, e77980.
- Kashwan, P. (2013). The politics of rights-based approaches in conservation. *Land use policy*, 31, 613–626.
- Kininmonth, S. & Bergsten, A. (2015). Closing the collaborative gap : Aligning social and ecological connectivity for better management of interconnected wetlands, 44, 138–148.

- Kumar, K., Singh, N.M. & Kerr, J.M. (2014). Decentralisation and democratic forest reforms in India: Moving to a rights-based approach. *For. Policy Econ.*
- Kumar, S. & Kant, S. (2005). Bureaucracy and new management paradigms: modeling foresters' perceptions regarding community-based forest management in India. *For. Policy Econ.*, 7, 651–669.
- Kumar, S. & Kant, S. (2006). Organizational Resistance to Participatory Approaches in Public Agencies: An Analysis of Forest Department's Resistance to Community-Based Forest Management. *Int. Public Manag. J.*, 9, 141–173.
- Lawrence, A. (2007). Beyond the second generation: towards adaptiveness in participatory forest management. *CAB Rev. Perspect. Agric. Vet. Sci. Nutr. Nat. Resour.*, 2.
- Lindenmayer, D., Hobbs, R.J., Montague-Drake, R., Alexandra, J., Bennett, A., Burgman, M., Cale, P., Calhoun, A., Cramer, V., Cullen, P., Driscoll, D., Fahrig, L., Fischer, J., Franklin, J., Haila, Y., Hunter, M., Gibbons, P., Lake, S., Luck, G., MacGregor, C., McIntyre, S., Nally, R. Mac, Manning, A., Miller, J., Mooney, H., Noss, R., Possingham, H., Saunders, D., Schmiegelow, F., Scott, M., Simberloff, D., Sisk, T., Tabor, G., Walker, B., Wiens, J., Woinarski, J. & Zavaleta, E. (2008). A checklist for ecological management of landscapes for conservation. *Ecol. Lett.*, 11, 78–91.
- Linkie, M., Chapron, G., Martyr, D.J., Holden, J. & Leader-Williams, N. (2006). Assessing the viability of tiger subpopulations in a fragmented landscape. *J. Appl. Ecol.*, 43, 576–586.
- Macura, B. (2010). *Local Community Attitudes towards Reserved forests. A field study in Kodagu, Western Ghats, India. MSc Thesis.*
- Matta, J., Alavalapati, J., Kerr, J. & Mercer, E. (2005). Agency Perspectives on Transition to Participatory Forest Management: A Case Study From Tamil Nadu, India. *Soc. Nat. Resour.*, 18, 859–870.
- Menon, A. (2007). Engaging with the Law on Adivasi rights. *Econ. Polit. Wkly.*, 2239–2242.
- Mostert, E., Pahl-Wostl, C., Rees, Y., Searle, B., Tàbara, D. & Tippett, J. (2007). Social learning in European river-basin management: Barriers and fostering mechanisms from 10 river basins. *Ecol. Soc.*, 12.
- Mukherjee, A. (2009). Conflict and coexistence in a national park. *Econ. Polit. Wkly.*, 44, 52–59.
- Nagendra, H. & Ostrom, E. (2012). Polycentric governance of multifunctional forested landscapes. *Int. J. Commons*, 6, 104–133.

- NTCA. (2015a). *Measuring the management effectiveness of tiger reserves in India*.
- NTCA. (2015b). FAQs (Frequently Asked Questions) [WWW Document]. URL [http://projecttiger.nic.in/Faq/121\\_1\\_Faq.aspx](http://projecttiger.nic.in/Faq/121_1_Faq.aspx)
- NTCA. (2015c). Status:National Tiger Conservation Authority/ Project Tiger [WWW Document]. URL [http://projecttiger.nic.in/content/75\\_6\\_Status.aspx](http://projecttiger.nic.in/content/75_6_Status.aspx)
- Patnaik, S. (2007). PESA , the Forest Rights Act , and Tribal Rights in India Forest Rights in British India. *October*, 1–14.
- Planning Commission. (2011). Report of the Working Group on Ecosystem Resilience , Biodiversity and Sustainable Livelihoods for the XII Five-Year Plan. Planning Commission – Environment & Forest Division Steering Committee – Environment, Forests & Wildlife and Animal Welfare.
- Rastogi, A., Hickey, G.M., Badola, R. & Hussain, S.A. (2012). Saving the superstar: A review of the social factors affecting tiger conservation in India. *J. Environ. Manage.*, 113, 328–340.
- Rastogi, A., Thapliyal, S. & Hickey, G.M. (2014). Community Action and Tiger Conservation: Assessing the Role of Social Capital. *Soc. Nat. Resour.*, 1–17.
- Rathore, C.S., Dubey, Y., Shrivastava, A., Pathak, P. & Patil, V. (2012). Opportunities of habitat connectivity for tiger (*Panthera tigris*) between Kanha and Pench National Parks in Madhya Pradesh, India. *PLoS One*, 7, e39996.
- Ribot, J.C., Agrawal, A. & Larson, A.M. (2006). Recentralizing While Decentralizing: How National Governments Reappropriate Forest Resources. *World Dev.*, 34, 1864–1886.
- Rishi, P. (2007). Joint forest management in India: An attitudinal analysis of stakeholders. *Resour. Conserv. Recycl.*, 51, 345–354.
- Ronggui, H. (2010). RQDA: R-based Qualitative Data Analysis. R package version 0.1-9. <http://rqda.r-forge.r-project.org/>.
- Sayer, J. (2009). Reconciling Conservation and Development: Are Landscapes the Answer? *Biotropica*, 41, 649–652.
- Sayer, J., Sunderland, T., Ghazoul, J., Pfund, J., Sheil, D., Meijaard, E., Venter, M., Agni Klintuni Boedihartono, M.D., Garcia, C., Oosten, C. van & Buck, L.E. (2013). Ten principles for a landscape approach to reconciling agriculture , conservation, and other competing land uses. *PNAS*, 110, 8349–8356 SPECIAL.
- Sharma, S., Dutta, T., Maldonado, J., Wood, T., Panwar, H. & Seidensticker, J. (2013). Forest corridors maintain historical gene flow in a tiger metapopulation in the highlands of central India. *Proc R Soc B*.

- Sood, K.K. & Gupta, H.K. (2007). Implications of Indian Foresters' Perspectives of Joint Forest Management. *Small-scale For.*, 6, 291–308.
- Springate-Baginski, O., Madhu, S. & Reddy, M. (2012). Resisting Rights: Forest Bureaucracy and the Tenure Transition in India. *Small-scale For.*
- Sterling, E.J., Gómez, A. & Porzecanski, A.L. (2010). A systemic view of biodiversity and its conservation: Processes, interrelationships, and human culture: Presentation of a systemic view of biodiversity and its conservation that emphasizes complex interrelationships among subsystems and includes human cul. *BioEssays*, 32, 1090–1098.
- TERI. (2015). *Environmental Federalism in India: Forests and Protected Areas. Draft report No.2014IA05*. New Delhi.
- Tiger Task Force. (2005). *Joining the dots - The report of Tiger Task Force, Ministry of Environment and Forests, Government of India*. New Delhi.
- Vaccaro, I. & Norman, K. (2008). Social Sciences and landscape analysis: opportunities for the improvement of conservation policy design. *J. Environ. Manage.*, 88, 360–71.
- Vattakaven, J. (WWF-I. (2010). *Fragmentation Threat in Kanha-Pench Corridor: Implications of the Gondi-Jabalpur Railway Line on Corridor Connectivity & Tiger Dispersal*.
- Véron, R. & Fehr, G. (2011). State power and protected areas: Dynamics and contradictions of forest conservation in Madhya Pradesh, India. *Polit. Geogr.*, 30, 282–293.
- Waylen, K.A., Blackstock, K.L. & Holstead, K.L. (2015). How does legacy create sticking points for environmental management? Insights from challenges to implementation of the ecosystem approach. *Ecol. Soc.*, 20, 21.
- WWF-India. (2015a). Critical regions [WWW Document]. URL [http://www.wwfindia.org/about\\_wwf/critical\\_regions/](http://www.wwfindia.org/about_wwf/critical_regions/)
- WWF-India. (2015b). About Satpura Maikal landscape [WWW Document]. URL [http://www.wwfindia.org/about\\_wwf/critical\\_regions/satpuda\\_maikal\\_landscape/about\\_satpura\\_maikal\\_landscape/](http://www.wwfindia.org/about_wwf/critical_regions/satpuda_maikal_landscape/about_satpura_maikal_landscape/)
- Wyborn, C. (2012). A collaborative future for conservation: lessons from connectivity conservation. In: *Innov. 21st Century Conserv.* (eds. Figgis, P., Fitzsimons, J. & Irving, J.). Australian Committee for IUCN Inc., Sydney, pp. 44–49.
- Wyborn, C. & Bixler, R.P. (2013). Collaboration and nested environmental governance: Scale dependency, scale framing, and cross-scale interactions in collaborative conservation. *J. Environ. Manage.*, 123, 58–67.

Yumnam, B., Jhala, Y. V, Qureshi, Q., Maldonado, J.E., Gopal, R. & Saini, S. (2014).  
Prioritizing Tiger Conservation through Landscape Genetics and Habitat Linkages.  
*PLoS One*, 9, e111207.

## CHAPTER 4

### EFFECTS OF TWO STATE-DRIVEN PARTICIPATORY PROJECTS ON CONSERVATION KNOWLEDGE, ATTITUDES AND TRUST: A CASE OF A CENTRAL INDIAN TIGER RESERVE

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#### Introduction

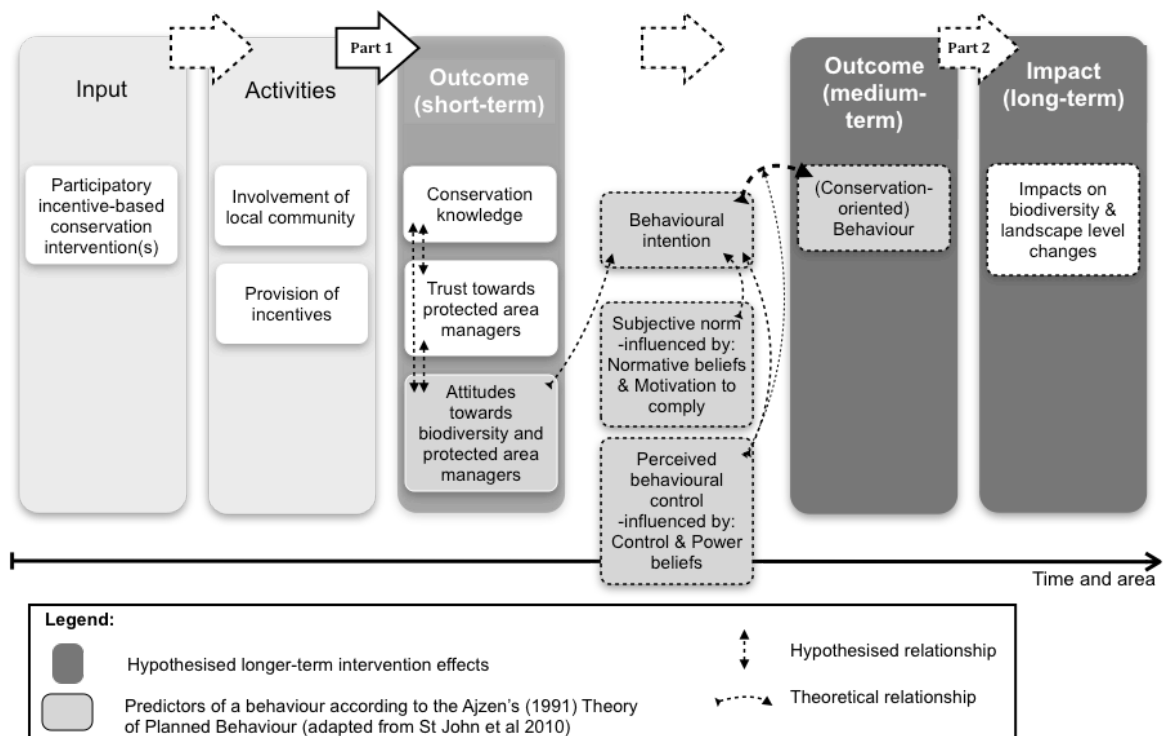
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Researchers and policy makers emphasize that people's involvement in any form of forest management can support biodiversity conservation through a change in attitudes (Brechin et al 2002; Baral and Heinen 2007). Depending on the conservation intervention setting, one can observe varying levels of participation by local people, transfer of political power and control over decisions vested in local communities. Participation can span from nominal and passive, to consultation, or to active and empowering engagement in decision-making (Agarwal 2001; Drydyk 2005). The governance shift from socially exclusive towards more inclusive conservation policies started in the 1980's when these policies entered conservation practice through community-based conservation and natural resource management; efforts to integrate conservation and development; and co-management arrangements (Reyes-Garcia et al 2013). While some criticise the necessity of large-scale participation for policy effectiveness (e.g. Cooke and Kothari 2001), others assume that people's involvement in forest management and conservation is able to modify their behaviour towards conservation action by changing their conservation knowledge and attitudes towards biodiversity as well as their trust towards protected area (PA) managers. This is assumed to, ultimately, lead to changes in biodiversity outcomes (see Persha et al 2011).

Despite the logic of this argument, it is very difficult to empirically test its second part, that is the link between behavioural changes (or people's involvement) and changes in ecological outcomes. Difficulties in getting empirical evidence are partially due to a temporal and spatial scale mismatch: biodiversity management and conservation happen at the landscape level, while changes in attitudes and behaviour happen at the individual or at the community level. So, the change in attitude of an individual does not necessarily reflect in measurable changes in conservation. It is, however, possible to test

the first part of the argument, regarding the causal link between participation and conservation knowledge and attitudes, in other words, the pathway through which people's involvement in forest management and conservation (participation) has an effect on biodiversity conservation. If participation helps raise conservation knowledge and attitudes (the first, testable, part of the argument), then it is possible that it will also ultimately affect landscape level conservation outcomes (the second, difficult to test, part); however, if the link does not exist, then one could safely discard participation as an effective tool for the conservation management.

To test potential paths between people's participation and conservation through behavioural change, we use applications of social psychology and attitudinal research (Ajzen 2001) to conservation (St John et al 2010) (see **Figure 4.1**)



**FIGURE 4.1** A THEORY OF CHANGE SHOWING INPUTS, ACTIVITIES AND THE EFFECTS OF PARTICIPATORY CONSERVATION INTERVENTIONS THROUGH HYPOTHESISED AND THEORETICAL CAUSE-EFFECT RELATIONS BETWEEN PARTICIPATION, BEHAVIOUR AND CONSERVATION (SOURCE: ADAPTED FROM AJZEN 1991 AND ST JOHN 2010)



Experiential knowledge can be defined as a correct belief (Schultz 2002) and it is a necessary prerequisite for behaviour (Frick et al 2004). Although knowledge cannot predict people's behaviour, the lack of (conservation) knowledge is found to be an internal barrier for a person's behaviour even if there is a strong motivation to act (Schultz 2002). In other words, individuals who have less knowledge about conservation rules might be less likely to involve into conservation-oriented behaviour (e.g. tree planting) or to avoid illegal behaviour (e.g. tiger poaching). Therefore, people's level of knowledge about conservation rules might indirectly influence their behaviour. According to theory of planned behaviour (Ajzen 1991), attitudes are more strongly but also indirectly linked to behaviour, as they act along with the social norms and perceived behavioural control to influence individual's behaviour through changes in their behavioural intentions. Therefore, the influence of the group is crucial for a person's behaviour. Negative conservation attitudes can lead to biodiversity-related conflicts in a PA (White et al 2009), which can have negative effects on the overall conservation outcomes (through, for example, retaliatory behaviour). Trust is the belief that a person (or an institution) will perform its role according to socially defined and expected responsibilities normally associated with it (Hawdon 2008). Trust (or lack of it) is argued to be highly associated to success of collaboration in the natural resource management (Bouma et al 2008; Baral 2012; Stern and Coleman 2014). A trustworthy relation of local community with the park administration can be a source of legitimacy, which can lead to a better voluntary compliance with the park regulations (Stern 2008; Bouma and Ansink 2013) and therefore, less illegal activities.

Over the last three decades, in India's forested yet human-dominated landscapes, two state-driven interventions have attempted to increase people's involvement in forest management and conservation: Joint Forest Management (JFM) and ecodevelopment (ED) projects.

JFM is a collaborative arrangement between local people and public entities whose aim is to sustainably manage state-owned forests outside of core zones of PAs (Nayak and Berkes 2008). JFM is a top-down state initiated decentralization (Kumar et al 2014), started in 1990 and impelled by the National Forest Policy, 1988 (GOI, 1988), which

was the first legal act after the Independence to recognize the value of involvement of local people in the natural resource conservation. At the local level, JFM operates through committees installed in villages with assigned adjacent forest patches. In exchange for so called “social fencing” i.e. safeguarding, protection and improvement of the forest, forest department (FD) provides villagers with usufruct rights and limited benefit sharing through (negotiated) extraction of Non-Timber Forest Products and the share of revenue from timber sale. Nevertheless, all the specific JFM arrangements depend on the states and their adaptation of the central government JFM rules. Currently financed by the central government through National Afforestation Policy scheme, JFM programme was initially partially funded by various foreign agencies including World Bank (WB), UNDP, etc. (Singh et al 2011).

In India, Integrated Conservation and Development Projects (ICDP) are known as ED projects. ED is implemented around core zones of PAs (in a 5 km belt) with the main aim to conserve the core zone against human impacts. It operates under 1972 Wildlife (Protection) Act, which prohibits locals to get usufruct rights from the core zones of PAs. At the village level, it runs through ecodevelopment committees (EDCs). “India ecodevelopment” project was approved in 1996 and was actively funded until 2004 by Global Environmental Facility (GEF)/WB part-loan and part-grant, contribution from “beneficiaries” (local people) and state and central governments. In total, US\$ 61 million was spent in 5 tiger reserves and 2 national parks, 54% of which was invested in village ecodevelopment (World Bank 2007). Village ecodevelopment was designed “to reduce negative impacts of local people on biodiversity and increase collaboration of local people in conservation” through: “[...] participatory microplanning [...], reciprocal commitments that foster alternative livelihoods and resource uses [...], special programmes for additional joint forest management, voluntary relocation and supplemental investments for special needs” (World Bank 2007:2). After “India ecodevelopment” finished, village ED continued to be part of the management plans of many PAs, especially tiger reserves, but with reduced funding.

The two types of projects have different reasons behind people’s involvement and none of them has managed to attract the participation of all people in the communities where they operate, as it was initially planned. Furthermore, both types of projects are

frequently criticised for including participation only in their rhetoric, not in practice (Hildyard et al 2001; Tiger Task Force 2005).

Few case studies have produced evidence that ED has almost no impact on promised outcomes due to i) the absence of genuine negotiation between local communities and PA authorities, ii) a poor understanding of project objectives, and iii) the missing links between delivered incentives and obtained conservation outcomes (Mahanty 2002; Arjunan et al 2006; Gubbi et al 2009; Dejouhanet 2010). JFM has been more frequently evaluated, for social and ecological success, with mixed results (e.g. Kumar 2002; Murali et al 2002; Damodaran and Engel 2003; Bhattacharya et al 2010).

Evaluations of the two participatory conservation interventions in India provide only anecdotal evidence of their effectiveness because such evaluations either: measure only one type of outcome (mostly ecological); without removing rival explanations of the observed effects; and do not adjust for selection bias occurring due to non-random assignment of such interventions (for comprehensive review see Shyamsundar and Ghate 2014). Moreover, rigorous studies assessing the effects of participatory conservation interventions with causal inference are very rare (Miteva et al 2012); except some recent studies on the ICDP evaluation (Morgan-Brown et al 2010; Weber et al 2011; Bauch et al 2014), on devolution and community based-management and conservation (Jumbe and Angelsen 2006; Ameha et al 2014), and on payments for environmental services (Hegde and Bull 2011). To our knowledge, credible evaluation studies of ED and JFM in India have not been conducted yet.

The work presented here uses household cross-sectional data collected in the buffer zone of Pench Tiger reserve (PTR), Madhya Pradesh (India) and a quasi-experimental design to evaluate the causal effects of state-driven participation, on the social outcomes in two types of programmes (JFM and ED). The diversity of participatory incentive-based strategies in forest management and conservation implemented around PTR, sometimes with geographical overlap, provides an ideal case to study: i) whether local people's conservation knowledge and biodiversity attitudes vary between participants and non-participants; and ii) whether the type of participatory intervention (JFM or ED)

matters in terms of people's conservation knowledge, biodiversity attitudes, trust and satisfaction with the management authorities.

## Case Study<sup>12</sup>

### STUDY SITE

The research was conducted in the buffer zone of PTR, in Seoni and Chhindwara districts of Madhya Pradesh. PTR (**Figure 4.2**) covers total area of 1179.6 km<sup>2</sup> divided between two zones: a core (411.3 km<sup>2</sup>) and a surrounding buffer (768.3 km<sup>2</sup>). Although it was included in Project Tiger in 1992, the area was under protection since 1977. The core zone was officially notified in December 2007 and the buffer in October 2010, but until 2013, buffer zone stayed under control of three territorial divisions of the FD: South Seoni, East Chhindwara and South Chhindwara. In 2013, part of the Reserve under East and South Chhindwara Forest Divisions were handed to the wildlife wing of FD i.e. PTR authorities. In March 2014, during our fieldwork, control of South Seoni division was handed to the PTR authorities.

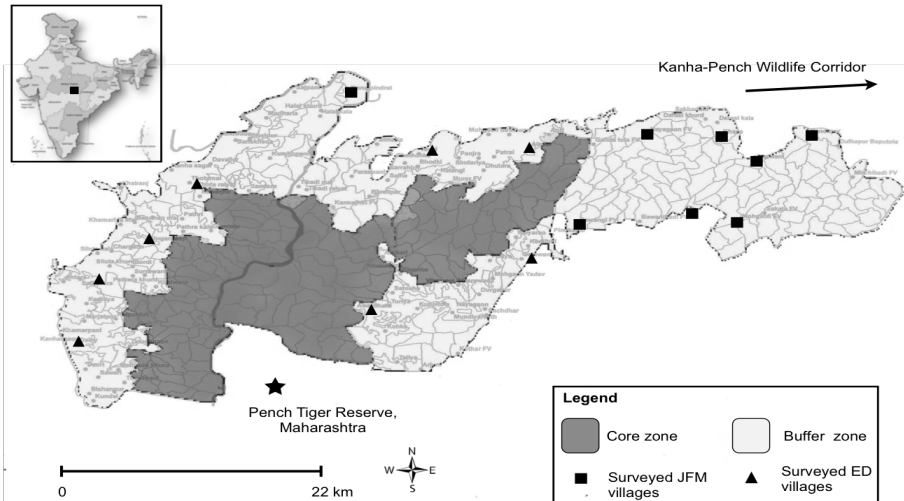


FIGURE 4.2 STUDY LOCATION: PTR, MADHYA PRADESH WITH SAMPLED VILLAGES (SOURCES: PTR ADMINISTRATION OFFICE; [HTTP://EN.WIKIPEDIA.ORG/WIKI/OUTLINE\\_OF\\_INDIA#MEDIAVIEWER/FILE:INDIA-MAP-EN.SVG](http://en.wikipedia.org/wiki/Outline_of_India#mediaviewer/File:India-map-en.svg))

<sup>12</sup> Part of what is reported in the case-study description is based on direct observations, document analysis and interviews carried out during the 4 months long fieldwork in PTR.

The study area is undulating terrain with small hill ranges supporting three main forest types: southern Indian tropical moist deciduous (slightly moist), southern tropical dry deciduous (with teak *Tectona grandis*), and southern dry mixed deciduous forest. The core zone supports many species of high conservation concern and represents Critical Tiger Habitat, which is an inviolate space “*required for the sustenance of viable populations of tiger and other wild animals*” and no human disturbance, habitation, resource extraction or agriculture is allowed (MOEF 2007:1).

Buffer zone is multiple use area with lower degree of habitat protection and *de jure* rights for resources access and cultivation exists. There are 99 villages (around 60000 people) located within the first 5 km around the core zone; 20 more villages are located in the rest of the buffer zone. More than 60% of the local people are *Adivasis* (i.e. original inhabitants), with the prevailing percentage of Gond tribal group. There is also smaller percentage of the Scheduled Caste and Other Backward Castes with very low proportion of General caste. The main occupation of local people is (subsistence) agriculture and wage labour. Villages (in the first 5 km around the core) are estimated to have around 60000 cattle.

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#### JOINT FOREST MANAGEMENT AROUND PTR

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JFM in Madhya Pradesh commenced in 1991. Depending on the quality of the forests being managed under JFM, there are two types of committees: 1) village protection committees (VPC) for rehabilitating degraded forest areas with density of forest cover lower than 40% and 2) forest protection committees (FPC) for protection of forest with forest cover density above 40%. The benefit sharing through these committees is different as it depends on the quality of the forest being managed. Committees have “general body” where all people from the village can participate and “executive body” that is composed of 9-11 members, a secretary from the FD (usually lower rank forest officer) and a joint secretary from the village (to take the future role of the secretary) (MPFD, 2014). Depending on the funding flow, villagers also receive household utensils (e.g. smokeless stoves, blankets, LPG connections) that could help them decrease forest dependency. The majority of the committees in the buffer zone of PTR are FPC.

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## ECODEVELOPMENT AROUND PTR

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PTR was one of the selected sites where “India ecodevelopment” project commenced in 1996-97. Up to 2005, it released 268.6 million rupees (approx. US\$ 6.1million) in PTR (Pench Tiger Reserve 2012). Its implementation continued through EDCs in 99 villages surrounding the core zone of the park in the 5km belt. As in JFM, all the people from a village constitutes EDC “general body”, while “executive body” is composed of 9-11 members and a secretary from the FD (usually lower rank forest officer). EDC distributed household assets and initiates village development works for decreasing pressure on forests and for alternative (non-forest) livelihoods. Household level assets distributed were pressure cookers, gas cylinders and stoves with improved efficiency, dung-powered biogas plants, bicycles, and sewing machines. In order to create a sense of ownership, beneficiaries need to contribute 7-25% of the asset price. Community level provisions were ponds, wells, field banding, stop dams, electric pumps (for agricultural intensification); or village infrastructure: village roads, community halls and stalls (for meetings), game proof wall (for protecting wildlife entering villages, and livestock entering forest). Even after GEF/WB project ended, the EDCs remained in the villages with considerable smaller or even non-existent activities and intermittent funding that comes partially from the union and the state funds allocated for the PA management activities and partially from the share of tourism revenues (through PTR development fund). From 2005 to 2011, 13.1 million rupees (approx. US\$ 282000) were spent for ecocodevelopment in PRT, which is about 22 times lower than the amount spent in period 1997-2005 (Pench Tiger Reserve 2012). Management authorities have been occasionally distributing gas cylinders, stoves, pressure cookers, organising IT skills classes, conducting some minor (mainly reparatory) works in the villages. Nevertheless, these activates are probably almost negligible in comparison to the ones during the “India Ecodevelopment”.

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### The JFM and the ED: differences

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Although both programmes aim at promoting people’s involvement in conservation, there are differences between them. Given that PAs are governed by the Wildlife Protection Act, extraction of forest resources is strictly prohibited from the core zone of the park. So, there is no benefit-sharing from the core zone of the park to the

surrounding villages and this is the main difference with the JFM (Badola 2000). The ED is implemented to shift local forest-dependent people away from the forests and find them alternative sources of livelihood. According to some authors, local people are seen only as “beneficiaries” (see Woodman 2002). By design, JFM seeks to involve locals in the forest protection and provides revenues from the adjacent forest that are shared among the local community.

## Methods

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### DATA COLLECTION

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Fieldwork was carried out between January and May 2014. We implemented quasi-experimental design with the two-stage, random stratified and systematic sampling. In total we sampled 16 villages (8 under each programme), located in the buffer zone of the PTR. From a list containing all the ED villages in the park surrounding, we further sub-divided the sample according to high and low amount of received benefits and randomly selected 4 villages from each stratum. JFM villages were matched to ED villages based on the population size, ethnic and caste composition, literacy rate, number of non-workers (using data from Census of India (2011)), and on proximity to forested area. On average, 20 households were surveyed in each village, with the first household selected at random and subsequent households sampled at intervals determined by village size (Bernard 2006). Questionnaires were administered to household heads, or to a person older than 21 if the head was not present (located in **Annexes 13 and 14**).

We carried out face-to-face structured questionnaires implemented by 5 non-local enumerators<sup>13</sup> conversant in Hindi (Madhya Pradesh official language). The questionnaires were written in English, translated and conducted in Hindi and pre-tested in two villages located in the buffer zone. Before administering questionnaires, enumerators obtained an oral informed voluntary consent. Out of 320 collected questionnaires, 303 contained complete data and were included in the final analysis.

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<sup>13</sup> Hired professional agency for social research from Mumbai, first author trained the team for 2 days

Questionnaires contained close- and open-ended questions including demographic and socio-economic characteristics of the household, perceptions of the ED or JFM project, knowledge about the tiger reserve, attitudes towards biodiversity in general as well as trust in and satisfaction with the park authorities.

In addition, rich contextual and historical information on the projects' past and current functioning was collected through over 30 semi-structured interviews carried out with committee members and FD staff. We asked about activity of different internal and external stakeholders, possible conflicts between them, frequency and attendance of meetings, the level of local people engagement in decision-making processes, flow of benefits, and the distribution and demand of household assets. Each interview lasted an hour on average.

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## EMPIRICAL STRATEGY

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We aim to estimate the causal effects on conservation attitudes of 1) the participation in ED and JFM versus no participation, and 2) participation in ED versus participation in JFM. Therefore, we focus on the Average Treatment Effect on Treated (ATT) which is defined as a difference between average observed effect with participation and the average counterfactual without the participation or with the participation in an alternative project (Dugoff et al 2014) (Equation 1).

$$ATT = E(Y_1 - Y_0 | P = 1) = E(Y_1 | P = 1) - E(Y_0 | P = 1) \quad (1)$$

The evaluation problem is that counterfactual ( $E(Y_0|P=1)$ ) is unobservable (a participant cannot be a non-participant at the same time) and thus the researcher has to choose an appropriate substitute to estimate it (Caliendo and Kopeinig 2008). Moreover, in conservation projects, participants are not randomly assigned to the treatment or they do not have an equal opportunity to participate; that means that a selection bias and other factors that determine decision to participate might influence the observed outcome (Ferraro 2012). To overcome these issues and to create credible comparison, we apply propensity score (PS) matching, a statistical non-parametric method. PS (Equation 2) is a predicted probability of participating in the programme conditional on a set of observed covariates ( $X$ ) (Rosenbaum and Rubin 1983). PS is specified through a binary choice modelling (probit or logit).



$$\text{Prob}(X) = \text{Pr}(P = 1 | X) = E(P | X) \quad (2)$$

## HYPOTHESES AND EFFECTS: FROM PARTICIPATION TO BEHAVIOURAL CHANGE

To evaluate participation effects, we measure several intermediary effects of participation that, according to our theory of change (see Online Resource 1), can influence local people's behaviour and possibly affect conservation effectiveness: 1) conservation-related knowledge; 2) attitudes towards biodiversity, specifically, towards forests, tigers, and other wildlife; 3) attitudes towards PTR managers and 4) trust towards PTR managers (**Table 4. 1**).

**TABLE 4.1** MEASURED EFFECTS AND RELATED QUESTIONS FOR PARTICIPANT (BOTH ED AND JFM) AND NON-PARTICIPANT HOUSEHOLDS

Measured constructs	Constituting questions, scores and rating scales
<b>A. Conservation knowledge<sup>a)</sup></b>	Do you know about Pench Tiger Reserve? - Yes (1) / No (0); Do you clearly know where are the boundaries of the core zone? - Yes (1) / No (0); Do you clearly know where are the boundaries of the buffer zone? - Yes (1) / No (0); What is your definition of the buffer zone? - No knowledge (0), fair understanding (1), good understanding (2); Which activities are banned in the core zone? - No knowledge (0), knows 1 rule (1), knows 2 rules (2), knows 3 rules (3); Why do you think these activities are banned in the core zone? - No knowledge (0), fair understanding (1), good understanding (2); Which activities are allowed in the core zone? - No knowledge (0), fair understanding (1), good understanding (2); Scale reliability coefficient ( $\alpha$ ): 0.8253 (for H1) and 0.8085 (for H2) <sup>b)</sup>
<b>Attitudes towards biodiversity<sup>c)</sup></b>	Do you like or dislike: Tiger? - Strongly dislike (1), dislike (2), neutral (3), like (4), like very much (5) Other wild animals? - Strongly dislike (1), dislike (2), neutral (3), like (4), like very much (5) Forests? - Yes (1) / No (0) <sup>d)</sup>

	Scale reliability coefficient ( $\alpha$ ): 0.5475 (for H1) and 0.5402 (for H2)
<b>Attitudes towards PTR authority</b> <sup>e)</sup>	Taking everything into account, how satisfied are you with the Tiger Reserve management authority? - Very unsatisfied (1), unsatisfied (2), neutral (3), satisfied (4), very satisfied (5)
<b>D. Trust towards PTR authority</b> <sup>e)</sup>	How much do you trust the Tiger Reserve management authority to work in your interest? - Not at all (1), not very much (2), neutral (3), a fair amount (4), a lot (5) <sup>f)</sup>

<sup>a)</sup> Based on the work by Olomí-Solà et al (2012). Answers from open-ended questions 4, 5, 6 and 7 are coded into the different levels, assigning 0 score if a respondent did not know or gave the wrong answer and 1 for every correct answer. Final knowledge score is a sum of all the individual item scores divided by the highest aggregated score (=8).

<sup>b)</sup> We assume that the awareness of park rules is more important for the compliance and conservation-oriented behaviour than the sole knowledge of the PTR existence and its location. Therefore, we have assigned different weights to the constituting questions of the conservation knowledge indicator.

<sup>c)</sup> Attitude is a summary evaluation, a level of a favour or disfavour towards an attitude object (Ajzen 2001). In our case attitude objects are tiger, other wild animals, forests or park management authority.

<sup>d)</sup> Collapsed to 1/0 format as 89.4% participants liked forests i.e. assigned score 4 to the statement.

<sup>e)</sup> Agency-related effects are used only for the second hypothesis as people who are not participating neither in JFM nor in ED most probably do not have so frequent encounters with the Reserve managers and therefore answers to these questions are not pertinent for this part of the sample.

<sup>f)</sup> Based on the work by Baral 2012. According to encapsulated interest theory trust is relational and can be defined as “a tripartite relationship in which A trusts B with respect to X” (Baral 2012, p.43)

Our hypotheses are as follows.

H1: People living in households that participate in any forest conservation programme (either JFM or ED) have more positive attitudes towards biodiversity and more conservation knowledge than people living in non-participant households. The rationale

behind this hypothesis is that involvement in the forest management might increase people's access to information and level of awareness, and this along with the received incentives and household assets, may change conservation knowledge and consequently affect biodiversity attitudes.

*H2: People living in households that participate in ED have more conservation-related knowledge, more positive attitudes towards biodiversity, and better relationship (attitudes and trust) towards PTR managers than the people living in the JFM-participating households.* The ED villages are closer to the reserve and they received substantial funding during India ED project. This might have left some legacy effect on their knowledge, attitudes and trust.

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#### Defining treatments, counterfactual and reasons to particiPATE

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For evaluating effects of participation, regardless of the programme type (H1), we created a treatment sample (1, N=212) that includes those households that a) received household assets (gas cylinder, pressure cooker, etc.) through either ED or JFM programs or b) were well aware of the village level activities executed through the aforementioned programs, even if they had not directly received any household assets. Households that did not have any knowledge about any of the two projects and never received any benefits, composed the control sample (0, N=91). We did not distinguish between households who received benefits before and households who also received benefits after the GEF/WB funding ended.

For evaluation of the effects of the participation and project type (H2), we analysed a subsample of the participants and evaluated differences in effects of the ED versus JFM. The first sample includes households participating under the ED program (1, N=118) and it is compared to a sample of households participating under the JFM program (0, N=81).

We assume that the decision to participate in either of the two programmes (H1) will be driven by different factors (H2). Therefore, we have two different sets of covariates to fit two propensity specification models. The choice of covariates is based on the theoretical considerations, previous research, administrative selection of the participants, and programmes' eligibility criteria. Moreover, we attempted to choose

covariates that are stable or deterministic with respect to time to make sure covariates are not affected by the treatment (Caliendo and Kopeinig 2008).

To model participation under H1 we combined nine covariates. Elements of human capital, such as household head gender, education and age, are all able to determine social status. Household size can determine labour availability and amount of benefits household can obtain from a forest. All these variables predicted participation in similar conservation interventions elsewhere (Agrawal and Gupta 2005; Baral and Heinen 2007; Parker and Thapa 2011; Hegde and Bull 2011) but were also found to influence conservation knowledge and attitudes (Heinen and Shrivastava 2009; Macura et al 2011; Olomí-Solà et al 2012; Carter et al 2014; Ruiz-Mallén et al 2014).

We hypothesise that economic capital, expressed through a household wealth index (possession of household durables and land, access to electricity), can determine project participation. On the one side, we expect very poor families to be more forest-dependent and probably more targeted by the ED or JFM projects. Nevertheless, the poor might have more difficulties in obtaining household assets, as they need to contribute to the asset value or more powerful society member may exclude them from getting provisions (elite capture). On the other side, wealthy families might not be interested in forest-related projects as they can draw incomes from other sources than the forests. Therefore, households with middle level of income might find it easiest to participate as they can afford assets provided by the projects. Economic condition has also been found to be a predictor of participation (Agrawal and Gupta 2005) and of conservation and wildlife attitudes (Infield 1988; Carter et al 2014).

To account for conflict management, received compensation for livestock loss or crop raiding was included in the model for testing H1. Frustration caused by the loss and no compensation for the costs might negatively influence willingness to participate in the conservation-oriented projects and decrease the institutional trust; result in negative attitudes towards conservation (Shibia 2010) and possibly lead to antagonistic behaviour (e.g. forest fires, wildlife poisoning) (Mukherjee 2009; White et al 2009).

Village distance to a closest forested area was included to account for forest dependency but also for disturbance by wild animals. This variable and closeness to the core were

also included in order to match households within similar locations (Ameha et al 2014) and therefore, the ones with similar social and economic background.

To account for the differences between the two projects (H2), we included ten covariates in the model. ED-participating households were slightly closer to the main roads and PTR, and better integrated to the market. These factors may open more opportunities for schooling and income generation. Apart from the head education and gender, literacy gap between men and women was accounted through the interaction term. As a proxy for household economic status we included cash income (per household size) and household electricity. Due to park regulations, grazing is curtailed, so difference in the livestock ownership was accounted in the model. Self-reported incidence of cattle kill by wild animals was included to proxy variability in potential for human-wildlife conflicts. Due to variation in market integration level, forest proximity was included to account for potential dissimilarities in forest dependence. Finally, participation in non-forest related groups was added to account for potential differences between ED- and JFM-participating households in the level of political activity.

Both models incorporated sampling weights (Dugoff et al 2014) to account for complex survey data and the variation in sampled village sizes (percentage of sampled households per village varied from 9.5% to 100%). Sampling weights were calculated as inverse probability of household selection into the sample:  $SW=N/n$ , where SW is sampling weight, N is total village population; n is number of sampled units (households).

The two models specified for estimation of PSs for the two samples are shown in **Table 4.2**.

**TABLE 4.2** MODELS FOR SPECIFICATION OF THE PSS FOR TESTING H1 (LOGIT) AND H2 (PROBIT). FOR H1, DEPENDENT VARIABLE DENOTES HOUSEHOLD PARTICIPATION IN EITHER OF THE TWO PROGRAMMES (YES=1, NO PARTICIPATION AT ALL=0). FOR H2, DEPENDENT VARIABLE IS PARTICIPATION IN ED (YES=1, PARTICIPATING IN JFM=0)

	<b>H1: Logit model</b>	<b>H2: Probit model</b>
<b>Variable</b>	<b>Coefficient (SD)</b>	<b>Coefficient (SD)</b>
<b>Household size</b>	-0.0936 (0.0821)	/
<b>Head gender (1=female)</b>	0.767*(0.462)	-0.949*** (0.312)
<b>Head education (1=has formal education)</b>	-0.0886(0.319)	-0.482*(0.251)
<b>Gender * education (interaction)</b>	/	0.105(0.611)
<b>Head age: 40 or older (1=yes)</b>	-0.465(0.328)	/
<b>Cash income per capita (1000 INR/person) b)</b>	/	0.390*(0.201)
<b>Household wealth index <sup>a)</sup></b>	0.207(0.162)	/
<b>Has electricity (1=yes)</b>	/	-0.673(0.471)
<b>Ownership of livestock (1=yes)</b>	/	-0.589** (0.285)
<b>Livestock killed by wild animals (1=yes)</b>	/	-0.919*** (0.228)
<b>Compensated for crop raiding or cattle lifting incidents (1=yes)</b>	1.299*** (0.331)	/
<b>Participation in non-forest related groups (1=yes)</b>	/	-0.499* (0.293)
<b>Distance to the nearest forested area (in km)</b>	-0.455** (0.186)	0.670*** (0.151)
<b>Distance to the core zone (1=0-2, 2=2-5, 3=5-14, 4= 14-19 km)</b>	-0.824*** (0.146)	/
<b>Sampling Weights</b>	-0.0232(0.0396)	-0.0305(0.0341)
<b>Constant</b>	3.987*** (0.774)	1.145** (0.554)

<b>Number of observations</b>	<b>302</b>	<b>199</b>
<b>Pseudo R-squared</b>	<b>0.183</b>	<b>0.319</b>

*Robust standard errors in parentheses. \*\*\*, \*\* and \* stands for significant at 1%, 5% and 10% level, respectively. a) Household wealth index is a standardized first component score generated by factor analysis and composed of following variables: dummy variables for ownership of durables and access to infrastructure (satellite, mobile, motor, TV, toilet, own source of water, electricity) and land size (in ha). b) INR stands for Indian Rupees, 1 INR= 0.017 US\$ as of April 2014*

Despite minor local differences, economic, social and institutional settings of all the sampled households are very similar as data come from villages located relatively close one to each other (approx. 70km radius), all adjoining forests with similar economic and cultural background. Moreover, all data were collected at the same time using similar survey tools, with the identical measures of effects for non-participants and participants of both ED and JFM. Therefore, our study design context complies with criteria for inference from observational studies with low (or no) bias (Heckman et al 1998; Ferraro and Miranda 2014).

## MATCHING ALGORITHM AND BALANCE DIAGNOSTICS

We iteratively tested performances of three different matching algorithms for each model: nearest neighbour matching with replacement and 3 neighbours (NNM-n3); NNM-n3 with caliper; and Epanechnikov kernel matching (with band-width=0.06). We checked how each of these three matching algorithms balanced distribution of covariates used in the PS specification to understand if we succeeded in creating plausible counterfactual. Specifically, we examined if 1) matching reduced mean standardized bias for each variable before and after matching; 2) model for the specification of PSs has very low explanatory power after matching; 3) likelihood-ratio tests of joint covariate insignificance are not significant; 4) number of the cases outside of common support region (i.e. dropped treatment observations whose PS is higher than the maximum or lower than the minimum PS of the comparing cases) is low or zero (Sianesi 2004). We run all analyses with the user-written package psmatch2 (Leuven and Sianesi 2003) in Stata12 (StataCorp 2011). For both the models, the NNM-n3

showed the best performance in terms of lowest variance and mean standardized bias after the matching, and the following analysis will be based on the results obtained by this matching algorithm only. Propensity score for H1 was specified using probit model as it had the best matching performances. For H2, logistical regression was selected as it balanced covariates better and had fewer cases outside of support region than a probit model (**Annexes 15** and **16** contain balancing diagnostics for both models).

## Results

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### DESCRIBING THE UNMATCHED SAMPLE

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**Table 4.3** shows the descriptive statistics of the variables used in the analyses for the unmatched samples.



**TABLE 4.3** DESCRIPTIVE STATISTICS FOR UNMATCHED SAMPLES. MEAN VALUES WITH STANDARD DEVIATIONS (SD) IN PARENTHESES ARE SHOWN FOR CATEGORICAL AND CONTINUOUS VARIABLES; AND PERCENTAGE FOR DUMMY VARIABLES

Variable description		Whole Sample (N=302)		Participating households (N=210)		Non-participating households (N=92)		JFM households (N=81)		ED households (N=118)	
		Mean (SD)/ Freq (%)		Mean (SD)/ Freq (%)		Mean (SD)/ Freq (%)		Mean (SD)/ Freq (%)		Mean (SD)/ Freq (%)	
<b>Household level</b>	Household size	5.364 (1.775)		5.295 (1.716)		5.522 (1.901)		5.346 (1.675)		5.229 (1.814)	
	Head gender (1=female)	15.23%		17.14%		10.87%		27.16%***		11.02%***	
	Head formal education level (0=none, 1=1st to 4th grade, 2=5th to 10th, 3=11th to University)	0=45.03% 1=16.89% 2=31.46% 3=6.62%	1 (1.017)	0=47.62 1=14.76% 2=31.43% 3=6.19%	0.962 (1.021)	0=39.13% 1=21.74% 2=31.52% 3=7.61%	1.076 (1.008)	0=44.44% 1=20.99% 2=30.86% 3=3.70%	0.938 (0.953)	0=52.54% 1=10.17% 2=29.66% 3=7.63%	0.924 (1.063)
	Head formal education (1=yes)	54.64%		51.90%		60.87%		55.56%		46.61%	
	Compensated for crop raiding or cattle lifting incidents (at least once) (1=yes)	36.42%		44.29%***		18.48%***		43.21%		48.21%	
	Household wealth index	0.017 (1.013)		0.063** (0.995)		-0.088** (1.052)		0.021 (0.971)		0.104 (0.997)	
	Cash income per capita (1000 INR/person)	0.873 (1.365)		0.917*** (1.396)		0.772*** (1.293)		0.569*** (0.571)		1.201*** (1.749)	
	Livestock ownership (1=yes)	74.83%		77.14%		69.57%		87.65%***		66.1%***	

	Electricity in the household (1=yes)	90.73%		91.90%		88.04%		96.3%**		89.83%**	
	Livestock killed by wild animals (1=yes)	38.08%		35.71%		43.48%		56.79%***		16.1%***	
	Participation in other non-forest related groups (1=yes)	14.90%		15.24%		14.13%		24.69%**		10.17%**	
<b>Community level</b>	Distance to the nearest forested area (in km)	1.340 (0.695)		1.316*** (0.738)		1.395*** (0.584)		1.048*** (0.403)		1.505*** (0.850)	
	Distance to the core zone (1=0-2, 2=2-5, 3=5-14, 4= 14-19 km)	1=28.48% 2=31.46% 3=20.53% 4=19.54%	2.311 (1.086)	1=36.19% 2=37.14% 3=10.48% 4=16.19%	2.066*** (1.056)	1=10.87%, 2=18.48%, 3=43.48%, 4=27.17%	2.869*** (0.940)	2=35.80% 3=27.16% 4=37.04%	3.012*** (0.859)	1=61.02% 2=38.98%	1.390** * (0.489)
<b>Effects</b>	Satisfaction with the PTR authority (1=not at all, 3=neutral, 5=very much) <sup>a)</sup>	1=13.58% 2=29.43% 3=19.62% 4=9.43% 5=92%	2.887 (1.201) (N=265)	1=14.36% 2=28.72% 3=17.44% 4=29.74% 5=9.74%	2.918 (1.245) (N=195)	1=11.43%, 2=31.43%, 3=25.71%, 4=28.57%, 5=2.86%	2.8 (1.071) (N=70)	1=7.41%, 2=28.40% 3=18.52% 4=28.40% 5=17.28%	3.198*** (1.239)	1=19.49% 2=28.81% 3=17.80% 4=28.81% 5=5.08%	2.712** * (1.220)
	Trust in the PTR authority (1=not at all, 3=neutral, 5=very much) <sup>a)</sup>	1=16.79% 2=28.21 3=17.14 % 4=34.29% 5=3.57%	2.796 (1.184) (N=280)	1=18.23% 2=28.08% 3=14.78% 4=34.98% 5=3.94%	2.783 (1.216) (N=203)	1=12.99%, 2=28.57%, 3=23.38%, 4=32.47%, 5=2.60%	2.831 (1.105) (N=77)	1=11.11% 2=32.10% 3=9.88%, 4=43.21% 5=3.70%	2.963* (1.167)	1=25.42% 2=23.73% 3=15.25% 4=31.36% 5=4.24%	2.653* (1.277)
	Conservation knowledge Score (0-1)	0.352		0.424***		0.189***		0.147***		0.637***	

Like tiger (1=not at all, 3=neutral, 5=very much)	1=2.65% 2=21.19% 3=12.25% 4=61.59% 5=2.32%	3.397 (0.934)	1=3.33%, 2=20.95% 3= 10.48% 4=62.86% 5=2.38%	3.4 (0.955)	1=1.09%, 2=21.74%, 3=16.30%, 4=58.70%, 5=2.17%	3.391 (0.889)	1=3.70%, 2=14.81%, 3=13.58%, 4=61.73%, 5=6.17%	3.519 (0.950)	1=3.39% 2=22.88% 3=6.78% 4=66.95% 5=0%	3.373 (0.95)
Like other wild animals (1=not at all, 3=neutral, 5=very much)	1=3.97% 2=25.17% 3=16.56% 4=51.66% 5=2.65%	3.238 (0.989)	1=4.76%, 2=24.76%, 3=16.19%, 4=51.43%, 5=2.86%	3.229 (1.009)	1=2.17%, 2=26.09%, 3=17.39%, 4=52.17%, 5=2.17%	3.261 (0.948)	1=6.17%, 2=24.69%, 3=20.99%, 4=44.44%, 5=3.70%	3.148 (1.038)	1=4.24% 2=23.73% 3=11.86% 4=58.47% 5=1.69%	3.297 (0.989)
Like forest (1=yes)	98.35%		99.05%		96.74 %		100.00%		98.31%	

\*\*\*, \*\* and \* refer to likelihood ratio Chi2 tests or Wilcoxon rank-sum tests significant at the 1%, 5% and 10% level respectively when comparing mean values. a) Not pertinent for the overall sample and for the sample of non-participants



In the overall sample, average households size was 5.36 ( $\pm 1.775$ ) with 15.23% of female heads. A little over 45% household heads did not have formal education. 38.08% reported that wild animals killed their livestock and 36.42% of the households stated they received compensation (at least once) for a cattle lifting or crop raiding. Household wealth index was low ( $0.017 \pm 1.013$ ). Average monthly cash income was 873INR per person in a household. The majority of families owned livestock (74.83%) and had electricity in their house (90.73%). Only small percentage of households participated in non-forest related groups (14.9%). 59.94% of sampled villages was located within 5km from the core zone. Average village distance to the nearest forested area was 1.34km ( $\pm 0.695$ ). Satisfaction and trust towards park authorities was low to neutral (2.9 ( $\pm 1.201$ ; N=265) and 2.8 ( $\pm 1.184$ ; N=280) respectively), but majority of non-participants could not give response to these questions. Conservation knowledge was low and the average score was 0.352 out of 1. Biodiversity attitudes were positive: 63.91% of respondents have positive attitudes towards tigers (scores 4 and 5 together), 54.31% have positive attitudes towards other wildlife (scores 4 and 5 together), and 98.35% have positive attitudes towards forests (assigned max score 1; this category was collapsed to 1/0 format as 89.4% participants liked forests i.e. assigned score 4 to the statement).

Participant households had significantly higher household wealth index and the cash income than the non-participant households (no respondents reported ED or JFM to be their primary employment source). Higher percentage of participating households that were compensated for cattle or crop loss, were significantly more distant from a forest and were closer to the PTR core zone. Unmatched sample of participant households had significantly higher knowledge scores (0.434) than the non-participant households (0.189). Other effects were not significantly different.

ED-participant households had significantly smaller percentage of female heads, livestock ownership, livestock kills and lower proportion of participation in non-forest related groups than the JFM-participant households. Significantly, lower number of ED households had electricity. ED-participating households were significantly closer to the core zone; had higher cash income and were more distant from the nearest forested area than JFM households. In the ED participating households satisfaction and trust towards

park authorities was significantly lower and conservation knowledge was significantly higher than in the JFM households. Biodiversity attitudes were not significantly different.

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**AVERAGE EFFECT OF PARTICIPATION COMPARED TO NO PARTICIPATION (H1)**

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The only significant difference found between matched participants and non-participants is in conservation knowledge score (0.144, St. Error=0.0517, t-stat=2.78) (Table 4.4). Participant knowledge score was on average low (0.419 out of 1), but still almost two times higher to non-participants knowledge score (0.276).

**TABLE 4.4** EFFECT OF PARTICIPATION (IN EITHER ED OR JFM) VERSUS NO PARTICIPATION (H1) FOR FOUR MEASURED EFFECTS (ATT)<sup>A</sup>. MEAN DIFFERENCES ARE SHOWN FOR BOTH MATCHED AND UNMATCHED SAMPLES

<b>Variable</b>	<b>Sample</b>	<b>Participants</b>	<b>Non-participants</b>	<b>Difference</b>	<b>Standard Errors</b>	<b>T-stat</b>
<b>Conservation knowledge score (0-1)</b>	Unmatched	0.424	0.189	0.235	0.0377	6.23
	<b>ATT</b>	0.419	0.276	0.144	0.0517	2.78***
<b>Like tiger (1=not at all, 3=neutral, 5=very much)</b>	Unmatched	3.400	3.391	0.009	0.1169	0.07
	<b>ATT</b>	3.410	3.178	0.232	0.1740	1.33
<b>Like other wild animals (1=not at all, 3=neutral, 5=very much)</b>	Unmatched	3.229	3.261	-0.032	0.1239	-0.26
	<b>ATT</b>	3.225	3.023	0.202	0.1848	1.09
<b>Like forest (1=yes)</b>	Unmatched	0.990	0.967	0.023	0.0160	1.45
	<b>ATT</b>	0.990	0.990	0.000	0.0339	0

\*\*\* stands for significant at 1% level. a) 10 treated cases (3.3 % of the total sample) were dropped due to a lack of common support and were not included into estimation of the ATT

Differences in conservation attitudes towards tigers, other wildlife and forests were insignificant too, but on average biodiversity attitudes were positive. For participating households, attitudes towards tiger and other wild animals averaged 3.4 and 3.3 (out of 5) respectively. In non-participating households, attitudes towards tiger and other wildlife were somewhat positive and on average insignificantly lower (3.178 and 3.023 respectively). Attitudes towards forests were consistently very positive and in both samples 99% of respondents stated that they like forests.

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**AVERAGE EFFECTS OF PARTICIPATION IN ED COMPARED TO JFM (H2)**

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The only significant difference between households participating in ED and JFM in the matched sample (**Table 4.5**) relates to their knowledge about conservation. Here the difference is even higher than the one from H1 (mean=0.411, St. Error=0.0562, t-stat=7.3). Average knowledge score of ED participating households was relatively high (0.633), while the one of JFM-participating households was almost three times lower (0.222).

**TABLE 4.5** EFFECT OF HOUSEHOLD PARTICIPATION IN ED VERSUS PARTICIPATION IN JFM (H2) FOR MEASURED EFFECTS (ATT)<sup>A)</sup>. MEAN DIFFERENCES ARE SHOWN FOR BOTH MATCHED AND UNMATCHED SAMPLES

Variable	Sample	ED-participating households	JFM-participating households	Difference	Standard Errors	T-stat
<b>Satisfaction with the PTR authority (1=not at all, 3=neutral, 5=very much)</b>	Unmatched	2.712	3.198	-0.486	0.1772	-2.74
	ATT	2.723	3.179	-0.455	0.3214	-1.42
<b>Trust in the PTR authority (1=not at all, 3=neutral, 5=very much)</b>	Unmatched	2.653	2.963	-0.310	0.1780	-1.74
	ATT	2.661	2.923	-0.262	0.3125	-0.84

<b>Knowledge score (0-1)</b>	Unmatched	0.637	0.147	<i>0.490</i>	0.0309	15.84
	ATT	0.633	0.222	<i>0.411</i>	0.0562	7.3***
<b>Like tiger (1=not at all, 3=neutral, 5=very much)</b>	Unmatched	3.373	3.519	<i>-0.146</i>	0.1371	-1.06
	ATT	3.438	3.476	<i>-0.039</i>	0.2465	-0.16
<b>Like other wild animals (1=not at all, 3=neutral, 5=very much)</b>	Unmatched	3.297	3.148	<i>0.148</i>	0.1457	1.02
	ATT	3.295	3.042	<i>0.253</i>	0.2521	1
<b>Like forest (1=yes)</b>	Unmatched	0.983	1.000	<i>-0.017</i>	0.0144	-1.18
	ATT	0.982	1.000	<i>-0.018</i>	0.0126	-1.42

\*\*\* stands for significant at 1% level. a) 6 cases (3% of the total sample) were dropped from this comparison due to the lack of common support and were not included into estimation of the ATT

JFM-participating households were slightly (but insignificantly) more satisfied and trustworthy towards the PTR authorities, however those differences in satisfaction (0.455, St. Error=0.321, t-stat=1.42) and trust (0.262, St. Error 0.312, t-stat=0.84) towards tiger reserve authorities were not statistically significant.

As for the case of H1, attitudes towards forest, tiger and other wildlife were positive and negligibly higher with JFM-participating households, but these differences were not statistically significant.

## Discussion

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### DO LOCAL PEOPLE'S CONSERVATION KNOWLEDGE AND BIODIVERSITY ATTITUDES DIFFER BETWEEN PARTICIPANTS AND NON-PARTICIPANTS?

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We found that participation in either of the programmes (H1) only had an effect on the level of conservation knowledge, but did not affect biodiversity attitudes. Furthermore, the magnitude of the effect was low as knowledge about conservation and park's regulations, existence and location were relatively weak in the matched subsamples. Perhaps our results reflect the lower funding currently invested in the projects. Lower



conservation awareness concurs with other research, also reporting that knowledge was found to be inversely associated to a residence distance from a PA (Ormsby and Kaplin 2005; Olomí-Solà et al 2012).

Although most respondents live in the buffer zone, they could not define the buffer zone, and only 20.95% participants and 10.87% non-participants could actually provide any answer. Administrative changes connected to the buffer zone created a lot of confusion as locals thought that they would be relocated (interview with the local villager, Pench Tiger Reserve- buffer, February 2014). Moreover, according to our interviewees, confusion about the operational rules and regulations in the buffer zone existed also among the PTR officers (Interview with the forest officer, Pench Tiger Reserve -core, March 2014). To decrease the potential escalation of the local conflicts, more efforts should be directed towards awareness campaigns in all the villages surrounding the buffer.

Although we found no significant difference between the two matched samples, our data shows that attitudes towards biodiversity were on average positive, despite the high costs incurred to locals due to constant incidences of crop riding and cattle lifting (reported by 79.47% and 38.08% sampled households respectively). These are encouraging results as high locally borne costs were found to negatively influence wildlife attitudes in other locations (Heinen and Shrivastava 2009; Carter et al 2014).

Interestingly, prevalent perception among interviewees is that crop riding intensified as well as number of wild animals due to good protection and enforcement and banned resource extraction. So there is a trade off between conservation and human livelihoods. ED provisions are perceived not to be sufficient to offset these big costs connected to both access restriction and agricultural losses (ED committee member, February 2014, Pench Tiger Reserve-buffer). This every-day fight for subsistence does not allow free time for any other activities (including participation in ED or JFM meetings) (forest villager, January, 2014, Pench Tiger Reserve-buffer).

Perhaps more should be invested in the compensatory measures or awareness about villagers' rights to compensation. Majority of interviewees, both ED committee

members and other villagers, complained about lack of compensation. However, interviewees did not know who is responsible for giving compensation, and they usually stopped asking for it after several failed attempts. Park gives compensation only for cattle lifting by wildlife, but revenue department is responsible for crop raiding compensations in revenue villages. However, revenue department was perceived to be very slow in following the procedure for damage assessment and paying the costs back. Nevertheless, this situation also creates dissatisfaction with the Forest Department, as there is a frequent misconception that they are in charge for such compensation. Recently, government of Madhya Pradesh enacted Public Service Guarantee Act, 2010 increasing efficiency of public administration and regulating the response of public servants to general public within 30 days. This should have increased response rate for the compensation but local people are unaware of these changes and they are very frequently stating how they stopped applying for the compensation after so many failed attempts (group Interview with villagers, February 2014, Pench Tiger Reserve-buffer). Finally, compensation is provided only if the damage area is above 1 acre, which does not have much sense for small farmers (whole field can be 1 -2 acres) (group interview with villagers, March 2014, Pench Tiger Reserve-buffer).

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DOES THE TYPE OF PARTICIPATORY INTERVENTION - JFM OR ED –  
MATTERS IN TERMS OF PEOPLE’S CONSERVATION KNOWLEDGE,  
BIODIVERSITY ATTITUDES, TRUST AND SATISFACTION WITH THE  
MANAGEMENT AUTHORITIES?

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We found no difference between the ED and JFM participating households (H2) except in the level of conservation knowledge. According to our hypothesis, ED households have higher levels of knowledge than the JFM participating households. This finding can be explained, not only by the ED project activities, but also by the core zone proximity. Namely, while testing H2, we could not control for the distance to the core as this variable perfectly predicted participation. This can mean that higher awareness of the local forest-dependent dwellers perhaps come with the higher dependence on the park and more frequent (perhaps unwanted) encounters with the park staff, rather by the ED project activities only.

When asked about the trust and satisfaction with the park authorities, ED-participating households assigned lower scores compared to the JFM households, but these differences were not statistically significant. Overall, participants of ED and JFM were moderately unsatisfied to ambivalent towards PTR authorities. Slightly lower scores were assigned to the statements on trust towards PTR authorities. Low level of compensation rates and the sense of extended Forest Department control through ED or JFM committees (Véron and Fehr 2011) might explain moderate distrust of locals towards Reserve stewards. Low level of interactions with the local people and low awareness of the park might also be a plausible explanation for the ambivalence regarding satisfaction, as our first finding suggests.

We can interpret some of these results in the light of the design of participatory policies. Both, the JFM and ED are designed as participatory programmes, but still, they are implemented in a very top-down way. The idea that authoritarian governmental departments are placed in charge to implement participatory strategies (Guha 1997) was not proven to lead to long-lasting legacy of such projects (Gubbi et al 2009). According to Vemuri (2008) attitudinal changes of FD staff to prepare for policy that advocates social inclusion into hierarchical system of forest management did not happen. This concurs with our field observation that villagers from our sample identify ED project with the actual FD; furthermore, ED is seen as one more way of control of the forest access. Scholars have interpreted such types of participatory projects as a state-driven territorialisation (Véron and Fehr 2011) and recentralizing while decentralising (Ribot et al 2006). Therefore, the imposed participation (if any) and top-down decentralization seems to have failed in creating better rapport between locals and the Reserve authorities. This is reflected in the projects' functioning as well. Namely, meetings, as arenas to negotiate and make decisions, in both JFM and ED, are nowadays non-existent or very rare (once or twice per year), as perhaps there is neither interest nor time for participation. Moreover, benefits and provisions under ED once abundant (with the bigger funding) are now very rare. This creates frustration due to raised expectations. When provisions are distributed (once per year/two years) internal conflicts are frequent among local people, as there are not enough provisions for everyone in the village (e.g. 10 gas cylinders per a village of 300 households). On the other hand, local demands (for example, for fences against crop raiding) are frequently not fulfilled. EDC members are

in-between local people and FD and so, they are often blamed for unfulfilled demands and unequal benefits distribution, which may create intra-community conflicts. Giving incentives can change people's values (García-Amado et al 2013) and if not executed properly, incentive-based conservation can exaggerate local conflicts and existing differences, prompting the elite capture, excluding poor and marginalized parts of the society (Balooni et al 2010) rather than creating positive behavioural changes towards conservation.

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## STUDY LIMITATIONS

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Despite careful design, our study might suffer from different sources of bias. As with every matching, our results are dependent on the PS model specification and observed covariates. When alternating model specifications, our results remained robust, except tiger attitudes variable that was changing significance for H1-related model. We might not be aware and might not include all the covariates that simultaneously influence the participation and the measured effects. We did not have the baseline data and collected recall data did not seem reliable enough to precisely capture the past. Our assessment is based on the respondents' perceptions that might be interpreted as less objective data. Nevertheless, we believe that conservation knowledge, being built of 7 different questions, represents a robust indicator of "cognitive difference" between participants (both ED and JFM) and non-participants. Measured attitudes are less robust, but are still a valid assessment of (current) relations among local people, surrounding biodiversity and resource stewards (White et al 2009). Finally, interviewees tend to give socially desirable answers and we might have over- or under-reported the results. Nevertheless, we have taken all the necessary measures to gain interviewees' trust (we clearly explained research objectives, guaranteed and respected confidentiality and anonymity, asked sensitive questions using neutral wording), so they feel more comfortable expressing their genuine opinions.

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## Conclusions

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According to recent tiger census from 2014 (Jhala et al 2015) tiger numbers increased in India for 30.5% (with increase recorded in Madhya Pradesh). However, threats to wild tigers are still intensifying (Wikramanayake et al 2010) especially outside of PA

networks, and lessons learned from evaluations of interventions that may affect conservation success around tiger reserves can be critical for the effective tiger conservation. Due to lack of space for both tigers and humans, this increase in tiger numbers will also mean more human –wildlife conflicts (Rastogi et al 2012), so there is a need to understand which people-centred approaches to conflict resolution have a positive impact.

In spite of huge investments during the WB/GEF project, this study found negligible effect of participation in the two state-driven forest conservation and management projects on local people knowledge, and there were no effects on the attitudes towards biodiversity. Moreover, the type of the project also did not seem to make a difference for people’s attitudes, satisfaction and trust towards reserve stewards, except for the conservation knowledge. These findings might be due to the low amount of current funding flows in ED, or lack of genuine participation and no decision-making power vested in local people. The exact role and effectiveness of participation (in state-driven decentralization models) for improvement of long-term conservation outcomes remains yet to be clarified with future research incorporating measures of ecological outcomes in the evaluations. Nevertheless, our findings suggest that the participatory rhetoric of the policies has to translate into the practice first, as practitioners need to understand that the genuine social inclusion may be necessary for the sustainability of long-lasting efforts for tiger survival (Tiger Task Force 2005). More genuine, grass-root and not imposed participation, combined with awareness campaigns, higher and targeted compensation, carefully listening to local needs and incorporating local opinions in the management planning, are all needed to build local social capital and increase people’s interest in conservation, their knowledge and trust towards conservation practitioners. Finally, local context and existing power relations has to be accounted for in participatory efforts, as no simple blueprint approaches are proven to lead to conservation success.

## References

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- Agarwal B (2001) Participatory Exclusions, Community Forestry, and Gender: An Analysis for South Asia and a Conceptual Framework. *World Dev* 29:1623–1648. doi: 10.1016/S0305-750X(01)00066-3
- Agrawal A, Gupta K (2005) Decentralization and Participation: The Governance of Common Pool Resources in Nepal's Terai. *World Dev* 33:1101–1114. doi: 10.1016/j.worlddev.2005.04.009
- Ajzen I (2001) Nature and operation of attitudes. *Annu Rev Psychol* 52:27–58.
- Ajzen I (1991) The theory of planned behavior. *Organ Behav Hum Decis Process* 50:179–211.
- Ameha A, Nielsen OJ, Larsen HO (2014) Impacts of access and benefit sharing on livelihoods and forest: Case of participatory forest management in Ethiopia. *Ecol Econ* 97:162–171.
- Arjunan M, Holmes C, Puyravaud J-P, Davidar P (2006) Do developmental initiatives influence local attitudes toward conservation? A case study from the Kalakad-Mundanthurai Tiger Reserve, India. *J Environ Manage* 79:188–97. doi: 10.1016/j.jenvman.2005.06.007
- Badola R (2000) Local people amidst the changing conservation ethos: relationships between people and protected areas in india. *Decentralization Devolution For. Manag. Asia Pacific*
- Balooni K, Lund JF, Kumar C, Inoue M (2010) Curse or blessing? Local elites in Joint Forest Management in India's Shiwaliks. *Int J Commons* 4:707–728.
- Baral N (2012) Empirical analysis of factors explaining local governing bodies' trust for administering agencies in community-based conservation. *Environ Manage* 103:41–50. doi: 10.1016/j.jenvman.2012.02.031
- Baral N, Heinen JT (2007) Decentralization and people's participation in conservation: a comparative study from the Western Terai of Nepal. *Int J Sustain Dev World Ecol* 14:520–531.

- Bauch SC, Sills EO, Pattanayak SK (2014) Have We Managed to Integrate Conservation and Development? ICDP Impacts in the Brazilian Amazon. *World Dev.* doi: 10.1016/j.worlddev.2014.03.009
- Bernard HR (2006) *Research Methods In Anthropology Qualitative And Quantitative Approaches*, 4th edn. AltaMira Press, Oxford
- Bhattacharya P, Pradhan L, Yadav G (2010) Joint forest management in India: Experiences of two decades. *Resour Conserv Recycl* 54:469–480. doi: 10.1016/j.resconrec.2009.10.003
- Bouma J, Ansink E (2013) The role of legitimacy perceptions in self-restricted resource use: A framed field experiment. *For Policy Econ* 37:84–93. doi: 10.1016/j.forpol.2013.01.006
- Bouma J, Bulte E, van Soest D (2008) Trust and cooperation: Social capital and community resource management. *J Environ Econ Manage* 56:155–166. doi: 10.1016/j.jeem.2008.03.004
- Brechin SR, Wilshusen PR, Fortwangler CL, West PC (2002) Beyond the square wheel: toward a more comprehensive understanding of biodiversity conservation as social and political process. *Soc & Natural Resour* 15:41–64.
- Caliendo M, Kopeinig S (2008) Some practical guidance for the implementation of propensity score matching. *J Econ Surv* 22:31–72.
- Carter NH, Riley SJ, Shortridge A, et al (2014) Spatial assessment of attitudes toward tigers in Nepal. *Ambio* 43:125–37. doi: 10.1007/s13280-013-0421-7
- Census of India (2011) List of villages/towns. [http://www.censusindia.gov.in/\(S\(thfeo255jrszfnbr10h3bzfr\)\)/2011census/Listofvillagesandtowns.aspx](http://www.censusindia.gov.in/(S(thfeo255jrszfnbr10h3bzfr))/2011census/Listofvillagesandtowns.aspx). Accessed 18 Dec 2014
- Cooke B, Kothari U (2001) *Participation: The new tyranny?* Zed Books, London
- Damodaran A, Engel S (2003) *Joint Forest Management in India: Assessment of Performance and Evaluation of Impacts*. 44.
- Dejouhanet L (2010) Participatory eco-development in question: The case of the Parambikulam wildlife sanctuary in South India. *J Alp Res* 98:83–96.

- Drydyk J (2005) When is Development More Democratic? *J Hum Dev* 6:247–267. doi: 10.1080/14649880500120566
- Dugoff EH, Schuler M, Stuart EA (2014) Generalizing observational study results: applying propensity score methods to complex surveys. *Health Serv Res* 49:284–303. doi: 10.1111/1475-6773.12090
- Ferraro PJ (2012) Experimental Project Designs in the Global Environmental Facility: Designing projects to create evidence and catalyze investments to secure global environmental benefits.(Global Environment Facility/United Nations Environment Programme, Washington, DC.).
- Ferraro PJ, Miranda JJ (2014) The performance of non-experimental designs in the evaluation of environmental programs: A design-replication study using a large-scale randomized experiment as a benchmark. *J Econ Behav Organ* 1–22. doi: 10.1016/j.jebo.2014.03.008
- Frick J, Kaiser FG, Wilson M (2004) Environmental knowledge and conservation behavior: exploring prevalence and structure in a representative sample. *Pers Individ Dif* 37:1597–1613. doi: 10.1016/j.paid.2004.02.015
- Government of India (1988) The National Forest Policy, Resolution No. 3-1/86-FP. 10.
- Gubbi S, Linkie M, Leader-Williams N (2009) Evaluating the legacy of an integrated conservation and development project around a tiger reserve in India. *Environ Conserv* 35:331–339. doi: 10.1017/S0376892908005225
- Guha R (1997) The authoritarian biologist and the arrogance of anti-humanism. *Ecologist* 27:14–21.
- Hawdon J (2008) Legitimacy, Trust, Social Capital, and Policing Styles: A Theoretical Statement. *Police Q* 11:182–201. doi: 10.1177/1098611107311852
- Heckman J, Ichimura H, Smith J, Todd P (1998) Characterizing Selection Bias Using Experimental Data. *Econometrica* 66:1017–1098.
- Hegde R, Bull GQ (2011) Performance of an agro-forestry based Payments-for-Environmental-Services project in Mozambique: A household level analysis. *Ecol Econ* 71:122–130. doi: 10.1016/j.ecolecon.2011.08.014



- Heinen JT, Shrivastava RJ (2009) An analysis of conservation attitudes and awareness around Kaziranga National Park, Assam, India: implications for conservation and development. *Popul Environ* 30:261–274. doi: 10.1007/s11111-009-0086-0
- Hildyard N, Hegde P, Wolvekamp P, Reddy S (2001) Pluralism, participation and power: joint forest management in India. In: Cooke B, Kothari U (eds) *Particip. new tyranny?* Zed Books, London, pp 56–71
- Infield M (1988) Attitudes of a rural community towards conservation and a local conservation area in Natal, South Africa. *Biol Conserv* 45:21–46. doi: 10.1016/0006-3207(88)90050-X
- Jhala Y V., Qureshi Q, Gopal R (2015) *Status of Tigers in India, 2014*. National Tiger Conservation Authority, New Delhi and The Wildlife Institute of India, Dehradun.
- Jumbe C, Angelsen A (2006) Do the poor benefit from devolution policies? Evidence from Malawi’s forest co-management program. *Land Econ* 82:562–581.
- Kumar K, Singh NM, Kerr JM (2014) Decentralisation and democratic forest reforms in India: Moving to a rights-based approach. *For Policy Econ*. doi: 10.1016/j.forpol.2014.09.018
- Kumar S (2002) Does “Participation” in Common Pool Resource Management Help the Poor? A Social Cost – Benefit Analysis of Joint Forest Management in Jharkhand, India. *World Dev* 30:763–782.
- Leuven E, Sianesi B (2003) *psmatch2*: Stata module to perform full Mahalanobis and propensity score matching, common support graphing, and covariate imbalance testing. Stata: `ssc install psmatch2`.
- Macura B, Zorondo-Rodríguez F, Grau-Satorras M, et al (2011) Local Community Attitudes toward Forests Outside Protected Areas in India. Impact of Legal Awareness, Trust, and Participation. *Ecol Soc* 16:16.
- Madhya Pradesh Forest Department (2014) *Joint Forest Management*. <http://www.mpforest.org/jointforestmanagement.html#8>. Accessed 18 Dec 2014
- Mahanty S (2002) Conservation and Development Interventions as Networks: The Case of the India Ecodevelopment Project, Karnataka. *World Dev* 30:1369–1386. doi: 10.1016/S0305-750X(02)00039-6

- Ministry of Environment and Forests (MOEF) (2007) Guidelines to notify critical wildlife habitat including constitution and functions of Expert Committee, scientific information required and resettlement and matters incidental thereto. 1–6.
- Miteva D, Pattanayak SK, Ferraro PJ (2012) Evaluation of biodiversity policy instruments: what works and what doesn't? *Oxford Rev Econ Policy* 28:69–92. doi: 10.1093/oxrep/grs009
- Morgan-Brown T, Jacobson SK, Wald K, Child B (2010) Quantitative assessment of a Tanzanian integrated conservation and development project involving butterfly farming. *Conserv Biol* 24:563–72. doi: 10.1111/j.1523-1739.2009.01433.x
- Mukherjee A (2009) Conflict and coexistence in a national park. *Econ Polit Wkly* 44:52–59.
- Murali KS, Rao RJ, Ravindranath NH (2002) Evaluation studies of Joint Forest Management in India : a review of analytical processes. 1:184–199.
- Nayak PK, Berkes F (2008) Politics of co-optation: community forest management versus Joint Forest Management in Orissa, India. *Environ Manage* 41:707–18. doi: 10.1007/s00267-008-9088-4
- Olomí-Solà M, Zorondo-Rodríguez F, Triguero-Mas M, et al (2012) Local Residents' Knowledge about Protected Areas: A Case Study in Dandeli Wildlife Sanctuary, India. *Soc Nat Resour* 25:410–420. doi: 10.1080/08941920.2011.591034
- Ormsby A, Kaplin BA (2005) A framework for understanding community resident perceptions of Masoala National Park, Madagascar. *Environ Conserv* 32:156–164. doi: 10.1017/S0376892905002146
- Parker P, Thapa B (2011) Distribution of benefits based on household participation roles in decentralized conservation within Kanchenjunga Conservation Area Project, Nepal. *Environ Dev Sustain* 13:879–899. doi: 10.1007/s10668-011-9296-6
- Pench Tiger Reserve (2012) Welcome to PTR (Unpublished presentation).
- Persha L, Agrawal A, Chhatre A (2011) Social and ecological synergy: local rulemaking, forest livelihoods, and biodiversity conservation. *Science* 331:1606–8. doi: 10.1126/science.1199343

- Rastogi A, Hickey GM, Badola R, Hussain SA (2012) Saving the superstar: A review of the social factors affecting tiger conservation in India. *J Environ Manage* 113:328–340. doi: 10.1016/j.jenvman.2012.10.003
- Rastogi A, Thapliyal S, Hickey GM (2014) Community Action and Tiger Conservation: Assessing the Role of Social Capital. *Soc Nat Resour* 1–17. doi: 10.1080/08941920.2014.917753
- Reyes-Garcia V, Ruiz-Mallen I, Porter-Bolland L, et al (2013) Local understandings of conservation in southeastern Mexico and their implications for community-based conservation as an alternative paradigm. *Conserv Biol* 27:856–65. doi: 10.1111/cobi.12056
- Ribot JC, Agrawal A, Larson AM (2006) Recentralizing While Decentralizing: How National Governments Reappropriate Forest Resources. *World Dev* 34:1864–1886. doi: 10.1016/j.worlddev.2005.11.020
- Rico García-Amado L, Ruiz Pérez M, Barrasa García S (2013) Motivation for conservation: Assessing integrated conservation and development projects and payments for environmental services in La Sepultura Biosphere Reserve, Chiapas, Mexico. *Ecol Econ* 89:92–100. doi: 10.1016/j.ecolecon.2013.02.002
- Rosenbaum P, Rubin D (1983) The central role of the propensity score in observational studies for causal effects. *Biometrika* 70:41–55.
- Ruiz-Mallén I, Newing H, Porter-Bolland L, et al (2014) Cognisance, participation and protected areas in the Yucatan Peninsula. *Environ Conserv* 41:265–275. doi: 10.1017/S0376892913000507
- Schultz WP (2002) Knowledge, Information, and Household Recycling: Examining the Knowledge-Deficit Model of Behavior Change. In: Dietz T, Stern PC (eds) *New Tools Environ. Prot. Educ. Information, Volunt. Meas.* Thomas, Committee. Committee on the Human Dimensions of Global Change, National Research Council, p 368
- Shibia M (2010) Determinants of attitudes and perceptions on resource use and management of Marsabit National Reserve, Kenya. *J Hum Ecol* 30:55–62.

- Shyamsundar P, Ghate R (2014) Rights, Rewards, and Resources: Lessons from Community Forestry in South Asia. *Rev Environ Econ Policy* 8:80–102. doi: 10.1093/reep/ret022
- Sianesi B (2004) An evaluation of the Swedish system of active labor market programs in the 1990s. *Rev Econ Stat* 86:133–155.
- Singh VRR, Mishra D, Dhawan VK (2011) Status of Joint Forest Management in India (as on June 2011). Proceedings of National Workshop on JFM 27-28 June 2011. FRI-ICFRE. 1–74.
- St John FA V, Edwards-Jones G, Jones JPG (2010) Conservation and human behaviour : lessons from social psychology. *Wildl Res* 37:658–667.
- StataCorp (2011) Stata Statistical Software: Release 12. College Station, TX: StataCorp LP.
- Stern MJ (2008) Coercion, voluntary compliance and protest: the role of trust and legitimacy in combating local opposition to protected areas. *Environ Conserv* 35:200–210. doi: 10.1017/S037689290800502X
- Stern MJ, Coleman KJ (2014) The Multidimensionality of Trust: Applications in Collaborative Natural Resource Management. *Soc Nat Resour* 1–16. doi: 10.1080/08941920.2014.945062
- Tiger Task Force (2005) Joining the dots - The report of Tiger Task Force, Ministry of Environment and Forests, Government of India. New Delhi
- Vemuri A (2008) Joint Forest Management in India: An unavoidable and conflicting common property regime in natural resource management. *J Dev Soc Transform* 5:81–90.
- Véron R, Fehr G (2011) State power and protected areas: Dynamics and contradictions of forest conservation in Madhya Pradesh, India. *Polit Geogr* 30:282–293. doi: 10.1016/j.polgeo.2011.05.004
- Weber J, Sills E, Bauch S, Pattanayak S (2011) Do ICDPs work? An empirical evaluation of forest-based microenterprises in the Brazilian Amazon. *Land Econ* 87:661–681.

- White RM, Fischer A, Marshall K, et al (2009) Developing an integrated conceptual framework to understand biodiversity conflicts. *Land Use Policy* 26:242–253. doi: 10.1016/j.landusepol.2008.03.005
- Wikramanayake E, Dinerstein E, Forest J, et al (2010) Roads to Recovery or Catastrophic Loss: How Will the Next Decade End for Wild Tigers. In: Tilson R, Nyhus P (eds) *Tigers World Sci. Polit. Conserv. Panthera tigris*, Second Edi. Elsevier Inc., pp 493–506
- Woodman J (2002) Ghosts in the transmission: the translation of global conservation concepts to local scenarios—a case study of ecodevelopment in central India. 9th Bienn. Conf. IASCP Commons an Age Glob. pp 1–30
- World Bank (2007) Project Performance Assessment Report: India Ecodevelopment project (Credit 2916-IN). Report No.: 39930. 1–37.



## CHAPTER 5

### ADVANCING ANALYSIS AND EVALUATION OF CONSERVATION POLICY AND PRACTICE

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The traditional natural resource governance has been neglecting the complexity of coupled social and ecological systems and proposing simple solutions or panaceas for problems in natural resource management, imposing one limited set of resource institutions dealing with conservation dilemmas (Gibson et al., 2004). The most frequent prescription in conservation was a public property right (e.g. denomination of state national parks to protect biodiversity). This simplistic solution is argued to lead to failure of governance arrangements when applied to diverse settings, also because problems rarely stem from a single cause (Ostrom 2007). Moreover, the blueprint approach (i.e. assigning state-run protected areas regardless of local conditions) tends to simplify complexity of natural systems, which has a negative impact to viability and robustness of such systems (Cox 2011). The motivation for this research is threefold: first to understand the knowledge gaps in the links between conservation outcomes and governance at a global scale; second to understand the changing role of the state in conservation; and third, to understand the effect of participation in the state-driven decentralization programmes

Several relevant lessons, for both policy and practice, can be derived from this research. Following three main objectives (to collate evidence on the changing role of governance in forest protected areas globally (**Chapter 2**); to analyse the potential shift from hierarchical to collaborative governance in the case example of tiger conservation (**Chapter 3**); 3) to evaluate inclusive policies and their implementation through state-driven decentralization programmes on the ground (**Chapter 4**), below are presented main results that are explained in the context of wider protected area literature.

Hierarchical state-governed PAs and their simple governing norms and prescriptions are now well understood in the literature (Lockwood 2010), but once there is a shift to multi-actor governance, involving diverse state and non-state actors, with various level of power sharing, the understanding of the interacting governance components is often

blurred by its overall complexity. There are still many methodological constraints in discerning causal effects between conservation intervention and outcomes (Ferraro & Pattanayak 2006; Nolte et al. 2013; Ferraro & Hanauer 2014; Baylis et al. 2015), there are still lessons to be learned from the current evidence base.

The first part of this dissertation catalogued existing evidence on the role of diverse governance arrangements in the effectiveness of forest PAs. The produced systematic map collated evidence based on four outcome categories: attitudinal, behavioural, ecological and spill-over effects. Evidence gaps are mapped in this literature and the quality and the quantity of the current evidence base described. Although there seems to be an increase in the research on governance in conservation (**see Figure 2.2.3 - Chapter 2**), the current evidence base is fragmented and small, in terms of geographical width, quantity and quality which coincides with results from other systematic reviews on natural resource governance (Bowler et al. 2010; Geldmann et al. 2013; Pullin et al. 2013; Samii et al. 2014).

However, researchers frequently do not sufficiently describe PA governance when evaluating PA effectiveness or measuring conservation outcomes. They often disregard mentioning who the main actors are, how is power shared among them and who is accountable. With this observation, this study highlights the frequent failure of conservationists to acknowledge the connections between conservation outcomes and the local institutional and political setting (Brechin et al. 2002).

The complexity of relations between ecological and social layers of FPAs, is further simplified by looking only at the ecological side of conservation success. The majority of mapped studies focus only on one outcome, predominantly ecological. Local peoples' attitudes and behaviour, conditional upon different governance modes, are less represented in the mapped literature. Focusing only on ecological outcomes can obscure information on local conflicts, the level of compliance and the trust relationship between local people and managers. In this way the role of governance in FPA effectiveness is only partially understood. This understanding is frequently contingent on the imposed (by scientists) and limited understanding of conservation success (Murray 2005; Axford et al. 2008; Brechin et al. 2010; Granderson 2011).



The systematic mapping of studies measuring spill-over effects in connection to different FPAs under different governance modes could not be adequately performed with the available literature. This is not surprising as measuring spill-over effects require strong baseline data that is frequently not available in conservation setting (Ferraro & Pattanayak 2006). Planning the impact assessment exercise already in the project-writing phase and measuring baseline data before conservation project has to be established (Baylis et al. 2015). Furthermore, studies that measured how FPAs affect surrounding social-ecological systems either did not include enough information on governance modes or they did not provide a relevant comparator, which prevented the linking of these two variables for this research

Conservation funding is frequently restricted and policy makers and funding agencies have to know what works and under which circumstances, therefore it is important to improve effectiveness toolbox (Ferraro & Pattanayak 2006). Numerous scientists are calling for the application of impact evaluation in nature conservation (Miteva et al. 2012; Ferraro & Hanauer 2014; Baylis et al. 2015). Rightly so, because the map reflects poor methodological tools that researchers currently use to evaluate conservation effectiveness. They usually lack counterfactual logic and do not apply appropriate and robust study designs that can assure attribution of the intervention to the effect.

This work further underlines the complexity of governance arrangements and difficulties of primary research to discern and clearly isolate one effect over the other, even with the best methodology available. Proof of this complexity is the difficulty in collating and cataloguing of evidence within a diverse governance-related research without common definitions and vast “background noise” (i.e. effect-modifiers). The same problem is already recognised in evidence synthesis of complex interlinked interventions in the field of health service research (e.g.: Pawson et al. 2005; Shepperd et al. 2009) and these reviewers offer guidelines that could be applicable and adapted to the conservation context.

The complexity further increases as we scale up from isolated protected areas to wider landscapes. Achieving ecological connectivity within landscapes often needs to be supported by vertical and horizontal connectivity between institutions, actors and ecological entities (Kininmonth & Bergsten 2015). Understanding of the alignment

between ecological and social processes is therefore of immense importance for the sustainable conservation outcomes (Folke et al. 2005; Garmestani & Benson 2013). Here, collaboration and coordination between actors become a central to the question of governance (Kallis et al. 2009). The changing role of the park agencies with the “exclusionary and sectoral” mentality is therefore critical for this shift.

The second set of findings in this dissertation analyse the potential for a change from isolated PA-centric towards landscape-scale tiger conservation in central India. This shift would imply change in current governance structures to achieve the “fit” between social and ecological part of the system (Young 2002). This work finds that a mix of interlinked institutional and cognitive factors might be an obstacle to governance change and collaboration between different landscape actors. In spite of changes in policies that call for greater participation, decentralized and livelihoods-oriented natural resource management, in the analysed case-study, (very centralized, State-driven decision making) conservation on the ground is perceived to retain strong “fortress” configuration. The organisational structure of the implementing state agencies in the central Indian landscape (state forest departments of Madhya Pradesh and Maharashtra) was perceived to be the reason for persistence of fortress conservation. As in other similar studies in the same context (Kumar & Kant 2006; Sood & Gupta 2007), colonial legacies embedded in the working culture and values of park manager visible through their urge to retain the territorial power, is perceived to affect their potential for collaboration with other landscape actors (in this case, local people and NGOs). This could affect the shift from centralised-management to collaborative management (government to governance) of the PA potentially difficult. The organisational structure and culture of park managers have already been analysed in context of decentralised forest management (Matta et al. 2005; Kumar & Kant 2006; Lawrence 2007), but they have been often forgotten in biodiversity conservation (for Indonesian park see: Kubo & Supriyanto 2010) and this dissertation contributes to fill this knowledge gap. A further analysis of interactions between the park managers and other landscape actors (NGOs, scientists, and local communities) identified a lack of trust and information flow to be an impediment for better social connectivity. Differences in value frames and pre-established power imbalances across actors are also perceived to constrain collaboration and consensus building (also in: Bryson et al. 2006; Mostert et al. 2007).

Following analysis of the wider governance system, this research focused on both the regional and the local level. Two participatory incentive-based projects around the Pench Tiger Reserve in Madhya Pradesh, India were evaluated through differences in conservation knowledge, biodiversity attitudes, and institutional trust. In the context of state-driven decentralization, the work focused on assessment of integrated conservation and development project (known under name eco-development (ED)) and a form of collaborative forest management – Joint Forest Management (JFM). This study found only weak causal links between participation in both projects on local people conservation knowledge. People’s attitudes towards biodiversity are found to be independent of any kind of participation. Results were the same when effects of the participation were compared between the two projects. Additional outcome measured – trust towards implementing agency<sup>14</sup> – was not significantly different between the two projects either. These results that might be interpreted as “money for nothing”<sup>15</sup> correspond to the findings in the previous chapter of this dissertation and other literature on the ecodevelopment evaluation (Arjunan et al. 2006; Gubbi et al. 2009; Dejouhanet 2010). Namely, ED in India was conceived as an idea that departs from exclusionary conservation logic, where interests of local people should be taken into account to offset people-wildlife conflict (Das 2011). However, in the actual implementation of the ecodevelopment, the only focus was weaning people away from protected areas. Local people were seen only as “beneficiaries” and “participation” meant provision of household benefits, rather than inclusion in the meaningful decision making (Woodman 2002). Moreover, the meaning of participation is frequently interpreted differently to serve the particular purpose of the implementing (state) agencies or donors (Cooke & Kothari 2001; Das 2011). This in turn is counter-productive for conservation in the long run (Das 2011).

### Directions for future research

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Apart from contributing to knowledge gaps throughout 3 data chapters, this dissertation left many open questions for the future research.

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<sup>14</sup> Madhya Pradesh Forest Department

<sup>15</sup> Ferraro and Pattanayak (2006)

The study only implicitly draws on the issues of governance scale. Ecological and social scale differ, which challenges evaluation of environmental and conservation governance (Bruyninckx 2009). New governance arrangements are often functioning in cross-scale interactions (e.g. between different actors at local, national or international levels). Understanding of these linkages is left to be completed in the future research.

Systematic map (**Chapter 2.2**) can serve as start for several full systematic reviews by breaking down elements of the systematic map question. This research could continue with reviewing and extracting evidence on the role and effectiveness of each governance type separately using the map as a basis with update of the search, full critical appraisal, data extraction and synthesis.

Moreover, mapping left open several primary research questions. For example, there is no sufficient and reliable evidence on the effectiveness of private protected areas on the ecological and social outcomes (see **Chapter 2.2**). This is important conservation question, having in mind that the designation of such protected areas is voluntary and their long term security is at stake (Dudley 2008).

The map findings pointed to lack of the research on spill-over effects contingent to governance type of FPAs. This is one of the important areas for the future research as spill-over effects might bias estimate of the real conservation impacts (through leakage effect or confounding control area)(Baylis et al. 2015).

Governance of FPAs is complex, with various actors, management practices, tenure regimes, funding sources (Borrini-Feyerabend et al. 2013). Moreover, systematic reviews in environmental management and conservation do not seem to have developed methodology for assessing such heterogeneity. Development of systematic review methodology in this direction might be needed. Some advancements on evidence synthesis of complex interventions in medicine (Shepperd et al. 2009) might be helpful initial guidance for evidence synthesis in governance of natural resources.

Exploring ecological outcomes of the participatory interventions and painting the complete picture on the effects of participatory interventions in the context of state-

driven decentralization would be also needed to obtain more robust results of the evaluation conducted in this research.

Some argue that conservation attitudes do not lead to conservation oriented behaviour (Karanth et al. 2008) so for the future research on the effects of participatory policies, there is a need to study conservation behaviour to better understand the effects of the participation on local people. This could be estimated through self-reported behaviour or a study of behavioural intentions as a proxy to actual behaviour (see: St John et al. 2010).

In context of top-down exclusive conservation depicted in **Chapter 3** of this dissertation, people-park conflicts are frequent because of limited conservation space and resources, incompatible interests, unequal power and benefit flows between local people and natural resource managers (Rastogi et al. 2012). In such context, local community trust towards park management authority can be an important source of legitimacy and voluntary compliance with the park rules (Stern 2008). Moreover, trustworthy relationship is a precondition for collaboration (Baral & Heinen 2007; Bouma et al. 2008; Stern & Coleman 2014), which is at hearth of landscape level conservation. This research has not paid sufficient attention to institutional trust and in-depth analysis would be needed to gain a deeper collaborative potential for landscape level conservation.

Given the complexity of coupled social and ecological systems and embedded FPAs, it would have been impossible to cover all the aspects of their governance. This research sheds light on some important facets of this complexity, but, as shown, it also opens space for further investigation and advancement.

## References

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- Arjunan, M., Holmes, C., Puyravaud, J.-P. & Davidar, P. (2006). Do developmental initiatives influence local attitudes toward conservation? A case study from the Kalakad-Mundanthurai Tiger Reserve, India. *J. Environ. Manage.*, 79, 188–97.
- Axford, J.C., Hockings, M.T. & Carter, R.W. (2008). What constitutes success in Pacific island community conserved areas? *Ecol. Soc.*, 13.

- Baral, N. (2012). Empirical analysis of factors explaining local governing bodies' trust for administering agencies in community-based conservation. *Environ. Manage.*, 103, 41–50.
- Baral, N. & Heinen, J.T. (2007). Decentralization and people's participation in conservation: a comparative study from the Western Terai of Nepal. *Int. J. Sustain. Dev. World Ecol.*, 14, 520–531.
- Baylis, K., Honey-rosés, J., Börner, J., Corbera, E., Ezzine-de-blas, D., Ferraro, P.J., Lapeyre, R., Persson, M., Pfaff, A. & Wunder, S. (2015). Mainstreaming impact evaluation in nature conservation. *Conserv. Lett.*, 1–17.
- Borrini-Feyerabend, G., Dudley, N., Jaeger, T., Lassen, B., Pathak Broome, N., Phillips, a. & Sandwith, T. (2013). *Governance of Protected Areas: From understanding to action. Best Pract. Prot. Area Guidel. Ser. No. 20.*
- Bouma, J., Bulte, E. & van Soest, D. (2008). Trust and cooperation: Social capital and community resource management. *J. Environ. Econ. Manage.*, 56, 155–166.
- Bowler, D., Buyung-Ali, L., Healey, J.R.R., Jones, J.P.G.P.G., Knight, T. & Pullin, a. S.S. (2010). The Evidence Base for Community Forest Management as a Mechanism for Supplying Global Environmental Benefits and Improving Local Welfare. CEE Review 08-011(SR48). *Environ. Evid.*
- Brechin, S.R., Murray, G. & Mogelgaard, K. (2010). Conceptual and Practical Issues in Defining Protected Area Success: The Political, Social, and Ecological in an Organized World. *J. Sustain. For.*, 29, 362–389.
- Brechin, S.R., Wilshusen, P.R., Fortwangler, C.L. & West, P.C. (2002). Beyond the square wheel: toward a more comprehensive understanding of biodiversity conservation as social and political process. *Soc. & Natural Resour.*, 15, 41–64.
- Bruyninckx, H. (2009). Environmental evaluation practices and the issue of scale. In: *Environ. Progr. policy Eval. Addressing Methodol. challenges. New Dir. Eval.* (eds. Birnbaum, M. & Mickwitz, P.). Wiley Periodicals, Inc, pp. 31–39.
- Bryson, J., Crosby, B. & Stone, M. (2006). The design and implementation of cross-sector collaborations: Propositions from the literature. *Public Adm. Rev.*, 17–18.
- Cooke, B. & Kothari, U. (2001). *Participation: The new tyranny?* Zed Books, London.
- Cox, M. (2011). Advancing the diagnostic analysis of environmental problems. *Int. J. Commons*, 5, 346–363.
- Das, P.D. (2011). *Politics of Participatory Conservation: A Case of Kailadevi Wildlife Sanctuary, Rajasthan, India. PhD Thesis. SOAS, University of London.*

- Dejouhanet, L. (2010). Participatory eco-development in question: The case of the Parambikulam wildlife sanctuary in South India. *J. Alp. Res.*, 98, 83–96.
- Dudley, N. (2008). *Guidelines for applying protected area management categories*.
- Ferraro, P. & Pattanayak, S. (2006). Money for nothing? A call for empirical evaluation of biodiversity conservation investments. *PLoS Biol.*, 4, e105.
- Ferraro, P.J. & Hanauer, M.M. (2014). Advances in Measuring the Environmental and Social Impacts of Environmental Programs. *Annu. Rev. Environ. Resour.*, 39, 495–517.
- Folke, C., Hahn, T., Olsson, P. & Norberg, J. (2005). Adaptive Governance of Social-Ecological Systems. *Annu. Rev. Environ. Resour.*, 30, 441–473.
- Garmestani, A.S. & Benson, M.H. (2013). A Framework for Resilience-based Governance of Social-Ecological Systems. *Ecol. Soc.*, 18, art9.
- Geldmann, J., Barnes, M., Coad, L., Craigie, I.D., Hockings, M. & Burgess, N.D. (2013). Effectiveness of terrestrial protected areas in reducing habitat loss and population declines. *Biol. Conserv.*, 161, 230–238.
- Granderson, A. a. (2011). Enabling multi-faceted measures of success for protected area management in Trinidad and Tobago. *Eval. Program Plann.*, 34, 185–195.
- Gubbi, S., Linkie, M. & Leader-Williams, N. (2009). Evaluating the legacy of an integrated conservation and development project around a tiger reserve in India. *Environ. Conserv.*, 35, 331–339.
- Kallis, G., Kiparsky, M. & Norgaard, R. (2009). Collaborative governance and adaptive management: Lessons from California’s CALFED Water Program. *Environ. Sci. Policy*, 12, 631–643.
- Karanth, K., Kramer, R., Qian, S. & Christensenjr, N. (2008). Examining conservation attitudes, perspectives, and challenges in India. *Biol. Conserv.*, 141, 2357–2367.
- Kininmonth, S. & Bergsten, A. (2015). Closing the collaborative gap : Aligning social and ecological connectivity for better management of interconnected wetlands, 44, 138–148.
- Kubo, H. & Supriyanto, B. (2010). From fence-and-fine to participatory conservation: Mechanisms of transformation in conservation governance at the Gunung Halimun-Salak National Park, Indonesia. *Biodivers. Conserv.*, 19, 1785–1803.
- Kumar, S. & Kant, S. (2006). Organizational Resistance to Participatory Approaches in Public Agencies: An Analysis of Forest Department’s Resistance to Community-Based Forest Management. *Int. Public Manag. J.*, 9, 141–173.

- Lawrence, A. (2007). Beyond the second generation: towards adaptiveness in participatory forest management. *CAB Rev. Perspect. Agric. Vet. Sci. Nutr. Nat. Resour.*, 2.
- Lockwood, M. (2010). Good governance for terrestrial protected areas: A framework, principles and performance outcomes SEARCH 1. *J. Environ. Manage.*
- Matta, J., Alavalapati, J., Kerr, J. & Mercer, E. (2005). Agency Perspectives on Transition to Participatory Forest Management: A Case Study From Tamil Nadu, India. *Soc. Nat. Resour.*, 18, 859–870.
- Miteva, D., Pattanayak, S.K. & Ferraro, P.J. (2012). Evaluation of biodiversity policy instruments: what works and what doesn't? *Oxford Rev. Econ. Policy*, 28, 69–92.
- Mostert, E., Pahl-Wostl, C., Rees, Y., Searle, B., Tàbara, D. & Tippett, J. (2007). Social learning in European river-basin management: Barriers and fostering mechanisms from 10 river basins. *Ecol. Soc.*, 12.
- Murray, G.D. (2005). Multifaceted Measures of Success in Two Mexican Marine Protected Areas. *Soc. Nat. Resour.*, 18, 889–905.
- Nolte, C., Agrawal, A., Silvius, K. & Soares-Filho, B. (2013). Governance regime and location influence avoided deforestation success of protected areas in the Brazilian Amazon. *PNAS*, 110, 4956–4961.
- Ostrom, E. (2007). A diagnostic approach for going beyond panaceas. *Proc. Natl. Acad. Sci. U. S. A.*, 104, 15181–7.
- Pawson, R., Greenhalgh, T., Harvey, G. & Walshe, K. (2005). Realist review--a new method of systematic review designed for complex policy interventions. *J. Health Serv. Res. Policy*, 10 Suppl 1, 21–34.
- Pullin, A.S., Bangpan, M., Dalrymple, S., Dickson, K., Haddaway, N.R., Healey, J.R., Hauari, H., Hockley, N., Jones, J.P.G., Knight, T., Vigurs, C. & Oliver, S. (2013). Human well-being impacts of terrestrial protected areas. *Environ. Evid.*, 2, 19.
- Rastogi, A., Hickey, G.M., Badola, R. & Hussain, S.A. (2012). Saving the superstar: A review of the social factors affecting tiger conservation in India. *J. Environ. Manage.*, 113, 328–340.
- Samii, C., Lisiecki, M., Kulkarni, P., Paler, L. & Chavis, L. (2014). *Effects of Decentralized Forest Management (DFM) on Deforestation and Poverty in Low and Middle Income Countries: a systematic review. CEE 13-015a. Collaboration for Environmental Evidence.*
- Shepperd, S., Lewin, S., Straus, S., Clarke, M., Eccles, M.P., Fitzpatrick, R., Wong, G. & Sheikh, A. (2009). Can we systematically review studies that evaluate complex interventions? *PLoS Med.*, 6.



- Sood, K.K. & Gupta, H.K. (2007). Implications of Indian Foresters' Perspectives of Joint Forest Management. *Small-scale For.*, 6, 291–308.
- St John, F.A. V, Edwards-Jones, G. & Jones, J.P.G. (2010). Conservation and human behaviour : lessons from social psychology. *Wildl. Res.*, 37, 658–667.
- Stern, M.J. (2008). The Power of Trust: Toward a Theory of Local Opposition to Neighboring Protected Areas. *Soc. Nat. Resour.*, 21, 859–875.
- Stern, M.J. & Coleman, K.J. (2014). The Multidimensionality of Trust: Applications in Collaborative Natural Resource Management. *Soc. Nat. Resour.*, 1–16.
- Woodman, J. (2002). Ghosts in the transmission: the translation of global conservation concepts to local scenarios—a case study of ecodevelopment in central India. In: *9th Bienn. Conf. IASCP Commons an Age Glob.* pp. 1–30.
- Young, O.R. (2002). *The institutional dimensions of environmental change: fit, interplay, and scale.* MIT Press, Cambridge, MA.



## ANNEXES

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**ANNEX 1: SCOPING EXERCISE, SEARCH STRING DEVELOPMENT AND FINALIZED SEARCH STRING**

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13.7.2012		
Timespan=All Years. Search language=English  Lemmatization=Off		
ALL KEYWORDS  management, governance, social, ecological outcomes and attributes of governance	("NGO*" OR non\$governmental organi\$ation OR "private nature reserve*" OR "privat*" OR "state" OR "governme*" OR "public" OR "commun*" OR "indigenous" OR "jfm" OR "joint forest management" OR co\$manag* OR "collaborative" OR "decentrali*" OR "devolut*" OR "delegat* authority" OR "integrat* conservation development" or "ICDP*" or "governance" or "institution*" or "polit*" or "polic*") AND ("protected area*" OR "reserve*" OR park* OR "monument" OR "wilderness area*" OR "world heritage site*" or "biocultural Heritage Site*" or "sanctuar*" or "refug*" or "biosphere reserve*" or "protected landscape" or "managed resource" or "sacred forest*" or "sacred grove*") AND forest* AND ("deforest*" or "degrad*" or "biodiversity" or "decline*" or desert* or "threaten" or "leakage*" or spill\$over* or "reforest*" or "afforest*" or re\$growth or "loss*") AND ("participat*" or "accountab*" or "legitima*" or, "monitor*" or "report*" or "compliance" or "enforcement*" or "coercion*" or "trust*") AND ("attitude*" or "behavi*" or "perception*" or "belief*" or "perspective*" or "opinion*" or "view*")	230
Doesn't give any returns - DELETED	"biocultural Heritage Site*"	
Doesn't give any returns - DELETED and REPLACED by delegat* authorit*	"delegat* authority"	
Doesn't give any returns - DELETED and REPLACED by	"integrat* conservation development"	

("integrated conservation and development")		
Deleted as it is not present in Protected areas, JFM hasn't returned any hits	"jfm" OR "joint forest management"	
now: "monument"	"monument"	
now: "managed resource"	"managed resource"	
now: ("spillover" or "spill-over")	spill\$over*	
doesnt give any returns, now: (comanag* or co-manag*)	comang	
now: (re-growth or regrowth)	re\$growth	
	("NGO*" OR non\$governmental organi\$ation OR "private nature reserve*" OR "privat*" OR "governme*" OR "state" OR "public" OR "commun*" OR "indigenous" or (comanag* or co-manag*) OR "collaborative" OR "decentrali*" OR "devolut*" OR (delegat* AND authorit*) OR ("integrated and conservation and development") or "ICDP*" or "governance" or "institution*" or "polit*" or "polic*") AND ("protected area*" OR "reserve*" OR park* OR "monument*" OR "wilderness area*" OR "world heritage site*" or "sanctuar*" or "refug*" or "biosphere reserve*" or "protected landscape" or "managed resource*" or "sacred forest*" or "sacred grove*") AND forest* AND ("deforest*" or "degrad*" or "biodiversity" or "decline*" or desert* or "threaten" or "leakage*" or ("spillover" or "spill-over") or "reforest*" or "afforest*" or (re-growth or regrowth) or "loss*") AND ("participat*" or "accountab*" or "legitima*" or "monitor*" or "report*" or "compliance" or "enforcement*" or "coercion*" or "trust*") AND ("attitude*" or "behavi*" or "perception*" or "belief*" or "perspective*" or "opinion*" or "view*")	231
samo eco	Topic=((("NGO*" OR non\$governmental organi\$ation OR "private nature reserve*" OR "privat*" OR "governme*" OR "state" OR "public" OR "commun*" OR "indigenous" or (comanag* or co-manag*) OR "collaborative" OR	Approximately 6,245

	<p>"decentrali*" OR "devolut*" OR (delegat* AND authorit*) OR ("integrated and conservation and development") or "ICDP*" or "governance" or "institution*" or "polit*" or "polic*") AND ("protected area*" OR "reserve*" OR park* OR "monument*" OR "wilderness area*" OR "world heritage site*" or "sanctuar*" or "refug*" or "biosphere reserve*" or "protected landscape" or "managed resource*" or "sacred forest*" or "sacred grove*") AND forest* AND ("deforest*" or "degrad*" or "biodiversity" or "decline*" or desert* or "threaten" or "leakage*" or ("spillover*" or "spill-over*") or "reforest*" or "afforest*" or (re-growth or regrowth) or "loss*"))</p> <p>Timespan=All Years. Search language=English Lemmatization=Off</p>	
w/o LOSS	<p>Topic=((("NGO*" OR non\$governmental organi\$ation OR "private nature reserve*" OR "privat*" OR "governme*" OR "state" OR "public" OR "commun*" OR "indigenous" or (comanag* or co-manag*) OR "collaborative" OR "decentrali*" OR "devolut*" OR (delegat* AND authorit*) OR ("integrated and conservation and development") or "ICDP*" or "governance" or "institution*" or "polit*" or "polic*") AND ("protected area*" OR "reserve*" OR park* OR "monument*" OR "wilderness area*" OR "world heritage site*" or "sanctuar*" or "refug*" or "biosphere reserve*" or "protected landscape" or "managed resource*" or "sacred forest*" or "sacred grove*") AND forest* AND ("deforest*" or "degrad*" or "biodiversity" or "decline*" or desert* or "threaten" or "leakage*" or ("spillover*" or "spill-over*") or "reforest*" or "afforest*" or (re-growth or regrowth))))</p> <p>Timespan=All Years. Search language=English Lemmatization=Off</p>	Approximately 5,665
socio (w.o eco) + attributes	<p>("NGO*" OR non\$governmental organi\$ation OR "private nature reserve*" OR "privat*" OR "governme*" OR "state" OR "public" OR "commun*" OR "indigenous" or (comanag* or co-manag*) OR "collaborative" OR "decentrali*" OR "devolut*" OR (delegat* AND authorit*) OR ("integrated and conservation and development") or "ICDP*" or "governance" or "institution*" or "polit*" or "polic*") AND ("protected area*" OR "reserve*" OR park* OR "monument*" OR "wilderness area*" OR "world heritage site*" or "sanctuar*" or "refug*" or "biosphere reserve*" or "protected landscape" or "managed resource*" or "sacred forest*" or "sacred grove*") AND forest* AND ("participat*" or "accountab*" or</p>	624

	“legitima*” or “monitor*” or “report*” or “compliance*” or “enforcement*” or “coercion*” or “trust*”) AND (“attitude*” or “behavi*” or “perception*” or “belief*” or “perspective*” or “opinion*” or “view*”)	
w/o eco and attributes, samo socio	("NGO*" OR non\$governmental organi\$ation OR "private nature reserve*" OR “privat*” OR "governme*” OR “state” OR “public” OR “commun*” OR “indigenous” or (comanag* or co-manag*) OR “collaborative” OR "decentrali*” OR “devolut*” OR (delegat* AND authorit*) OR ("integrated and conservation and development") or "ICDP*" or “governance” or “institution*” or “polit*” or “polic*”) AND (“protected area*” OR “reserve*” OR park* OR “monument*” OR “wilderness area*” OR “world heritage site*” or “sanctuar*” or “refug*” or “biosphere reserve*” or “protected landscape” or “managed resource*” or “sacred forest*” or “sacred grove*”) AND forest* AND (“attitude*” or “behavi*” or “perception*” or “belief*” or “perspective*” or “opinion*” or “view*”)	Approximately 2,395
samo socio	((“protected area*” OR “reserve*” OR park* OR “monument*” OR “wilderness area*” OR “world heritage site*” or “sanctuar*” or “refug*” or “biosphere reserve*” or “protected landscape” or “managed resource*” or “sacred forest*” or “sacred grove*”) AND forest* AND (“attitude*” or “behavi*” or “perception*” or “belief*” or “perspective*” or “opinion*” or “view*”))	Approximately 5,967
	UMESTO “JFM” or “joint forest management” stavi “joint management” to account for collaborative management	
18.7.2012		
	("NGO*" OR non\$governmental organi\$ation OR "private nature reserve*" OR “privat*” OR "governme*” OR “state” OR “public” OR “commun*” OR “indigenous” or (comanag* or co-manag*) OR “collaborative” OR "decentrali*” OR “devolut*” OR “joint management” OR (delegat* AND authorit*) OR ("integrated and conservation and development") or "ICDP*" or “governance” or “institution*” or “polit*” or “polic*”) AND (“protected area*” OR “reserve*” OR park* OR “monument*” OR “wilderness area*” OR “world heritage site*” or “sanctuar*” or “refug*” or “biosphere reserve*” or “protected landscape” or “managed resource*” or “sacred forest*” or “sacred grove*”) AND forest* AND (“deforest*” or “degrad*” or “biodiversity” or “decline*” or desert* or “threaten” or “leakage*” or ("spillover*" or "spill-over*") or “reforest*” or “afforest*” or (re-growth or regrowth) or “loss*”) AND (“participat*” or “accountab*” or “legitima*” or, “monitor*” or “report*” or	231

	"compliance" or "enforcement*" or "coercion*" or "trust*") AND ("attitude*" or "behavi*" or "perception*" or "belief*" or "perspective*" or "opinion*" or "view*")	
	((("governance" or "institution*" or "polit*" or "polic*") AND ("protected area*" OR "reserve*" OR park* OR "monument*" OR "wilderness area*" OR "world heritage site*" or "sanctuar*" or "refug*" or "biosphere reserve*" or "protected landscape" or "managed resource*" or "sacred forest*" or "sacred grove*")) AND forest* AND ("deforest*" or "degrad*" or "biodiversity" or "decline*" or desert* or "threaten" or "leakage*" or ("spillover*" or "spill-over*") or "reforest*" or "afforest*" or (re-growth or regrowth) or "loss*")) AND ("participat*" or "accountab*" or "legitima*" or, "monitor*" or "report*" or "compliance" or "enforcement*" or "coercion*" or "trust*") AND ("attitude*" or "behavi*" or "perception*" or "belief*" or "perspective*" or "opinion*" or "view*"))	123
BANGOR PROXY: >16000 hits!! lemmatization on	Topic=("NGO*" OR non\$governmental organi\$ation OR "private nature reserve*" OR "privat*" OR "governme*" OR "state" OR "public" OR "commun*" OR "indigenous" or (comanag* or co-manag*) OR "collaborative" OR "decentrali*" OR "devolut*" OR "joint management" OR (delegat* AND authorit*) OR ("integrated and conservation and development") or "ICDP*" or "governance" or "institution*" or "polit*" or "polic*") AND ("protected area*" OR "reserve*" OR park* OR "monument*" OR "wilderness area*" OR "world heritage site*" or "sanctuar*" or "refug*" or "biosphere reserve*" or "protected landscape" or "managed resource*" or "sacred forest*" or "sacred grove*") AND forest* AND ("deforest*" or "degrad*" or "biodiversity" or "decline*" or desert* or "threaten" or "leakage*" or ("spillover*" or "spill-over*") or "reforest*" or "afforest*" or (re-growth or regrowth) or "loss*"))  Timespan=All Years. Search language=English Lemmatization=Off	approx 6,249 = 6,086
		FINALLY 9,070
Change commun to community conserved areas	("STATE" OR "NGO*" OR non\$governmental organi\$ation OR "private nature reserve*" OR "privat*" OR "governme*" OR "public" OR "community conserved area*" OR "indigenous" or (comanag* or co-manag*) OR "collaborative" OR "decentrali*" OR "devolut*" OR "joint management" OR (delegat* AND authorit*) OR ("integrated	Approxim ately 9,242



	and conservation and development") or "ICDP*" or "governance" or "institution*" or "polit*" or "polic*") AND ("protected area*" OR "reserve*" OR park* OR "monument*" OR "wilderness area*" OR "world heritage site*" or "sanctuar*" or "refug*" or "biosphere reserve*" or "protected landscape" or "managed resource*" or "sacred forest*" or "sacred grove*") AND forest* AND ("deforest*" or "degrad*" or "biodiversity" or "decline*" or desert* or "threaten" or "leakage*" or ("spillover*" or "spill-over*") or "reforest*" or "afforest*" or (re-growth or regrowth) or "loss*")	
delete state	("NGO*" OR non\$governmental organi\$ation OR "private nature reserve*" OR "privat*" OR "governme*" OR "public" OR "community conserved area*" OR "indigenous" or (comanag* or co-manag*) OR "collaborative" OR "decentrali*" OR "devolut*" OR "joint management" OR (delegat* AND authorit*) OR ("integrated and conservation and development") or "ICDP*" or "governance" or "institution*" or "polit*" or "polic*") AND ("protected area*" OR "reserve*" OR park* OR "monument*" OR "wilderness area*" OR "world heritage site*" or "sanctuar*" or "refug*" or "biosphere reserve*" or "protected landscape" or "managed resource*" or "sacred forest*" or "sacred grove*") AND forest* AND ("deforest*" or "degrad*" or "biodiversity" or "decline*" or desert* or "threaten" or "leakage*" or ("spillover*" or "spill-over*") or "reforest*" or "afforest*" or (re-growth or regrowth) or "loss*")	Approximately 6,848 finally: 3,609
delete decline	("NGO*" OR non\$governmental organi\$ation OR "private nature reserve*" OR "privat*" OR "governme*" OR "public" OR "community conserved area*" OR "indigenous" or (comanag* or co-manag*) OR "collaborative" OR "decentrali*" OR "devolut*" OR "joint management" OR (delegat* AND authorit*) OR ("integrated and conservation and development") or "ICDP*" or "governance" or "institution*" or "polit*" or "polic*") AND ("protected area*" OR "reserve*" OR park* OR "monument*" OR "wilderness area*" OR "world heritage site*" or "sanctuar*" or "refug*" or "biosphere reserve*" or "protected landscape" or "managed resource*" or "sacred forest*" or "sacred grove*") AND forest* AND ("deforest*" or "degrad*" or "biodiversity" or desert* or "threaten" or "leakage*" or ("spillover*" or "spill-over*") or "reforest*" or "afforest*" or (re-growth or regrowth) or "loss*")	LEMMA T I Z A T I O N O F F Approximately 6,175 finally: 3,272
add "paper park*"	("NGO*" OR non\$governmental organi\$ation OR "private nature reserve*" OR "privat*" OR "governme*" OR "public"	Approximately

	OR "community conserved area*" OR "indigenous" or (comanag* or co-manag*) OR "collaborative" OR "decentrali*" OR "devolut*" OR "joint management" OR (delegat* AND authorit*) OR ("integrated and conservation and development") or "ICDP*" or "governance" or "institution*" or "polit*" or "polic*" or "paper park*") AND ("protected area*" OR "reserve*" OR park* OR "monument*" OR "wilderness area*" OR "world heritage site*" or "sanctuar*" or "refug*" or "biosphere reserve*" or "protected landscape" or "managed resource*" or "sacred forest*" or "sacred grove*") AND forest* AND ("deforest*" or "degrad*" or "biodiversity" or desert* or "threaten" or "leakage*" or ("spillover*" or "spill-over*") or "reforest*" or "afforest*" or (re-growth or regrowth) or "loss*")	6,187 finally: 3,276
delete public	("NGO*" OR non\$governmental organi\$ation OR "private nature reserve*" OR "privat*" OR "governme*" OR "community conserved area*" OR "indigenous" or (comanag* or co-manag*) OR "collaborative" OR "decentrali*" OR "devolut*" OR "joint management" OR (delegat* AND authorit*) OR ("integrated and conservation and development") or "ICDP*" or "governance" or "institution*" or "polit*" or "polic*" or "paper park*") AND ("protected area*" OR "reserve*" OR park* OR "monument*" OR "wilderness area*" OR "world heritage site*" or "sanctuar*" or "refug*" or "biosphere reserve*" or "protected landscape" or "managed resource*" or "sacred forest*" or "sacred grove*") AND forest* AND ("deforest*" or "degrad*" or "biodiversity" or desert* or "threaten" or "leakage*" or ("spillover*" or "spill-over*") or "reforest*" or "afforest*" or (re-growth or regrowth) or "loss*")	Approxim ately 5,201 finally:2,7 68
ADDED socio/attributes	("NGO*" OR non\$governmental organi\$ation OR "private nature reserve*" OR "privat*" OR "governme*" OR "community conserved area*" OR "indigenous" or (comanag* or co-manag*) OR "collaborative" OR "decentrali*" OR "devolut*" OR "joint management" OR (delegat* AND authorit*) OR ("integrated and conservation and development") or "ICDP*" or "governance" or "institution*" or "polit*" or "polic*" or "paper park*") AND ("protected area*" OR "reserve*" OR park* OR "monument*" OR "wilderness area*" OR "world heritage site*" or "sanctuar*" or "refug*" or "biosphere reserve*" or "protected landscape" or "managed resource*" or "sacred forest*" or "sacred grove*") AND forest* AND ("deforest*" or "degrad*" or "biodiversity" or desert* or "threaten" or "leakage*" or ("spillover*" or "spill-over*") or "reforest*" or "afforest*" or (re-growth or regrowth) or "loss*")	180

	<p>“afforest*” or (re-growth or regrowth) or “loss*”) AND (“participat*” or “accountab*” or “legitima*” or, “monitor*” or “report*” or ”compliance” or “enforcement*” or “coercion*” or “trust*”) AND (“attitude*” or “behavi*” or “perception*” or “belief*” or “perspective*” or “opinion*” or “view*”)</p>	
<p>put gov attributes with (OR) under governance</p>	<p>("NGO*" OR non\$governmental organi\$ation OR "private nature reserve*" OR “privat*” OR "governme*” OR “community conserved area*” OR “indigenous” or (comanag* or co-manag*) OR “collaborative” OR "decentrali*” OR “devolut*” OR “joint management” OR (delegat* AND authorit*) OR ("integrated and conservation and development") or "ICDP*" or “governance” or “institution*” or “polit*” or “polic*” or “paper park*” OR “participat*” or “accountab*” or “legitima*” or, “monitor*” or “report*” or ”compliance” or “enforcement*” or “coercion*” or “trust*”) AND (“protected area*” OR “reserve*” OR park* OR “monument*” OR “wilderness area*” OR “world heritage site*” or “sanctuar*” or “refug*” or “biosphere reserve*” or “protected landscape” or “managed resource*” or “sacred forest*” or “sacred grove*”) AND forest* AND (“deforest*” or “degrad*” or “biodiversity” or desert* or “threaten” or “leakage*” or ("spillover*" or "spill-over*") or “reforest*” or “afforest*” or (re-growth or regrowth) or “loss*”) AND (“attitude*” or “behavi*” or “perception*” or “belief*” or “perspective*” or “opinion*” or “view*”)</p>	866
<p>put together attributes and attitudes/behavior</p>	<p>("NGO*" OR non\$governmental organi\$ation OR "private nature reserve*" OR “privat*” OR "governme*” OR “community conserved area*” OR “indigenous” or (comanag* or co-manag*) OR “collaborative” OR "decentrali*” OR “devolut*” OR “joint management” OR (delegat* AND authorit*) OR ("integrated and conservation and development") or "ICDP*" or “governance” or “institution*” or “polit*” or “polic*” or “paper park*”) AND (“protected area*” OR “reserve*” OR park* OR “monument*” OR “wilderness area*” OR “world heritage site*” or “sanctuar*” or “refug*” or “biosphere reserve*” or “protected landscape” or “managed resource*” or “sacred forest*” or “sacred grove*”) AND forest* AND (“deforest*” or “degrad*” or “biodiversity” or desert* or “threaten” or “leakage*” or ("spillover*" or "spill-over*") or “reforest*” or “afforest*” or (re-growth or regrowth) or “loss*”) AND (“attitude*” or “behavi*” or “perception*” or “belief*” or “perspective*” or “opinion*” or “view*” OR “participat*” or</p>	1148

	“accountab*” or “legitima*” or, “monitor*” or “report*” or ”compliance” or “enforcement*” or “coercion*” or “trust*”))	
only governance and management	("NGO*" OR non\$governmental organi\$ation OR "private nature reserve*" OR “privat*” OR "governme*” OR “community conserved area*” OR “indigenous” or (comanag* or co-manag*) OR “collaborative” OR "decentrali*” OR “devolut*” OR “joint management” OR (delegat* AND authorit*) OR ("integrated and conservation and development") or "ICDP*" or “governance” or “institution*” or “polit*” or “polic*” or “paper park*”) AND (“protected area*” OR “reserve*” OR park* OR “monument*” OR “wilderness area*” OR “world heritage site*” or “sanctuar*” or “refug*” or “biosphere reserve*” or “protected landscape” or “managed resource*” or “sacred forest*” or “sacred grove*”) AND forest*)	Approxim ately 11,927
addedd power	("NGO*" OR non\$governmental organi\$ation OR "private nature reserve*" OR “privat*” OR "governme*” OR “community conserved area*” OR “indigenous” or (comanag* or co-manag*) OR “collaborative” OR "decentrali*” OR “devolut*” OR “joint management” OR (delegat* AND authorit*) OR ("integrated and conservation and development") or "ICDP*" or “governance” or “institution*” or “polit*” or “polic*” or “power” or “paper park*”) AND (“protected area*” OR “reserve*” OR park* OR “monument*” OR “wilderness area*” OR “world heritage site*” or “sanctuar*” or “refug*” or “biosphere reserve*” or “protected landscape” or “managed resource*” or “sacred forest*” or “sacred grove*”) AND forest* AND (“deforest* or “degrad*” or “biodiversity” or desert* or “threaten” or “leakage*” or ("spillover*" or "spill-over*") or “reforest*” or “afforest*” or (re-growth or regrowth) or “loss*”) AND (“attitude*” or “behavi*” or “perception*” or “belief*” or “perspective*” or “opinion*” or “view*” OR “participat*” or “accountab*” or “legitima*” or, “monitor*” or “report*” or ”compliance” or “enforcement*” or “coercion*” or “trust*”))	1,206 no decreased. ..
addedd “” to comanagement	("NGO*" OR non\$governmental organi\$ation OR "private nature reserve*" OR “privat*” OR "governme*” OR “community conserved area*” OR “indigenous” or (“comanag*” or “co-manag*”) OR “collaborative” OR "decentrali*” OR “devolut*” OR “joint management” OR (delegat* AND authorit*) OR ("integrated and conservation and development") or "ICDP*" or “governance” or “institution*” or “polit*” or “polic*” or “paper park*”) AND (“protected area*” OR “reserve*” OR park* OR “monument*” OR “wilderness area*” OR “world heritage	1,148 = no change!!

	site*" or "sanctuar*" or "refug*" or "biosphere reserve*" or "protected landscape" or "managed resource*" or "sacred forest*" or "sacred grove*") AND forest* AND ("deforest*" or "degrad*" or "biodiversity" or desert* or "threaten" or "leakage*" or ("spillover*" or "spill-over*") or "reforest*" or "afforest*" or (re-growth or regrowth) or "loss*") AND ("attitude*" or "behavi*" or "perception*" or "belief*" or "perspective*" or "opinion*" or "view*" OR "participat*" or "accountab*" or "legitima*" or, "monitor*" or "report*" or "compliance" or "enforcement*" or "coercion*" or "trust*"))	
add conservation	("NGO*" OR non\$governmental organi\$ation OR "private nature reserve*" OR "privat*" OR "governme*" OR "community conserved area*" OR "indigenous" or ("comanag*" or "co-manag*") OR "collaborative" OR "decentrali*" OR "devolut*" OR "joint management" OR (delegat* AND authorit*) OR ("integrated and conservation and development") or "ICDP*" or "governance" or "institution*" or "polit*" or "polic*" or "paper park*") AND ("protected area*" OR "reserve*" OR park* OR "monument*" OR "wilderness area*" OR "world heritage site*" or "sanctuar*" or "refug*" or "biosphere reserve*" or "protected landscape" or "managed resource*" or "sacred forest*" or "sacred grove*") AND forest* AND ("conserv*" or "deforest*" or "degrad*" or "biodiversity" or desert* or "threaten" or "leakage*" or ("spillover*" or "spill-over*") or "reforest*" or "afforest*" or (re-growth or regrowth) or "loss*") AND ("attitude*" or "behavi*" or "perception*" or "belief*" or "perspective*" or "opinion*" or "view*" OR "participat*" or "accountab*" or "legitima*" or, "monitor*" or "report*" or "compliance" or "enforcement*" or "coercion*" or "trust*"))	1793
add rules, norms	("NGO*" OR non\$governmental organi\$ation OR "private nature reserve*" OR "privat*" OR "governme*" OR "community conserved area*" OR "indigenous" or ("comanag*" or "co-manag*") OR "collaborative" OR "decentrali*" OR "devolut*" OR "joint management" OR (delegat* AND authorit*) OR ("integrated and conservation and development") or "ICDP*" or "governance" or "institution*" or "rule*" or "norm" or "polit*" or "polic*" or "paper park*") AND ("protected area*" OR "reserve*" OR park* OR "monument*" OR "wilderness area*" OR "world heritage site*" or "sanctuar*" or "refug*" or "biosphere reserve*" or "protected landscape" or "managed resource*" or "sacred forest*" or "sacred grove*") AND forest* AND ("conserv*" or "deforest*" or "degrad*" or "biodiversity" or	1862

	desert* or “threaten” or “leakage*” or ("spillover*" or "spill-over*") or “reforest*” or “afforest*” or (re-growth or regrowth) or “loss*”) AND (“attitude*” or “behavi*” or “perception*” or “belief*” or “perspective*” or “opinion*” or “view*” OR “participat*” or “accountab*” or “legitima*” or “monitor*” or “report*” or ”compliance” or “enforcement*” or “coercion*” or “trust*”)	
added * to account for norm	("NGO*" OR non\$governmental organi\$ation OR "private nature reserve*" OR “privat*” OR "governme*” OR “community conserved area*” OR “indigenous” or (“comanag*” or “co-manag*”) OR “collaborative” OR "decentrali*” OR “devolut*” OR “joint management” OR (delegat* AND authorit*) OR ("integrated and conservation and development") or "ICDP*" or “governance” or “institution*” or “rule*” or “norm*” or “polit*” or “polic*” or “paper park*”) AND (“protected area*” OR “reserve*” OR park* OR “monument*” OR “wilderness area*” OR “world heritage site*” or “sanctuar*” or “refug*” or “biosphere reserve*” or “protected landscape” or “managed resource*” or “sacred forest*” or “sacred grove*”) AND forest* AND (“conserv*” or “deforest*” or “degrad*” or “biodiversity” or desert* or “threaten” or “leakage*” or ("spillover*" or "spill-over*") or “reforest*” or “afforest*” or (re-growth or regrowth) or “loss*”) AND (“attitude*” or “behavi*” or “perception*” or “belief*” or “perspective*” or “opinion*” or “view*” OR “participat*” or “accountab*” or “legitima*” or “monitor*” or “report*” or ”compliance” or “enforcement*” or “coercion*” or “trust*”)	1998
w/o ecological impacts	("NGO*" OR non\$governmental organi\$ation OR "private nature reserve*" OR “privat*” OR "governme*” OR “community conserved area*” OR “indigenous” or (“comanag*” or “co-manag*”) OR “collaborative” OR "decentrali*” OR “devolut*” OR “joint management” OR (delegat* AND authorit*) OR ("integrated and conservation and development") or "ICDP*" or “governance” or “institution*” or “rule*” or “norm*” or “polit*” or “polic*” or “paper park*”) AND (“protected area*” OR “reserve*” OR park* OR “monument*” OR “wilderness area*” OR “world heritage site*” or “sanctuar*” or “refug*” or “biosphere reserve*” or “protected landscape” or “managed resource*” or “sacred forest*” or “sacred grove*”) AND forest* AND (“attitude*” or “behavi*” or “perception*” or “belief*” or “perspective*” or “opinion*” or “view*” OR “participat*” or “accountab*” or “legitima*” or “monitor*” or “report*” or ”compliance” or “enforcement*” or “coercion*” or “trust*”)	Approximately 6,007= Results: 3,274

odvojeno attributes i nema ecological attributes	("NGO*" OR non\$governmental organi\$ation OR "private nature reserve*" OR "privat*" OR "governme*" OR "community conserved area*" OR "indigenous" or ("comanag*" or "co-manag*") OR "collaborative" OR "decentrali*" OR "devolut*" OR "joint management" OR (delegat* AND authorit*) OR ("integrated and conservation and development") or "ICDP*" or "governance" or "institution*" or "rule*" or "norm*" or "polit*" or "polic*" or "paper park*") AND ("protected area*" OR "reserve*" OR park* OR "monument*" OR "wilderness area*" OR "world heritage site*" or "sanctuar*" or "refug*" or "biosphere reserve*" or "protected landscape" or "managed resource*" or "sacred forest*" or "sacred grove*") AND forest* AND ("attitude*" or "behavi*" or "perception*" or "belief*" or "perspective*" or "opinion*" or "view*" OR "participat*") and ("accountab*" or "legitima*" or "monitor*" or "report*" or "compliance" or "enforcement*" or "coercion*" or "trust*")	: 482
attributes with governance	("NGO*" OR non\$governmental organi\$ation OR "private nature reserve*" OR "privat*" OR "governme*" OR "community conserved area*" OR "indigenous" or ("comanag*" or "co-manag*") OR "collaborative" OR "decentrali*" OR "devolut*" OR "joint management" OR (delegat* AND authorit*) OR ("integrated and conservation and development") or "ICDP*" or "governance" or "institution*" or "rule*" or "norm*" or "polit*" or "polic*" or "paper park*" OR "participat*" or "accountab*" or "legitima*" or "monitor*" or "report*" or "compliance" or "enforcement*" or "coercion*" or "trust*") AND ("protected area*" OR "reserve*" OR park* OR "monument*" OR "wilderness area*" OR "world heritage site*" or "sanctuar*" or "refug*" or "biosphere reserve*" or "protected landscape" or "managed resource*" or "sacred forest*" or "sacred grove*") AND forest* AND ("conserv*" or "deforest*" or "degrad*" or "biodiversity" or desert* or "threaten" or "leakage*" or ("spillover*" or "spill-over*") or "reforest*" or "afforest*" or (re-growth or regrowth) or "loss*") AND ("attitude*" or "behavi*" or "perception*" or "belief*" or "perspective*" or "opinion*" or "view*")	1,610 very good articles
w/o attributes	("NGO*" OR non\$governmental organi\$ation OR "private nature reserve*" OR "privat*" OR "governme*" OR "community conserved area*" OR "indigenous" or ("comanag*" or "co-manag*") OR "collaborative" OR "decentrali*" OR "devolut*" OR "joint management" OR (delegat* AND authorit*) OR ("integrated and conservation	1005

	<p>and development") or "ICDP*" or "governance" or "institution*" or "rule*" or "norm*" or "polit*" or "polic*" or "paper park*") AND ("protected area*" OR "reserve*" OR park* OR "monument*" OR "wilderness area*" OR "world heritage site*" or "sanctuar*" or "refug*" or "biosphere reserve*" or "protected landscape" or "managed resource*" or "sacred forest*" or "sacred grove*") AND forest* AND ("conserv*" or "deforest*" or "degrad*" or "biodiversity" or desert* or "threaten" or "leakage*" or ("spillover*" or "spill-over*") or "reforest*" or "afforest*" or (re-growth or regrowth) or "loss*") AND ("attitude*" or "behavi*" or "perception*" or "belief*" or "perspective*" or "opinion*" or "view*")</p>	
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**ANNEX 2: DATABASE SEARCH WITH DIFFERENCES IN SEARCH STRINGS ACCORDING TO DB SEARCH FACILITY**

Total downloaded	Database	URL	Search 1	Search 2	Search 3
<b>Search date: 2.11.2012</b>					
2000	Scopus	<a href="http://www.scopus.com">http://www.scopus.com</a>	TITLE-ABS-KEY("governance" OR "self-governance" OR "institution*" OR "rule*" OR "norm*" OR "polit*" OR "polic*" OR "paper park*" OR "participat*" OR "accountab*" OR "legitima*" OR "compliance" OR "enforcement*" OR "coercion*" OR "trust*" OR "conflict*" OR "exclusion*" OR "access" OR "local elite*" OR "elite capture") AND ("protected area*" OR "nature reserve*" OR park* OR "monument*" OR "wilderness area*" OR "world heritage site*" OR "sanctuar*" OR "refug*" OR "biosphere reserve*" OR "protected landscape" OR "management area*" OR "sacred forest*" OR "sacred grove*") AND forest* AND ("conserv*" OR "deforest*" OR "degrad*" OR "biodiversity" OR desert* OR	("protected area*" OR "nature reserve*" OR park* OR monument* OR "wilderness area*" OR "world heritage site*" OR sanctuar* OR refug* OR "biosphere reserve*" OR "protected landscape" OR "management area*" OR "sacred forest*" OR "sacred grove*") AND (governance OR self-governance OR institution* OR rule* OR norm* OR polit* OR polic* OR "paper park*" OR participat* OR accountab* OR legitima* OR compliance OR enforcement* OR coercion* OR trust* OR conflict* OR exclusion* OR access OR "local elite*" OR "elite capture") AND forest* AND (conserv* OR deforest* OR degrad* OR biodiversity OR desert* OR threaten OR leakage* OR spillover* OR spill-over* OR	TITLE-ABS-KEY(("protected area*" OR "nature reserve*" OR park* OR monument* OR "wilderness area*" OR "world heritage site*" OR sanctuar* OR refug* OR "biosphere reserve*" OR "protected landscape" OR "management area*" OR "sacred forest*" OR "sacred grove*") AND (governance OR self-governance OR institution* OR rule* OR norm* OR polit* OR polic* OR "paper park*" OR participat* OR accountab* OR legitima* OR compliance OR enforcement* OR coercion* OR trust* OR conflict* OR exclusion* OR access OR "local elite*" OR "elite capture") AND forest* AND (conserv* OR deforest* OR degrad* OR biodiversity OR desert* OR threaten OR leakage* OR spillover* OR spill-over* OR reforest* OR

			"threaten" OR "leakage*" OR "spillover*" OR "spill-over*" OR "reforest*" OR "afforest*" OR "re-growth" OR "regrowth" OR "forest clearance" OR "land use change" OR "land cover change" OR "loss*" OR "attitude*" OR "behavi*" OR "perception*" OR "belief*" OR "perspective*" OR "opinion*" OR "view*"), 27950 hits, refine search	reforest* OR afforest* OR re-growth OR regrowth OR "forest clearance" OR "land use change" OR "land cover change" OR loss* OR attitude* OR behavi* OR perception* OR belief* OR perspective* OR opinion* OR view*), 78072 hits, refine search	afforest* OR re-growth OR regrowth OR "forest clearance" OR "land use change" OR "land cover change" OR loss* OR attitude* OR behavi* OR perception* OR belief* OR perspective* OR opinion* OR view*), 2069 hits, 69 could not be retrieved, 2000 imported in EPPI
<b>Search date: 5.11.2012</b>					
137	Agricola	<a href="http://agricola.nal.usda.gov/booleancube/booleancube_search_cit.html">http://agricola.nal.usda.gov/booleancube/booleancube_search_cit.html</a>	("protected area"OR"nature reserve"OR park OR monument OR "wilderness area"OR"world heritage site"OR sanctuary OR refuge OR "biosphere reserve"OR"protected landscape"OR"management area"OR"sacred forest"OR"sacred grove")AND(governance OR self-governance OR institution OR rule OR norm OR polity OR policy OR "paper park"OR participation OR conflict OR exclusion OR access)AND forest, - doesn't yield results, adapt	("protected area" OR"nature reserve"OR park OR monument OR "wilderness area"OR"world heritage site"OR sanctuary OR refuge OR "biosphere reserve"OR"protected landscape"OR"management area"OR"sacred forest"OR"sacred grove")AND(governance) AND forest, 5 hits. 1 relevant	(governance OR institution OR rule OR norm OR polity OR policy OR "paper park"OR trust OR conflict OR exclusion OR access OR "elite capture")AND forest AND("protected area"OR"nature reserve"OR park OR monument OR "wilderness area"OR"world heritage site"OR sanctuary OR refuge OR "biosphere reserve"OR"protected landscape"OR"management area"OR"sacred forest"OR"sacred grove"), 136 hits (all downloaded)
0	Science Index	<a href="http://scienceindex.com">http://scienceindex.com</a>	None relevant		

372	CAB abstracts	<a href="http://www.cabdirect.org">http://www.cabdirect.org</a>	(("governance" OR "self-governance" OR "institution*" OR "rule*" OR "norm*" OR "polit*" OR "polic*" OR "paper park*" OR "participat*" OR "accountab*" OR "legitima*" OR "compliance" OR "enforcement*" OR "coercion*" OR "trust*" OR "conflict*" OR "exclusion*" OR "access" OR "local elite*" OR "elite capture") AND ("protected area*" OR "nature reserve*" OR park* OR "monument*" OR "wilderness area*" OR "world heritage site*" OR "sanctuar*" OR "refug*" OR "biosphere reserve*" OR "protected landscape" OR "management area*" OR "sacred forest*" OR "sacred grove*") AND forest* AND ("conserv*" OR "deforest*" OR "degrad*" OR "biodiversity" OR desert* OR "threaten" OR "leakage*" OR "spillover*" OR "spill-over*" OR "reforest*" OR "afforest*" OR "re-growth" OR "regrowth" OR "forest clearance" OR "land use change" OR "land cover change" OR "loss*" OR "attitude*" OR "behavi*" OR "perception*" OR "belief*" OR "perspective*" OR "opinion*" OR "view*")) AND la:(En OR English), 372 hits, all uploaded to EPPI		
<b>Search date: 6.11.2012</b>					
17	Public Library of Science (PLOS)	<a href="http://www.plosone.org/search/advancedSearch">http://www.plosone.org/search/advancedSearch</a>	(("governance" OR "self-governance" OR "institution*" OR "rule*" OR "norm*" OR "polit*" OR "polic*" OR "paper park*" OR "participat*" OR "accountab*" OR "legitima*" OR "compliance" OR "enforcement*" OR "coercion*" OR "trust*" OR "conflict*" OR "exclusion*" OR "access" OR "local elite*" OR "elite capture") AND ("protected area*" OR "nature reserve*" OR park* OR "monument*" OR "wilderness area*" OR "world heritage site*" OR "sanctuar*" OR "refug*" OR "biosphere reserve*" OR "protected landscape" OR "management area*" OR "sacred forest*" OR "sacred grove*") AND forest* AND ("conserv*" OR "deforest*" OR "degrad*" OR "biodiversity" OR desert* OR "threaten" OR "leakage*" OR "spillover*" OR "spill-over*" OR "reforest*" OR "afforest*" OR "re-growth" OR "regrowth" OR "forest clearance" OR "land use change" OR "land cover change" OR "loss*" OR "attitude*" OR "behavi*" OR "perception*" OR "belief*" OR "perspective*" OR "opinion*" OR "view*"), 2130 hits, 17 downloaded		
37	Directory of Open Access Journals (DOAJ)	<a href="http://www.doaj.org/doaj?func=home&amp;uiLanguage=en">http://www.doaj.org/doaj?func=home&amp;uiLanguage=en</a>	All Fields=park AND <i>All Fields=governance</i> , 24 hits, 6 downloaded	All Fields=protected area AND All Fields=governance, 13 hits, 2 downloaded	All Fields=protected area AND All Fields=people, 47 hits, 13 relevant
5	ECONpapers Research papers on economic	<a href="http://econpapers.repec.org">http://econpapers.repec.org</a>	protected area governance, 27 hits, 3 relevant	park people biodiversity forest, 4 hits. 2 relevant	

	s				
<b>Search date: 7.11.2012</b>					
<b>0</b>	<b>COPAC</b>	<a href="http://copac.ac.uk/">http://copac.ac.uk/</a>	KEYWORDS: biodiversity park governance protected area conservation people, 25 hits, 0 relevant		
<b>9</b>	Social Science research Network- <b>SSRN</b>	<a href="http://papers.ssrn.com/sol3/DisplayAbstractSearch.cfm">http://papers.ssrn.com/sol3/DisplayAbstractSearch.cfm</a>	Protected area biodiversity conservation, 13 hits, 0 relevant	community biodiversity conservation, 23 hits, 5 relevant	governance biodiversity conservation, 10 hits, 3 relevant;  Search 4: governance protected area, 18 hits, 1 relevant
<u>0</u>	ECONOLIT		<u>NO access</u>		
<b>Search date: 9.11.2012</b>					
<b>10</b>	International Development Research Center ( <b>IDRC</b> ) digital library	<a href="http://idl-bnc.idrc.ca/dspace/advanced-search">http://idl-bnc.idrc.ca/dspace/advanced-search</a>	((("protected area"OR "nature reserve"OR park OR monument OR "wilderness area"OR "world heritage site"OR sanctuary OR refuge OR "biosphere reserve"OR "protected landscape"OR "management area"OR "sacred forest"OR "sacred grove")AND(governance OR self-governance OR institution OR rule	("governance" OR "self-governance" OR "institution*" OR "rule*" OR "norm*" OR "polit*" OR "polic*" OR "paper park*" OR "participat*" OR "accountab*" OR "legitima*" OR "compliance" OR "enforcement*" OR "coercion*" OR "trust*" OR "conflict*" OR "exclusion*" OR "access" OR "local elite*" OR "elite capture")	governance and ( "protected area"OR "nature reserve"OR park OR monument OR "wilderness area"OR "world heritage site"OR sanctuary OR refuge OR "biosphere reserve"OR "protected landscape"OR "management area"OR "sacred forest"OR "sacred grove"), 4155 hits, 0 relevant

			OR norm OR polity OR policy OR "paper park" OR participation OR conflict OR exclusion OR access) AND forest)), 2618 hits, first 100 only checked, 10 imported	AND ("protected area*" OR "nature reserve*" OR park* OR "monument*" OR "wilderness area*" OR "world heritage site*" OR "sanctuar*" OR "refug*" OR "biosphere reserve*" OR "protected landscape" OR "management area*" OR "sacred forest*" OR "sacred grove*") AND forest* AND ("conserv*" OR "deforest*" OR "degrad*" OR "biodiversity" OR desert* OR "threaten" OR "leakage*" OR "spillover*" OR "spill-over*" OR "reforest*" OR "afforest*" OR "regrowth" OR "regrowth" OR "forest clearance" OR "land use change" OR "land cover change" OR "loss*" OR "attitude*" OR "behavi*" OR "perception*" OR "belief*" OR "perspective*" OR "opinion*" OR "view*"), 3295, 0 relevant	
<b>Search date: 16.11.2012</b>					
13	<b>Index to Theses Online</b>	<a href="http://www.theses.com/">http://www.theses.com/</a>	("protected area~" OR "nature reserve~" OR park~ OR monument~ OR "wilderness area~" OR "world heritage site~" OR sanctuar* OR refug* OR "biosphere reserve~" OR "protected landscape" OR "management area~" OR "sacred forest~" OR "sacred grove~") AND forest~ AND (governance OR institution OR norm OR policy OR polity), 32 hits, 13 relevant		

50	<b>PROQUEST Theses</b>	<a href="http://www.proquest.com/products-services/pqdt.html">http://www.proquest.com/products-services/pqdt.html</a>	("protected area*" OR "nature reserve*" OR park* OR monument* OR "wilderness area*" OR "world heritage site*" OR sanctuar* OR refug* OR "biosphere reserve*" OR "protected landscape" OR "management area*" OR "sacred forest*" OR "sacred grove*") AND forest* AND (governance OR institution OR norm OR policy OR polity), 220 (approximate count without duplicates), 50 relevant
<b>Search date: 19.11.2012</b>			
118	<b>PROQUEST Journals</b>	<a href="http://www.proquest.com/products-services/pq_ed_journals.html">http://www.proquest.com/products-services/pq_ed_journals.html</a>	<b>same keywords</b> ("protected area*" OR "nature reserve*" OR park* OR monument* OR "wilderness area*" OR "world heritage site*" OR sanctuar* OR refug* OR "biosphere reserve*" OR "protected landscape" OR "management area*" OR "sacred forest*" OR "sacred grove*") AND forest* AND (governance OR institution OR norm OR policy OR polity)), (5012) Approximate result count without duplicates, 118 checked (10%) according to relevance, 118 relevant
<b>Search date: 15.10.2012</b>			
23	Ostrom Workshop in Political Theory and Policy Analysis	<a href="http://dlc.dlib.indiana.edu/dlc/advanced-search">http://dlc.dlib.indiana.edu/dlc/advanced-search</a> , <a href="http://www.indiana.edu/~workshop/publications/index.php">http://www.indiana.edu/~workshop/publications/index.php</a>	"(((protected area) OR (nature reserve) OR park OR monument OR (wilderness area) OR (world heritage site) or sanctuary or refuge or (biosphere reserve) or (protected landscape) or (management area) or (sacred forest) or (sacred grove)) AND (forest) AND ((attitude OR behavior OR perception OR belief OR perspective OR opinion) or (conservation or deforestation or degradation or biodiversity or desertification or threaten or leakage or spillover or spill-over or reforestation or afforestation or re-growth or regrowth Or (forest clearance) or (land use change) or (land cover change) or loss)))", 4226 hits, FIRST 200, items sorted by relevance; 23 relevant

### ANNEX 3: SEARCH THROUGH SPECIALIST WEBSITES

Relevant titles	Organisation name	URL	Date of search	Notes	Search 1	Search 2	Search 3	Search 4
0	Online Knowledge Base: Natural Resources Governance around the World	<a href="http://www.agter.org/">http://www.agter.org/</a>	07-10-12		None relevant - summaries of existing texts			
4	CGIAR Systemwide Program on Collective Action and Property Rights	<a href="http://www.capri.cgiar.org/">http://www.capri.cgiar.org/</a>	22-10-12	on gender and community, social capital, some of them in Spanish	"protected area" in advanced research under field "any word", 161 hits, 3 relevant	Forest reserve in title (the other management categories were without hits), 1 hit, 1 paper	"conserv*" or "deforest*" or "degrad*" or "biodiversity" or desert* or "threaten" or "leakage*" or ("spillover*" or "spill-over*") or "reforest*" or "afforest*" or ("re-growth" or "regrowth") Or "forest clearance" or "land use change" or "land cover change" or "loss*" /doesn't search	na
0	CATIE	<a href="http://www.catie.ac.cr/Magazin_ENG.asp?CodIdioma=ENG">http://www.catie.ac.cr/Magazin_ENG.asp?CodIdioma=ENG</a>	22-10-12	None relevant - no info on PAs				
0	The Community-Based Natural Resource	<a href="http://www.cbnrm.net/">http://www.cbnrm.net/</a>	22-10-12	None relevant - CBNRM main topic..compilation of papers..				

	Management Network							
0	CGIAR-a global agricultural research partnership	<a href="http://www.cgiar.org/">http://www.cgiar.org/</a>	22-10-12	agriculture research, food security, progress reports etc	Protected areas, 14 hits, 0 relevant	Governance, 14 hits, 0 relevant	na	na
24	CIFOR_Center for international forestry research	<a href="http://www.cifor.org/">http://www.cifor.org/</a>	22-10-12	also include publ. in sci journals	protected area under advanced search abstract and title; Online library, search listed as @most relevant@ Search results for keyword "and protected area", language " English", more than 290 hits, 18 relevant	Search results for keyword "and "protected area*" and governance and forest*", language " English" search listed as @most relevant@, more than 290, 0 relevant/non-duplicate	language " English", 'most relevant', "protected area*" OR "nature reserve*" OR park* OR "monument*" OR "wilderness area*" OR "world heritage site*" or "sanctuar*" or "refug*" or "biosphere reserve*" or "protected landscape" or "management area*" or "sacred forest*" or "sacred grove*", more than 290, 6 relevant	na
	Forest, Trees and People Program	<a href="http://www.cof.orst.edu/org/istf/ftpp.htm">http://www.cof.orst.edu/org/istf/ftpp.htm</a>	22-10-12	composed of several central websites< Africa (anglophone): <a href="http://www.ftpp.or.ke/">http://www.ftpp.or.ke/</a> - DOESNT WORK Africa (Francophone): (Not available) South Asia: <a href="http://www-trees.slu.se/nepal/watchindex.htm">http://www-trees.slu.se/nepal/watchindex.htm</a> -DOESNT WORK Asia-South Pacific: <a href="http://www.recoftc.org">http://www.recoftc.org</a> – WORKs, see below Europe: <a href="http://www-trees.slu.se">http://www-trees.slu.se</a> - DOESNT WORK Latin America: <a href="http://www.cnr.org.pe/fao/index.htm">http://www.cnr.org.pe/fao/index.htm</a> - DOESNT WORK				



				North America & Caribbean: <a href="http://www.cof.orst.edu/org/istf">http://www.cof.orst.edu/org/istf</a> redirects to <a href="http://www.istf-bethesda.org/index-english.html">http://www.istf-bethesda.org/index-english.html</a> Sweden FFTP: <a href="http://www-trees.slu.se/">http://www-trees.slu.se/</a> -DOESNT WORK FTPP at FAO-UN: <a href="http://www.fao.org/forestry/FON/FONP/cfu/cfu-e.stm">http://www.fao.org/forestry/FON/FONP/cfu/cfu-e.stm</a> WORKs, see below				
0	RECOFTC -the center for people and forests	<a href="http://www.recoftc.org">http://www.recoftc.org</a>	22-10-12	Publications by Topic - Community Forestry- none relevant, Climate Change- none relevant, Forest Conflict -policy briefs only., Livelihoods -benefits sharing – none relevant, Rights- none relevant, Governance - bulletins, p. Briefs, Benefits- none relevant, FPIC in REDD+- nothing relevant				
0	INTERNATIONAL SOCIETY OF TROPICAL FORESTERS	<a href="http://www.istf-bethesda.org/index-english.html">http://www.istf-bethesda.org/index-english.html</a>	22-10-12	no publications section (last updated 2010)				
	FAO Forestry	<a href="http://www.fao.org/forestry/FON/FONP/cfu/cfu-e.stm">http://www.fao.org/forestry/FON/FONP/cfu/cfu-e.stm</a>	22-10-12	Redirected : document repository <a href="http://www.fao.org/documents/en/search/init">http://www.fao.org/documents/en/search/init</a> (see below)				
0	FAO document repository	<a href="http://www.fao.org/documents/en/search/init">http://www.fao.org/documents/en/search/init</a>	22-10-12	na	("protected area*" or "park*") and governance - in free text, 15337: with refinement: forestry management and conservation -100 hits; Sustainable natural resources management 53 hits, 0 relevant	protected area*" OR "nature reserve*" OR park* OR "monument*" OR "wilderness area*" OR "world heritage site*" or "sanctuar*" or "refug*" or "biosphere reserve*" or "protected landscape" or "management area*" or "sacred	na	na

						forest*" or "sacred grove*", 16123 with refinement:for estry management and conservation - 100 hits; Sustainable natural resources management 53 hits, 0 relevant		
0	Community forestry international	<a href="http://www.communityforestryinternational.org/">http://www.communityforestryinternational.org/</a> <a href="http://www.communityforestryinternational.org/publications/research_reports/index.html">http://www.communityforestryinternational.org/publications/research_reports/index.html</a>	22-10-12	Research reports – none relevant, on community forestry. Working papers: only 3 available, none relevant Articles: none relevant				
0	Conservation International	<b>Error! Hyperlink reference not valid.</b>	22-10-12	Searched in all publications, 79 hits, none relevant				
0	Cooperation Commons: Interdisciplinary study of cooperation and collective action.	<a href="http://www.cooperationcommons.com/">http://www.cooperationcommons.com/</a>	22-10-12	Research summaries only, overall irrelevant				
0	Cultural survival	<a href="http://www.culturalsurvival.org/current-projects/universal-periodic-review">http://www.culturalsurvival.org/current-projects/universal-periodic-review</a>	22-10-12	none relevant, not focus on PAs				

1	Canadian Forest Service Publications	<a href="http://cfs.nrcan.gc.ca/publications">http://cfs.nrcan.gc.ca/publications</a>	22-10-12	na	(protected&area)&governance; 14 hits, 1 relevant	(protected & area)   (nature & reserve)   (park), 2 hits, 0 relevant	park and governance and forest, 14 hits, 0 relevant	na
0	The Eldis Communities (a free on-line interactive space)	<a href="http://community.eldis.org/">http://community.eldis.org/</a>	22-10-12	None relevant, networking scientific site with blogs				
3	ConserveOnline (online library, created and maintained by The Nature Conservancy)	<a href="http://conserveonline.org/">http://conserveonline.org/</a> , <a href="http://conserveonline.org/search?site=library&amp;q=protected+areas&amp;image.x=2&amp;image.y=6;">http://conserveonline.org/search?site=library&amp;q=protected+areas&amp;image.x=2&amp;image.y=6;</a>	24-10-12	na	park+governance+forest, 127 hits, 1 relevant	protected+area+governance, 261 hits, 1 relevant	protected+area+governance+forest, 163 hits, 1 relevant	na
0	CSID	<a href="http://csid.asu.edu/soecolib">http://csid.asu.edu/soecolib</a>	24-10-12	link broken, page not found..it is website of school of human evolution and social change				
0	USAID - DEVELOPMENT EXPERIENCE CLEARINGHOUSE database	<a href="http://dec.usaid.gov/index.cfm">http://dec.usaid.gov/index.cfm</a> , <a href="https://dec.usaid.gov/dec/content/AdvancedSearch.aspx?ctID=ODVhZjk4NWQtM2YyMi00YjRmLTkxNjktZTcxMjM2NDBmY2Uy">https://dec.usaid.gov/dec/content/AdvancedSearch.aspx?ctID=ODVhZjk4NWQtM2YyMi00YjRmLTkxNjktZTcxMjM2NDBmY2Uy</a>	24-10-12	na	((protected area*) OR (nature reserve*) OR park* OR monument* OR (wilderness area*) OR (world heritage site*) or sanctuar* or refug* or (biosphere reserve*) or (protected landscape) or (management area*) or (sacred forest*) or (sacred grove*)) and governance and forest, 23 hits, 0 relevant	((protected area*) OR (nature reserve*) OR park* OR monument* OR (wilderness area*) OR (world heritage site*) or sanctuar* or refug* or (biosphere reserve*) or (protected landscape) or (management area*) or	na	na

						(sacred forest*) or (sacred grove*)) and governance and forest and institutions, 23 hits, 0 relevant		
0	UK Department of international development	<a href="http://www.dfid.gov.uk">http://www.dfid.gov.uk</a>	24-10-12	topics hunger, wellbeing	protected area governance forest, no results	protected area forest, no results	parks governance forest, no results	na
11	Environmental change institute OXFORD	<a href="http://www.eci.ox.ac.uk/publications/index.php">http://www.eci.ox.ac.uk/publications/index.php</a>	24-10-12	na	conservation, parks, protected areas, 8 relevant,	protected+area+governance, 142 hits, 3 relevant	na	na
23	Eldis	<a href="http://www.eldis.org/">http://www.eldis.org/</a>	24-10-12		'protected area', 162 hits, 6 relevant	'protected area governance', 29 hits, 6 relevant	park governance, 15 hits, 11 relevant	
0	European Tropical Forest Research Network (ETFRN)	<a href="http://www.etfrn.org">http://www.etfrn.org</a>	24-10-12		protected area, 135 hits, 0 relevant			
0	FAO catalogue online	<a href="http://www.fao.org/">http://www.fao.org/</a> , <a href="http://www4.fao.org/fao/bib/">http://www4.fao.org/fao/bib/</a>	24-10-12		protected;area;institution;conservation, no hits	park governance effectiveness, 3 hits, 0 relevant		
0	First Peoples Worldwide	<a href="http://www.firstpeoples.org/">http://www.firstpeoples.org/</a>	24-10-12	No publication section				
0	forest trends	<a href="http://www.forest-trends.org/publications.php">http://www.forest-trends.org/publications.php</a>	25-10-2012	Pre-selected keywords	Biodiversity, 34 hits, 0 relevant	Communities, 41 hits, 0 relevant	Deforestation, 10 hits, 0 relevant,	protected areas, 3 hits, 0 relevant;

									governance: 42, 0 relevant - all on forestry; forest conservation 10, 0 relevant
0	Forests Protection Portal	<a href="http://forests.org/">http://forests.org/</a>	25-10-2012	No publication section					
1	International Fund for Agricultural Development (IFAD) - UN Agency	<a href="http://www.ifad.org/">http://www.ifad.org/</a>	25-10-2012		park+governance, about 199 results, 0 relevant	protected+area+governance, about 292 hits, 1 relevant	protected+area+governance+forest, 516 hits, 0 relevant		
8	International Institute for Environment and Development	<a href="http://www.iied.org">http://www.iied.org</a>	25-10-2012	Returns results In different languages	Biodiversity and conservation, 315 hits, 3 relevant	Participation, 9191 hits, 2 relevant	natural resource management, 690 hits, 3 relevant		
0	Institute on Governance	<a href="http://iog.ca/">http://iog.ca/</a>	25-10-2012	No (relevant) publications					
14	IUCN - World Commission on Protected Areas	<a href="http://www.iucn.org/about/union/commissions/wcpa/">http://www.iucn.org/about/union/commissions/wcpa/</a> , <a href="http://data.iucn.org/dbtw-wpd/commande/search.html">http://data.iucn.org/dbtw-wpd/commande/search.html</a>	29-10-2012		((protected area*) / (nature reserve*) / park* / monument* / (wilderness area*) / (world heritage site*) / sanctuar* / refug* / (biosphere reserve*) / (protected landscape*) / ((management area*) & forest*) / (sacred grove*) & (forest*) & ((attitude* / behavi* / perception*	((protected area*) / (nature reserve*) / park* / monument* / (wilderness area*) / (world heritage site*) / sanctuar* / refug* / (biosphere reserve*) /	(governance / self-governance / institution* / rule* / norm* / polit* / polic* / (paper park*) / participat* / accountab* / legitima* / compliance / enforcement* / coercion* / trust* / conflict* / exclusion* / access / (local elite*) /	("NGO*" / non\$governmental & organization / private nature reserve* / privat* / governme* / communit	

					/ belie* / perspective* / opinion*) / (conservation / deforestation / degradation / biodiversity / desertification / threaten / leakage / spillover / spill-over / reforestation / afforest / re-growth / regrowth / (forest clearance) / (land use change) / (land cover change) / loss))), 97 hits, 8 relevant	(protected landscape*) / ((management area*) & forest*) / (sacred grove*)) & forest* & (governance / self- governance / institution* / rule* / norm* / polit* / polic* / (paper park*) / participat* / accountab* / legitima* / compliance / enforcement* / coercion* / trust* / conflict* / exclusion* / access / (local elite*) / elite capture), 45 hits, 2 relevant	elite capture) & forest* & conservation, 159, 5 relevant	y conserved area* / indigenou s / comanag * / co- manag* / collaborat ive / decentralli * / devolut* / joint managem ent / delegat* authorit* / integrated conservat ion developm ent / "ICDP**" / governan ce / self- governan ce / institution * / rule* / norm* / polit* / polic* / paper
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								park* / participat * / accountab * / legitima* / complian ce / enforcem ent* / coercion* / trust* / conflict* / exclusion * / access / local & elite* / elite capture) & (protected area* / nature reserve* / park* / monumen t* / wildernes s area* / world heritage site* / sanctuar* / refug* /
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								biosphere reserve* /protected landscape / managem ent area*/ sacred forest* / sacred grove*) & forest* & (attitude* / behavi* / perceptio n* / belief* / perspecti ve* / opinion* / view*/co nserv* / deforest* / degrad* / biodiversi ty / desert* / threaten / leakage* / spillover* / spill-
--	--	--	--	--	--	--	--	--



								over* / reforest* / afforest* / re-growth / regrowth / forest clearance / land use change / land cover change / loss*), no results
0	IUFRO - The global network for forest science cooperation	<a href="http://www.iufro.org/publications/">http://www.iufro.org/publications/</a> , <a href="http://www.iufro.org/publications/online-library/">http://www.iufro.org/publications/online-library/</a>	29-10-2012	Broken link				
0	Worlds Environmental Library	<a href="http://www.nzdl.org/fast-cgi-bin/library?a=p&amp;p=about&amp;c=envl">http://www.nzdl.org/fast-cgi-bin/library?a=p&amp;p=about&amp;c=envl</a>	29-10-2012		protected area park reserve forest conservation biodiversity governance, 50 hits, 0 relevant	forest protected area nature reserve park monument wilderness area world heritage site sanctuary refuge biosphere reserve sacred grove sacred forest protected	na	na

						landscape, 0 hits		
6	World Wildlife Fund	<a href="http://wwf.panda.org">http://wwf.panda.org</a> , <a href="http://wwf.panda.org/about_our_earth/all_publications/?uSearchTerm=governance&amp;uMonth=0&amp;uYear=0">http://wwf.panda.org/about_our_earth/all_publications/?uSearchTerm=governance&amp;uMonth=0&amp;uYear=0</a>	30 and 3.10, 1-11-2012		Governance, 70 hits, 3 relevant,	park people, 3330 hits checked first 100, 3 relevant	park reserve governance, 180 hits, 0 relevant	na
11	Poverty and Conservation	<a href="http://povertyandconservation.info/en/bibliographies">http://povertyandconservation.info/en/bibliographies</a>	30 and 3.10, 1-11-2012		Governance, 45 hits, 11 relevant	na	na	na
0	Protected areas and governance groupsite	<a href="http://protectedareasandgovernance.groupsites.com">http://protectedareasandgovernance.groupsites.com</a>	30 and 3.10, 1-11-2012	blog-like site, networking function, links out to conserve online (already searched)				
0	Rainforest Portal	<a href="http://www.rainforestportal.org/">http://www.rainforestportal.org/</a>	30 and 3.10, 1-11-2012	Link to library doesnt work, seems irrelevant				
0	Oxford Centre for Tropical Forests	<a href="http://www.tropicalforests.ox.ac.uk">http://www.tropicalforests.ox.ac.uk</a>	30 and 3.10, 1-11-2012	not relevant (but, links to other relevant sites)				
0	United Nations	<a href="http://www.un.org/en/">http://www.un.org/en/</a>	30 and 3.10, 1-11-2012		'("protected area" OR "nature reserve" OR park OR monument OR "wilderness area " OR "world heritage site " OR sanctuary OR refuge OR "biosphere reserve" OR "protected landscape" OR "management area" OR "sacred forest" OR "sacred grove") AND governance, about 1320 sort but relevant, 0 relevant in	governance forest protected+area OR nature+reserve OR park OR monument OR wilderness+area OR world+heritage+site OR sanctuary OR refuge OR biosphere+reserve OR	(governance or self-governance or institution or rule or norm or polity or policy OR "paper park" OR participation OR accountability OR legitimacy OR compliance OR enforcement OR coercion OR trust OR conflict OR exclusion OR access OR "local elite" OR "elite	

					the first 100	protected+landscape OR management+area OR sacred+grove OR sacred+forest, 81 hits, 0 relevant	capture") AND ("protected area" OR "nature reserve" OR park OR monument OR "wilderness area" OR "world heritage site" OR sanctuary OR "refuge" OR "biosphere reserve" OR "protected landscape" OR "management area" OR "sacred forest" OR "sacred grove") AND Forest, 20 hits, 0 relevant	
0	UNDP	<a href="http://www.undp.org/">http://www.undp.org/</a> ,	30 and 3.10, 1-11-2012		("protected area" OR "nature reserve" OR park OR monument OR "wilderness area " OR "world heritage site " OR sanctuary OR refuge OR "biosphere reserve" OR "protected landscape" OR "management area" OR "sacred forest" OR "sacred grove") AND governance	"protected area" OR "nature reserve" OR park OR monument OR "wilderness area" OR "world heritage site " OR sanctuary OR refuge OR		

					AND forest, about 883 hits, 0 relevant among the first 100	“biosphere reserve” OR “protected landscape” OR “management area” OR “sacred forest” OR “sacred grove”, about 7350 hits, 0 relevant among the first 100		
0	UNDP_GEF	<a href="http://web.undp.org/gef/gef_library.shtml">http://web.undp.org/gef/gef_library.shtml</a>	30 and 3.10, 1-11-2012	SAME SEARCH AS UNDP (GOOGLE SEARCH OF THE WESITE)				
0	GEF Small Grants Programme	<a href="http://sgp.undp.org/">http://sgp.undp.org/</a>		If there are publications available on this website, they are policy briefs	protected area governance conservation biodiversity, 15 hits, 0 relevant	governance conservation biodiversity park people, 0 hits		
4	UNEP-WCMC World Conservation Monitoring Centre	<a href="http://www.unep-wcmc.org/">http://www.unep-wcmc.org/</a>	30 and 3.10, 1-11-2012		protected area governance ( filtered for types of publications - reports, journal papers), 14 hits, 1 relevant	conservation biodiversity governance, 18 hits, 1 relevant	protected area, 88 hits, 2 relevant	
2	United Nations Environmental Programme - UNEP	<a href="http://www.unep.org">http://www.unep.org</a> , <a href="http://ekh.unep.org/">http://ekh.unep.org/</a> , <a href="http://ekh.unep.org/?q=trip_search/advanced">http://ekh.unep.org/?q=trip_search/advanced</a>	30 and 3.10, 1-11-2012		protected area governance, 1 relevant	protected area, 44 hits, 1 relevant	Conservation, 159 hits, 0 relevant	
6	Wildlife conservation Society - WCS	<a href="http://www.wcs.org">http://www.wcs.org</a>	30 and 3.10, 1-11-2012		Governance, 16 hits, 3 relevant	Park, 140 hits, 1 relevant	Conflict, 14 hits, 2 relevant	

1	World Bank	<a href="http://web.worldbank.org">http://web.worldbank.org</a> , <a href="http://documents.worldbank.org/curated/en/docad/vancesearch">http://documents.worldbank.org/curated/en/docad/vancesearch</a>	30 and 3.10, 1-11-2012		(protected area* OR nature reserve* OR park* OR monument* OR wilderness area* OR world heritage site* or sanctuar* or refug* or biosphere reserve* or protected landscape OR management area* or sacred forest* or sacred grove*) AND forest AND (governance or management or institution or policy or conflict or participation or accountability or legitimacy), 124895 hits for english. 19126 for environment, too many hits, mostly reports and guidelines	(protected area* OR nature reserve* OR park* OR monument* OR wilderness area* OR world heritage site* or sanctuar* or refug* or biosphere reserve* or protected landscape OR management area* or sacred forest* or sacred grove*) AND forest AND governance, 21308 (in english, after 1.1. 1992, type: publications/journal paper); 1 relevant in first 50		
0	Nature Conservation Research Centre	<a href="http://www.ncrc-ghana.org/">http://www.ncrc-ghana.org/</a>	30 and 3.10, 1-11-2012	No relevant results				

#### ANNEX 4: BIBLIOGRAPHIC SEARCH

Relevant Review	Previously screened relevant title (not included)	Title extracted	Include at abstract	Include at full-text	Full-text not obtained
1. Porter-Bolland L, et al. 2011 Community managed forests and forest protected areas: An assessment of their conservation effectiveness across the tropics. <i>Forest Ecol. Manage.</i> doi:10.1016/j.foreco.2011.05.034	17	17	13	1	1
2. HIRSCHNITZ-GARBERS, M and STOLL-KLEEMANN, S 2011 Opportunities and barriers in the implementation of protected area management: a qualitative meta-analysis of case studies from European protected areas. <i>The Geographical Journal</i> 177: 321–334	5	15	6	1	1
3. West P, Igoe J, Brockington D 2006 Parks and Peoples: The Social Impact of Protected Areas. <i>Annual Review of Anthropology</i> 35: 251-277. DOI: <a href="https://doi.org/10.1146/annurev.anthro.35.081705.123308">10.1146/annurev.anthro.35.081705.123308</a>	8	25	17	0	8
4. Naughton-Treves L, Buck M and K Brandon 2005 The Role of Protected Areas in Conserving Biodiversity and Sustaining Local Livelihoods" <i>Annual Review of Environment and Resources.</i> 30:219-252.	12	10	7	0	2
5. Coad L, Campbell A, Miles L, Humphries K 2008 The Costs and Benefits of Protected Areas for Local Livelihoods: a review of the current literature. Working Paper. UNEP World Conservation Monitoring Centre, Cambridge, U.K.	7	25	10	2	0
6. Nagendra H 2008 Do parks work? Impact of protected areas on land cover clearing.. <i>Ambio</i> 37(5): 330-7.	18	15	8	0	1
7. Joppa, L and Pfaff, A 2010 Reassessing the forest impacts of protection: the challenge of nonrandom location and a corrective method. <i>Ann N Y Acad Sci.</i> ;1185:135-49. doi: 10.1111/j.1749-6632.2009.05162.x.	28	16	10	0	4

8. Pagdee, A., Kim, Y.-S., Daugherty, P.J., 2006. What makes community forest management successful: a meta study from community forests throughout the world. <i>Society and Natural Resources</i> 19, 33–52.	0	0	0	0	0
9. Shahabuddin, G., Roa, M., 2010. Do community-conserved areas effectively conserve biological diversity? Global insights and the Indian context. <i>Biological Conservation</i> 143, 2926–2936.	13	24	12	0	3
10. Holmes G 2007 Protection, Politics and Protest: Understanding Resistance to Conservation. <i>Conservation and society</i> 5: 184-201 <a href="http://conservationandsociety.org/article.asp?issn=0972-4923;year=2007;volume=5;issue=2;spage=184;epage=201;aurlast=Holmes">http://conservationandsociety.org/article.asp?issn=0972-4923;year=2007;volume=5;issue=2;spage=184;epage=201;aurlast=Holmes</a>	3	16	8	0	7
<b>TOTAL</b>	111	163	91	4	27

Extracted titles	Include at abstract	Include at full-text	Full-text not obtained
<b>Source: Porter Bolland et al</b>			
Brower, L.P., Castilleja, G., Peralta, A., Lopez-Garcia, J., Bojorquez-Tapia, L., Diaz, S., Melgarejo, D., Missrie, M., 2002. Quantitative changes in forest quality in a principal overwintering area of the monarch butterfly in Mexico, 1971–1999. <i>Conservation Biology</i> 16, 346–359.	1		
Chai, S.L., Tanner, E., McLaren, K., 2009. High rates of forest clearance and fragmentation pre- and post-National Park establishment: the case of a Jamaican montane rainforest. <i>Biological Conservation</i> 142, 2484–2492.	1		
Curran, L.M., Trigg, S.N., McDonald, A.K., Astiani, D., Hardiono, Y.M., Siregar, P., Caniogo, I., Kasischke, E., 2004. Lowland forest loss in protected areas of Indonesian Borneo. <i>Science</i> 303, 1000–1003.	1		
DeFries, R., Hansen, A., Newton, A.C., Hansen, M.C., 2005. Increasing isolation of protected areas in tropical forests over the past twenty years. <i>Ecological Applications</i> 15, 19–26.	1		

DeFries, R., Hansen, A., Turner, B.L., Reid, R., Liu, J., 2007. Land use change around protected areas: management to balance human needs and ecological function. <i>Ecological Applications</i> 17, 1031–1038.			
Dirzo, R., Garcia, M.C., 1992. Rates of deforestation in Los Tuxtlas, a neotropical area in Southeast Mexico. <i>Conservation Biology</i> 6, 84–90.			
Durán-Medina, A., Mas, J.F., Velázquez, A., 2005. Land use/cover change in community-based forest management regions and protected areas in Mexico. In: Barton, D.B., Merino-Pérez, L., Barry, D. (Eds.), <i>The Community Forests of Mexico: Managing for Sustainable Landscapes</i> . University of Texas Press, United States of America, pp. 215–238.	1		
Hansen, A.J., DeFries, R., 2007. Ecological mechanisms linking protected areas to surrounding lands. <i>Ecological Applications</i> 17, 974–988.			
Jusoff, K., Manaf, M.R.A., 1995. Satellite remote sensing of deforestation in the Sungai Buloh Forest Reserve, Peninsular Malaysia. <i>International Journal of Remote Sensing</i> 16, 1981–1997.	1		
Mapaure, I.N., Campbell, B.M., 2002. Changes in miombo woodland cover in and around Sengwa Wildlife Research Area, Zimbabwe, in relation to elephants and fire. <i>African Journal of Ecology</i> 40, 212–219.	1		
Nelson, A., Chomitz, K.M., 2009. Do protected areas reduce deforestation? A global assessment with implications for REDD. In: <i>Dialogue on Forests, Governance and Climate Change</i> . IEG, Washington, DC .			1
Ruiz-Pérez, M., Almeida, M., Dewi, S., Costa, E.M.L., Pantoja, M.C., Puntodewo, A., de Arruda Postigo, A., de Andrade, A.G., 2005. Conservation and development in Amazonian Extractive Reserves: the case of Alto Juruá. <i>Ambio</i> 34, 218–223.	1	1	
Sader, S.A., Hayes, D.J., Hepinstall, J.A., Coan, M., Soza, C., 2001. Forest change monitoring of a remote biosphere reserve. <i>International Journal of Remote Sensing</i> 22, 1937–1950.	1		
Sanchez-Azofeifa, G.A., Alvard, B., Calvo, J., Moorthy, I., 2002. Dynamics of Tropical Deforestation around National Parks: remote sensing of forest change on the Osa Peninsula of Costa Rica. <i>Mountain Research and Development</i> 22, 352–358.	1		
Southworth, J., Nagendra, H., Carlson, L.A., Tucker, C., 2004. Assessing the impact of Celaque National Park on forest fragmentation in western Honduras. <i>Applied Geography</i> , 303–322.	1		
Vadjunec, J.M., Gomes, C.V., Ludewigs, T., 2009. Land-use/land-cover change among rubber tappers in the Chico Mendes Extractive Reserve, Acre, Brazil. <i>Journal of Land Use Science</i> 4, 1–26.	1		
Wright, S.J., Sanchez-Azofeifa, G.A., Portillo-Quintero, C., Davies, D., 2007. Poverty and corruption compromise tropical forest reserves. <i>Ecological Applications</i> 17, 1259–1266.	1		
Source: HIRSCHNITZ-GARBERS, M and STOLL-KLEEMANN, S 2011			
Barker A and Stockdale A 2008 Out of the wilderness? Achieving sustainable development within Scottish			



national parks <i>Journal of Environmental Management</i> 88 181–93			
Bell S, Hampshire K and Topalidou S 2007 The political culture of poaching: a case study from northern Greece <i>Biodiversity and Conservation</i> 16 399–418			
Bosetti V and Locatelli G 2006 A data envelopment analysis approach to the assessment of natural parks' economic efficiency and sustainability: the case of Italian national parks. <i>Sustainable Development</i> 14 277–86			
Brockington D 2002 <i>Fortress conservation: the preservation of the Mkomazi Game Reserve, Tanzania</i> James Currey, Oxford			1
Catsadorakis G and Malakou M 1997 Conservation and management issues of Prespa National Park <i>Hydrobiologia</i> 351 175–96			
Hoole A and Berkes F 2010 Breaking down fences: recoupling social-ecological systems for biodiversity conservation in Namibia <i>Geoforum</i> 41 304–17	1		
Kaltenborn B P, Riese H and Hundeide M 1999 National park planning and local participation: some reflections from a mountain region in southern Norway <i>Mountain Research and Development</i> 19 51–61	1		
Kideghesho J, Røskaft E and Kaltenborn B 2007 Factors influencing conservation attitudes of local people in Western Serengeti, Tanzania <i>Biodiversity and Conservation</i> 16 2213–30	1		
Kusova D, Tesitel J, Matejka K and Bartos M 2008 Biosphere reserves – an attempt to form sustainable landscapes: a case study of three biosphere reserves in the Czech Republic <i>Landscape and Urban Planning</i> 84 38–51			
Liu J, Ouyang Z and Miao H 2010 Environmental attitudes of stakeholders and their perceptions regarding protected area-community conflicts: a case study in China. <i>Journal of Environmental Management</i> 91 2254–62	1		
Stoll-Kleemann S 2001 Barriers to nature conservation in Germany: a model explaining opposition to protected areas <i>Journal of Environmental Psychology</i> 21 369–85			
Stoll-Kleemann S and O'Riordan T 2002 From participation to partnership in biodiversity protection: experience from Germany and South Africa <i>Society and Natural Resources</i> 15: 161–77			
Svarstad H, Daugstad K, Vistad O I and Guldvik I 2006 New protected areas in Norway: local participation without gender equality <i>Mountain Research and Development</i> 26 48–54			
Wallner A, Bauer N and Hunziker M 2007 Perceptions and evaluations of biosphere reserves by local residents in Switzerland and Ukraine <i>Landscape and Urban Planning</i> 83 104–14	1	1	
Wiesmann U, Karina L and Rist S 2005 Between conservation and development: concretizing the first World Natural Heritage Site in the Alps through participatory processes <i>Mountain Research and Development</i> 25 128–38			
<b>Source: West et al 2006</b>			

Albers HJ, Grinspoon E. 1997. A comparison of the enforcement of access restrictions between Xishuangbanna Nature Reserve (China) and Khao Yai National Park (Thailand). <i>Environ. Conserv.</i> 24:351–62			1
Alexander SE. 2000. Resident attitudes towards conservation and black howler monkeys in Belize: the Community Baboon Sanctuary. <i>Environ. Conserv.</i> 27(4):341–50			1
Anderson DG, Ikeya K. 2001. Parks, Property and Power: Managing Hunting Practice and Identity Within State Policy Regimes. <i>Senri Ethnological Studies</i> No. 59. Osaka, Japan: Nat. Museum Ethnol.	1		
Baviskar A. 2003. States, communities and conservation: the practice of ecodevelopment in the Great Himalayan National Park. In <i>Battles Over Nature: Science and the Politics of Conservation</i> , ed. V Saberwal, M Rangarajan, pp. 256–83. Delhi: Permanent Black			1
Brandon K, Gorenflo LJ, Rodrigues ASL, Waller RW. 2005. Reconciling biodiversity conservation, people, protected areas, and agricultural suitability in Mexico. <i>World Dev.</i> 33(9):1403–18			
Brown K. 1998. The political ecology of biodiversity, conservation and development in Nepal's Terai: confused meanings, means and ends. <i>Ecol. Econ.</i> 24(1):73–87			
Bryant RL. 2000. Politicized moral geographies: debating biodiversity conservation and ancestral domain in the Philippines. <i>Polit. Geogr.</i> 19:673–705			
Eghenter C, Labo M. 2003. In search of equitable governance models for indigenous peoples in protected areas—the experience of Kayan Mentarang National Park. <i>Policy Matters</i> 12:248–53	1		
Ganguly V. 2004. Conservation, Displacement and Deprivation: Maldhari of Gir Forest of Gujarat. New Delhi: Indian Soc. Inst.			1
Hitchcock RK. 1995. Centralisation, resource depletion and coercive conservation among the Tyua of the northeastern Kalahari. <i>Hum. Ecol.</i> 23:168–98	1		
Igoe J. 2004. Conservation and Globalisation: A Study of National Parks and Indigenous Communities from East Africa to South Dakota. Belmont, CA: Wadsworth/Thomson Learning			1
Igoe J, Brockington D. 1999. Pastoral Land Tenure and Community Conservation: A Case Study from North-East Tanzania. <i>Pastoral Land Tenure Series</i> 11. London: IIED	1		
Jepson P, Momberg F, van Noord H. 2002. A review of the efficacy of the protected area system of East Kalimantan Province, Indonesia. <i>Nat. Areas J.</i> 22(1):28–42	1		
Kaus A. 1993. Environmental perceptions and social relations in the Mapimi Biosphere Reserve. <i>Conserv. Biol.</i> 7:398–406	1		
Knudsen A. 1999. Conservation and controversy in the Karakoram: Khunjerab National Park, Pakistan. <i>J. Polit. Ecol.</i> 56:1–30	1		
Li T. 2005. Engaging simplifications: community-based natural resource management, market processes, and			

state agendas in upland Southeast Asia. See Brosius et al., pp. 427–57			
McLean J, Straede S. 2003. Conservation, relocation and the paradigms of park and people management—a case study of Padampur Villages and the Royal Chitwan National Park, Nepal. <i>Soc. Nat. Res.</i> 16:509–26	1		
Nyhus P. 1999. Elephants, tigers and transmigrants: conflict and conservation at Way Kambas National Park, Sumatra, Indonesia. PhD thesis. Univ. Wisc., Madison			1
Panusittikorn P, Prato T. 2001. Conservation of protected areas in Thailand: the case of Khao Yai National Park. <i>Protected Areas East Asia</i> 18(2):67–76			
Paudel NS. 2005. Conservation and livelihoods: an exploration of the local responses to conservation interventions in Royal Chitwan National Park in Nepal. PhD thesis. Univ. Reading, United Kingdom			1
Sato J. 2000. People in between: conversion and conservation of forest lands in Thailand. <i>Dev. Change</i> 31:155–77			
Seeland K. 2000. National park policy and wildlife problems in Nepal and Bhutan. <i>Popul. Environ.</i> 22(1):43–62			
Shyamsundar P, Kramer R. 1997. Biodiversity conservation—at what cost? A study of households in the vicinity of Madagascar’s Mantadia National Park. <i>Ambio</i> 26(3):180–84			1
Sundberg J. 1998. NGO landscapes in the Maya Biosphere Reserve, Guatemala. <i>Geogr. Rev.</i> 88(3):388–412	1		
Whitesell EA. 1996. Local struggles over rain-forest conservation in Alaska and Amazonia. <i>Geogr. Rev.</i> 86(3):414–36			
<b>Source: Naughton-Treves L, Buck M and K Brandon 2005</b>			
Barrett CB, Brandon K, Gibson C, Gjertsen H. 2001. Conserving tropical biodiversity amid weak institutions. <i>Bio-Science</i> 51:497–502	1		
Liu JG, Linderman M, Ouyang ZY, An L, Yang J, Zhang HM. 2001. Ecological degradation in protected areas: the case of Wolong Nature Reserve for giant pandas. <i>Science</i> 292:98–101	1		
Mas J-F. 2005. Assessing protected area effectiveness using surrounding (buffer) areas environmentally similar to the target area. <i>Environ. Monit. Assess.</i> 105:69–80	1		
McShane T, Wells M. 2004. <i>Getting Biodiversity Projects to Work: Towards More Effective Conservation and Development.</i> New York City: Columbia Univ. Press			1
Oates J. 1999. <i>Myth and Reality in the Rain Forest: How Conservation Strategies Are Failing in West Africa.</i> Berkeley: Univ. Calif. Press			1
Phong LT. 2004. Analysis of forest cover dynamics and their driving forces in Bach Ma National Park and its buffer zone using using remote sensing and GIS. MSc thesis. Int. Inst. Geoinf. Sci. Earth Obs. (ITC), Enschede	1		

Neth. 66 pp.			
Rodrigues ASL, Andelman SJ, Bakarr MI, Boitani L, Brooks TM, et al. 2004. Effectiveness of the global protected area network in representing species diversity. <i>Nature</i> 428:640–43			
Rylands A, Brandon K. 2005. Brazilian protected areas. <i>Conserv. Biol.</i> 19:612–18			
Wells M, Brandon K. 1992. <i>People and Parks: Linking Protected Area Management with Local Communities</i> . Washington, DC: World Bank	1		
Zimmerer K. 2000. The reworking of conservation geographies: nonequilibrium landscapes and nature-society hybrids. <i>Ann. Assoc. Am. Geogr.</i> 90:356–69			
<b>Source: Coad L, Campbell A, Miles L, Humphries K 2008</b>			
Abbot, J. I., Mace, R. 1999. Managing Protected Woodlands: Fuelwood Collection and Law Enforcement in Lake Malawi National Park. <i>Conservation Biology</i> 13(2):418-421	1		
Allendorf, T., Swe, K. K., Oo, T., Htut, Y., Aung, M., Aung, M., Allendorf, K., Hayek, L., Leimgruber, P., Wemmer, C. 2006. Community attitudes toward three protected areas in Upper Myanmar (Burma). <i>Environmental Conservation</i> 33(4):344-352	1		
Baral, N., Heinen, J. T. 2007. Resources use, conservation attitudes, management intervention and park-people relations in the Western Terai landscape of Nepal. <i>Environmental Conservation</i> 34(1):64-72	1	1	
Bedunah, D.J., Schmidt, S.M. 2004. Pastoralism and protected area management in Mongolia's Gobi Gurvansaikhan National Park. <i>Development and Change</i> 35(1):167-191			
Brockington, D. 2004. Community conservation, inequality and injustice: myths of power in protected area management. <i>Conservation and Society</i> 2(2):411-432			
Brockington, D., Schmidt-Soltau, K. 2004. The social and environmental impacts of wilderness and development. <i>Oryx</i> 38(2):140-142			
Ferraro, P. J. 2002. The local costs of establishing protected areas in low-income nations: Ranomafana National Park, Madagascar. <i>Ecological Economics</i> 43(2):261-275			
Hackel, J.D. 1999. Community conservation and the future of Africa's wildlife. <i>Conservation Biology</i> 13(4):726-734			
Holmes, C. 2003. The influence of protected area outreach on conservation attitudes and resource use patterns: a case study from western Tanzania. <i>Oryx</i> 37(3):305-315	1		
Norgrove, L. Hulme, D., 2006. Confronting Conservation at Mount Elgon, Uganda. <i>Development and Change</i> 37(5). 1093-1116.	1	1	
Igoe, J. 2003. <i>Conservation and Contested Landscapes: The Potential for Community- Based Conservation in</i>	1		

East Africa and North America. <a href="http://www.iucn.org/themes/ceesp/Publications/SL/Potential for Community-Based Conservation- Jim Igoe.pdf">http://www.iucn.org/themes/ceesp/Publications/SL/Potential for Community-Based Conservation- Jim Igoe.pdf</a>			
Infield, M. 1988. Attitudes of a rural community towards conservation and a local conservation area in Natal, South Africa. <i>Biological Conservation</i> 45(1):21-46	1		
Infield, M., Namara, A. 2001. Community attitudes and behaviour towards conservation: an assessment of a community conservation programme around Lake Mburo National Park, Uganda. <i>Oryx</i> 35(1):48-60	1		
Linkie, M., Dinata, Y., Nofrianto, A., Leader-Williams, N. 2007. Patterns and perceptions of wildlife crop raiding in and around Kerinci Seblat National Park, Sumatra. <i>Animal Conservation</i> 10(1):127-135			
Madhusudan, M.D. 2003. Living Amidst Large Wildlife: Livestock and Crop Depredation by Large Mammals in the Interior Villages of Bhadra Tiger Reserve, South India, <i>Environmental Management</i> 31(4):466-475			
Metcalf, S. 2003. Impacts of Transboundary Protected Areas on Local Communities in Three Southern African Initiatives. Paper prepared for the Workshop on Transboundary Protected Areas, Governance Stream of the 5th World Parks Congress, Durban, South Africa, 12-13 September 2003			
Ongugo, P., Njuguna, J., Obonyo, E., Sigu, G. 2002. Livelihoods, natural resources entitlements and protected areas: the case of Mt Elgon Forest in Kenya. Kenya IFRI Collaborative Research Centre. <a href="http://www.cbd.int/doc/case-studies/for/cs-ecofor-ke-02-en.pdf">http://www.cbd.int/doc/case-studies/for/cs-ecofor-ke-02-en.pdf</a> .	1		
Saberwal, V.K., Gibbs, J.P., Chellam, R., Johnsingh, A.J.T. 1994. Lion-human conflict in the Gir forest, India. <i>Conservation Biology</i> 8(2):501-507			
Schwartzmann, S., Zimmerman, B. 2005. Conservation alliances with indigenous peoples of the Amazon. <i>Conservation Biology</i> 19:721-27			
Sharma, A., Kabra, A., Kinhal, G.A., Panwar, H.S., Misra, M.K., Upadhyay, S., Mohan, S., Upadhyay, V. 2004. Lessons learned from eco-development experiences in India: a study. Project Tiger, Ministry of Environment and Forests, India. <a href="http://projecttiger.nic.in/pdf/peace.pdf">http://projecttiger.nic.in/pdf/peace.pdf</a> . Accessed 19 May 2008.	1		
Songorwa, A.N. 1999. Community-based wildlife management (CWM) in Tanzania: are the communities interested? <i>World Development</i> 27:2061-2079			
Sundberg J. 2003. Conservation and democratization: constituting citizenship in the Maya Biosphere Reserve, Guatemala. <i>Political Geography</i> 22 (7):715-740			
Walpole, M.J., Goodwin, H.J. 2001. Local attitudes towards conservation and tourism around Komodo National Park, Indonesia. <i>Environmental Conservation</i> 28:160-166			
Weladji, R.B., Tchamba, M.N. 2003. Conflict between people and protected areas within the Benoue Wildlife Conservation Area, North Cameroon. <i>Oryx</i> 37(1):72-79			
West, P., Brockington, D. 2006. An Anthropological Perspective on Some Unexpected Consequences of			

Protected Areas. <i>Conservation Biology</i> 20(3):609-616			
<b>Source: Nagendra H 2008</b>			
Anonymous, 2004. Are Protected Areas Working? An Analysis of Forest Protected Areas by WWF. The International Union for the Conservation of Nature and Natural Resources (IUCN), The World Conservation Union and the World Conservation Monitoring Centre (WCMC), Gland, Switzerland, 32 pp.			
Abbot, J.I.O. and Homewood, K. 1999. A history of change: causes of miombo woodland decline in a protected area in Malawi. <i>J. Appl. Ecol.</i> 36, 422–433.			
Brandon, K., Redford, K.H. and Sanderson, S.E. 1998. Parks in Peril: People, Politics, and Protected Areas. The Nature Conservancy and Island, Washington DC, 540 pp.			1
Bresee, M.K., Le Moine, J., Mather, S., Brososke, K.D., Chen, J., Crow, T.R. and Rademacher, J. 2004. Disturbance and landscape dynamics in the Chequamegon National Forest Wisconsin, USA, from 1972 to 2001. <i>Landscape Ecol.</i> 19, 291–309.			
Ervin, J. 2003. Rapid assessment of protected area management effectiveness in four countries. <i>Bioscience</i> 53, 833–841.			
Hudak, A.T. and Wessman, C.A. 2001. Textural analysis of high resolution imagery to quantify bush encroachment in Madikwe Game Reserve, South Africa, 1955–1996. <i>Int.J. Remote Sens.</i> 22, 2731–2740.	1		
Larsson, H. 2002. Acacia canopy cover changes in Rawashda forest reserve, Kassala Province, Eastern Sudan, using linear regression NDVI models. <i>Int. J. Remote Sens.</i> 23, 335–339.	1		
Luque, S.S. 2000. Evaluating temporal changes using Multi-Spectral Scanner and Thematic Mapper data on the landscape of a natural reserve: the New Jersey Pine Barrens, a case study. <i>Int. J. Remote Sens.</i> 21, 2589–2611.	1		
Messina, J.P., Walsh, S.J., Mena, C.F. and Delamater, P.L. 2006. Land tenure and deforestation patterns in the Ecuadorian Amazon: conflicts in land conservation in frontier settings. <i>Appl. Geog.</i> 26, 113–128.	1		
Mosugelo, D.K., Moe, S.R., Ringrose, S. and Nellemann, C. 2002. Vegetation changes during a 36-year period in northern Chobe National Park, Botswana. <i>Afr. J. Ecol.</i> 40, 232–240.	1		
Parrish, J.D., Braun, D.P. and Unnasch, R.S. 2003. Are we conserving what we say we are? Measuring ecological integrity within protected areas. <i>Bioscience</i> 53, 851–860.			
Taylor, J.C., Brewer, T.R. and Bird, A.C. 2000. Monitoring landscape change in the national parks of England and Wales using aerial photo interpretation and GIS. <i>Int. J. Remote Sens.</i> 21, 2737–2752.			
Tinker, D.B., Romme, W.H. and Despain, D.G. 2003. Historic range of variability in landscape structure in subalpine forests of the Greater Yellowstone Area, USA. <i>Landscape Ecol.</i> 18, 427.	1		

Vanclay, J.K. 2001. The effectiveness of parks. <i>Science</i> 293, 1007.			
Zheng, D., Wallin, D.O. and Hao, Z. 1997. Rates and patterns of landscape change between 1972 and 1988 in the Changbai mountain area of China and North Korea. <i>Landscape Ecol.</i> 12, 241–254.	1		
<b>Source: Joppa, L and Pfaff, A 2010</b>			
Newmark, W. 1995. Extinction of mammal populations in Western North American National Parks. <i>Conserv. Biol.</i> 512–526.	1		
Woodroffe, R. & J. Ginsberg. 1998. Edge effects and the extinction of populations inside protected areas. <i>Science</i> 2126–2128.			
Campbell, A., S. Clark, L. Coad, et al. 2008. Protecting the future: carbon, forests, protected areas and local livelihoods. <i>Biodiversity</i> 117–122.			
Joppa, L. & A. Pfaff. 2009. Global Park Impacts: How Much Deforestation Has Protection Avoided? Duke University Nicholas School of the Environment Working Paper.			1
Sanchez-Azofeifa, G.A. et al. 1999. Protected areas and conservation of biodiversity in the tropics. <i>Conserv. Biol.</i> 407–411.	1		
Maiorano, L., A. Falcucci & L. Boitani. 2008. Size-dependent resistance of protected areas to land-use change. <i>Proc.R.Soc.B: Biol.Sci.</i> 1297–1304.	1		
Ando, A. et al. 1998. Species distributions, land values, and efficient conservation. <i>Science</i> 2126–2128.			
Skole, D. & C. Tucker. 1993. Tropical deforestation and habitat fragmentation in the Amazon: satellite data from 1978 to 1988. <i>Science</i> 1905			
Achard, F. et al. 2002. Determination of deforestation rates of the world's humid tropical forests. <i>Science</i> 999–1002.			
Cropper, M., J. Puri & C. Griffiths. 2001. Predicting the location of deforestation: the role of roads and protected areas in North Thailand. <i>Land Econ.</i> 172	1		
Pelkey, N., C. Stoner & T. Caro. 2000. Vegetation in Tanzania: assessing long term trends and effects of protection using satellite imagery. <i>Biol. Conserv.</i> 94:297–309	1		
Pelkey, N., C. Stoner & T. Caro. 2003. Assessing habitat protection regimes in Tanzania using AVHRR NDVI composites: comparisons at different spatial and temporal scales. <i>Int. J. Remote Sensing</i> 24:2533–2558.			
Zepeda, Y. et al. 2009. Evaluating the Impacts of Mexican Protected Areas on Deforestation from 1993–2000. <i>Resources for the Future Working Paper.</i>			1
Delgado, C. et al. 2008. Will Nearby Protected Areas Constrain Road Impacts On Deforestation? Presentation at the NASA LBA conference 'Amazon In Perspective', Manaus.			1

Pfaff, A. 2009. Evaluating deforestation impacts of protected areas. Presented at Connecting Amazon Protected Areas and Indigenous Lands to REDD Frameworks, Stanford, CA.			1
Bleher, B., D. Uster & T. Bergsdorf. 2006. Assessment of threat status and management effectiveness in Kakamega Forest, Kenya. <i>Biodivers. Conserv.</i> 15:00 1159–1177.	1		
<b>Source: Pagdee et al 2006</b>			
Klooster, D. and O. Masera. 2000. Community forest management in Mexico: Carbon mitigation and biodiversity conservation through rural development. <i>Global Environ. Change</i> 10:259–272.			
Agrawal, A. and C. Gibson. 1999. Enchantment and disenchantment: The role of community in natural resource conservation. <i>World Dev.</i> 27(4):629–649.			
<b>Source: Shahabuddin et al 2010</b>			
Bossart, J.L., Opuni-Frimpong, E., Kuudaar, S., Nkrumah, E., 2006. Richness, abundance, and complementarity of fruit-feeding butterfly species in relict sacred forests and forest reserves of Ghana. <i>Biodiversity and Conservation</i> 15, 333–359.	1		
Bray, D.B., Merino-perez, L., Negreros-castillo, P., Segura-Warnholtz, G., Torres-Rojo Vester, H.F.M., 2003. Mexico's community-managed forests as a global model for sustainable landscapes. <i>Conservation Biology</i> 17, 672–677.			
Campbell, M.O., 2004. Traditional forest protection and woodlots in the coastal savannah of Ghana. <i>Environmental Conservation</i> 31, 225–232.	1		
Carillo, E., Wong, G., Cuaron, A.D., 2000. Monitoring mammal populations in Costa Rican protected areas under different hunting restrictions. <i>Conservation Biology</i> 14, 1580–1591.	1		
Dalle, S.P., de Blois, S., Caballero, J., Johns, T., 2006. Integrating analyses of local landuse regulations, cultural perceptions and land-use/land cover data for assessing the success of community-based conservation. <i>Forest Ecology and Management</i> 222, 370–383.			
Fabricius, C., Burger, M., Hockey, P.A.R., 2003. Comparing biodiversity between protected areas and adjacent rangeland in Xeric succulent thicket, S. Africa: arthropods and reptiles. <i>Journal of Applied Ecology</i> 40, 392–403.			
Garcia, C.A., Pascal, J.P., 2005. Sacred forests of Kodagu: ecological value and social role. In: Cederlof, G., Sivaramakrishnan, K. (Eds.), <i>Ecological Nationalisms: Nature, Livelihoods and Identities in South Asia</i> . University of Washington Press, Seattle, pp. 199–232.			1
Horwich, R.H., Lyon, J., 2007. Community conservation: practitioners' answer to critics. <i>Oryx</i> 41, 376–385.			
Johari, R., 2007. Of paper tigers and invisible people: the cultural politics of nature in Sariska. In:			1



Shahabuddin, G., Rangarajan, M. (Eds.), Making Conservation Work: Securing Biodiversity in this New Century. Permanent Black, Delhi, India, pp. 48–80.			
Kothari, A., 2006. Community conserved areas: towards ecological and livelihood security. Parks 16, 3–13.			
Lewis, M., 2003. Cattle and conservation at Bharatpur: a case study in science and advocacy. Conservation and Society 1, 1–22.			
Madhusudan, M.D., Raman, T.R.S., 2003. Conservation as if biological diversity matters: preservationism vs. sustainable use in India. Conservation and Society 1, 49–60.			
Nawaz, M.A., Swenson, J.E., Zakaria, V., 2008. Pragmatic management increases a flagship species, the Himalayan brown bears, in Pakistan's Deosai National Park. Biological Conservation 141, 2230–2241.	1		
Peralta, P., Mather, P., 2000. An analysis of deforestation patterns in the extractive reserves of Acre, Amazonia from satellite imagery: a landscape ecological approach. International Journal of Remote Sensing 21, 2555–2570.	1		
Peres, C.A., Nascimento, H.S., 2006. Impact of game hunting by the Kayapo' of southeastern Amazonia: implications for wildlife conservation in tropical forest indigenous reserves. Biodiversity and Conservation 15, 2627–2653.	1		
Poffenberger, M., McGean, B., Khare, A., 1996. Communities sustaining India's forests in the twenty-first century. In: Poffenberger, M., McGean, B. (Eds.), Voices, Forest Choices, Joint Forest Management in India. Oxford University Press, Delhi, pp. 17–55.			1
Rai, N., Uhl, C.F., 2004. Forest product use, conservation and livelihoods: the case of Uppage fruit harvest in the Western Ghats, India. Conservation and Society 2, 289–313.			
Ranganathan, J., Daniels, R.J.R., Subash Chandran, M.D., Ehrlich, P.R., Daily, G.C., 2008. Sustaining biodiversity in ancient tropical countryside. Proceedings National Academy Sciences 105, 17852–17854.			
Sarkar, R., 2008. Decentralised forest governance in central Himalayas: a reevaluation of outcomes. Economic and Political Weekly 43, 54–63.			
Setsaas, T.H., Holmern, T., Mwakalebe, G., Stokke, S., Røskoft, E., 2007. How does human exploitation affect impala populations in protected and partially protected areas? – A case study from the Serengeti Ecosystem, Tanzania. Biological Conservation 136, 563–570.	1		
Shackleton, C.M., 2000. Comparison of plant diversity in protected and communal lands in the Bushbuckridge lowveld savanna, South Africa. Biological Conservation 94, 273–285.	1		
Somanathan, E., Prabhakar, R., Mehta, B.S., 2009. Decentralization for cost-effective conservation. Proceedings National Academy Sciences 106, 4143–4147.			
Wadt, L.H.O., Kainer, K.A., Staudhammer, C.L., Serrano, O.P., 2008. Sustainable forest use in Brazilian	1		

extractive reserves: natural regeneration of Brazil nut in exploited populations. <i>Biological Conservation</i> 141, 332–346.			
Wallgren, M., Skapre, C., Bergstrom, R., Danell, K., Bergstrom, A., Jakobsson, T., Karlsson, K., Strand, T., 2009. Influence of land use on the abundance of wildlife and livestock in the Kalahari, Botswana. <i>Journal of Arid Environments</i> 73, 314–321.			
<b>Source: Holmes 2007</b>			
Campbell, L.M. 2002. Conservation narratives in Costa Rica: Conflict and co-existence. <i>Development and Change</i> 33(1): 29-56.			
Carswell, G. 2006. Multiple historical geographies: Responses and resistance to colonial conservation schemes in East Africa. <i>Journal Of Historical Geography</i> 32(2): 398.			
Deb Roy, S. and P. Jackson. 1993. Mayhem in Manas: The threats to India's wildlife reserves. In <i>Indigenous Peoples and Protected Areas</i> (ed. E. Kemeff), pp. 156-161. Earthscan, London.			1
Gibson, C. 1999. <i>Politicians and Poachers: The Political Economy of Wildlife Policy in Africa</i> . Cambridge University Press, Cambridge.			
Grove, R.H. 1990. Colonial conservation, ecological hegemony and popular resistance: Towards a global synthesis. In <i>Imperialism and the Natural World</i> (ed. J.M. MacKenzie), pp. 15-50. Manchester University Press, Manchester.			1
Haenn, N. 2005. <i>Fields of Power, Forests of Discontent: Culture, Conservation and the State in Mexico</i> . University of Arizona Press, Tucson.			1
Jacoby, K. 2001. <i>Crimes Against Nature: Squatters, Poachers, Thieves and the Hidden History of American Conservation</i> . University of California Press, London.			1
Kepe, T., B. Cousins and S. Turner. 2001. Resource tenure and power relations in community wildlife: The case of Mkambati Area, South Africa. <i>Society and Natural Resources</i> 14: 911.	1		
Neumann, R.P. 1995. Local challenges to global agendas: Conservation, economic liberalization and the pastoralists' rights movement in Tanzania. <i>Antipode</i> 27(4): 363-382.			
Neumann, R.P. 2000. Land, Justice and the Politics of Conservation in Tanzania. In <i>People, Plants, and Justice: The Politics of Nature Conservation</i> (ed. C. Zerner), pp. 117-143. Columbia University Press, New York.			
Norgrove, L. 2002. <i>Parking Resistance and Resisting the Park: The Theory and Practice of National Park Management</i> . Ph.D thesis. Manchester: Institute for Development Policy and Management, University of Manchester. UK.			1
Nygren, A. 2003. Conflicts Over Wilderness Protection and Local Livelihoods in Rio San Juan, Nicaragua. In <i>Ethnographies of Conservation: Environmentalism and the Distribution of Privilege</i> (eds. D. Anderson and			1

E. Berglund), pp. 33-49. Berghahn, Oxford.			
Peluso, N. 1993. Coercing conservation? The politics of state resource control. <i>Global Environmental Change</i> 3(2): 199-218			
Sullivan, S. 2003. Dissent or Libel in Resistance to a Conservancy in North-West Namibia. In <i>Ethnographies of Conservation: Environmentalism and the Distribution of Privilege</i> (eds. D. Anderson and E. Berglund), pp. 69-86. Bergahn, Oxford.			1
Sunseri, T. 2005. 'Something else to burn': Forest squatters, conservationists, and the state in modern Tanzania. <i>Journal of Modern African Studies</i> 43(4): 609.			
Western, D. 1994. Ecosystem Conservation and Rural Development: The Case of Amboseli. In <i>Natural Connections: Perspectives in Community-Based Conservation</i> (eds. D. Western, R.M. Wright and S. Strum), pp. 15-52. Island Press, Covelo.			

## ANNEX 5: SEARCH THROUGH WEB SEARCH ENGINE

This search was done via googleScholar using 4 different search strings

	String description	Date of Search	Location of the reference	No. of hits	Number of downloaded titles	Duplicates identified by Mendeley	Duplicates identified by EPI reviewer	Total for title screening
<b>String 1</b>	governance+protected+area+forest	18.3.2015	Google Library	7380 0	first 159	0	49	110
<b>String 2</b>	allintext:(“community conserved area” OR indigenous OR (“comanagement” OR “co-management”) OR collaborative OR decentralisation OR devolution OR institution OR rule OR norm) AND forest AND (protected area OR park OR reserve) AND effectiveness	19.3.2015	Exported directly to Mendeley	9330 0	first 160	1	54	105
<b>String 3</b>	allintext:forest AND (protected area OR park OR reserve) AND (attitude OR behaviour OR conservation OR compliance OR enforcement OR coercion OR trust OR conflict OR exclusion OR access)	19.3.2015	Exported directly to Mendeley	7630 00	first 160	37	26	97
<b>String 4</b>	allintext:forest AND (protected area OR park OR reserve) AND (conservation OR deforestation OR degradation OR biodiversity OR desertification OR threaten OR leakage OR spillover OR spill-over OR reforestation OR afforestation OR regrowth)	19.3.2015	Exported directly to Mendeley	4330 00	first 160	129	10	21
<b>Summary</b>						167	139	333

## ANNEX 6: LIST OF UNOBTAINABLE STUDIES

SRC. = source from where an article was obtained from and it is coded as follows: 1st search via 15 publication databases (=1), update search on WOK (=2), bibliography (=3), googlescholar (=4), grey literature (=5). More explanations on different sources and searches can be find in the main text

Total=145: No institutional subscription/Not able to track it online=125, Not in English=20

S R C	No.	Full reference	Reason
1	1	ALBRECHT L (1992) THE IMPORTANCE OF NATURAL FOREST RESERVES FOR SPECIES PROTECTION ON WOODLANDS. <i>FORSTWISSENSCHAFTLICHES CENTRALBLATT</i> . 111(4):	No institutional subscription/Not able to track it online
1	2	Animon M M; (2008) Management of protected areas in the tropics: an exploratory and socio-economic analysis of ecotourism based strategies in Periyar Tiger Reserve, India. : Bangor.	No institutional subscription/Not able to track it online
1	3	Barton Alan William; (2002) Regulatory Authority and Participatory Protected Areas Management at Cerro Azul-Meambar National Park, Honduras.	No institutional subscription/Not able to track it online
1	4	BROWER B (1991) CRISIS AND CONSERVATION IN SAGARMATHA-NATIONAL-PARK, NEPAL. <i>SOCIETY &amp; NATURAL RESOURCES</i> . 4(2): .	No institutional subscription/Not able to track it online
1	5	Clark C (2000) Land tenure delegitimation and social mobility in tropical Peten, Guatemala. <i>HUMAN ORGANIZATION</i> . 59(4):	No institutional subscription/Not able to track it online
1	6	Fatima Sultana (2009) Human impacts on the biodiversity of the Darrah Wildlife Sanctuary in Rajasthan.. <i>International Journal of Climate Change: Impacts and Responses</i> . 1(3): 1-14.	No institutional subscription/Not able to track it online
1	7	Gaveau D L. A; (2008) Evaluating the effectiveness of protected areas in reducing tropical deforestation in Sumatra.. : Kent.	No institutional subscription/Not able to track it online
1	8	Ghimire K B; (1992) Parks and people: livelihood issues in national parks management in Thailand and Madagascar. Discussion Paper - United Nations Research Institute for Social Development. 29:	No institutional subscription/Not able to track it online
1	9	Gooch P (1999) A community management plan: the Van Gujjars and the Rajaji National Park.. In: . Richmond: Curzon Press Ltd, pages 79-112.	No institutional subscription/Not able to track it online
1	10	Gupta H K; (1999) A study of factors influencing participation in joint forest management in the Northwest Himalayas, India. : Aberdeen.	No institutional subscription/Not able to track it online
1	11	Hao Y, Wang J, Jiang H (2009) The dynamics of land cover	No institutional

		change pattern and landscape fragmentation in Jiuzhaigou Nature Reserve, China. Proceedings of SPIE - The International Society for Optical Engineering. .	subscription/Not able to track it online
1	12	Holden T (2004) Current arrangements for the control of deforestation and the conservation of terrestrial biological diversity in Thailand. Asia Pacific Journal of Environmental Law. 8(1-2): 69-102.	No institutional subscription/Not able to track it online
1	13	Hovardas TasosBE Grossberg, SP; (2009) FOREST MANAGEMENT WITHIN PROTECTED AREAS: THE SOCIAL PRODUCTION OF NATURE IN THE DADIA FOREST RESERVE, GREECE. FOREST MANAGEMENT. : .	No institutional subscription/Not able to track it online
1	14	Musavi A, Khan J A; Kumar S, Khan A, Malik P K; Kushwaha S P.S; Khati D S; Sarin G D; (2006) A study of Tiger human conflict in buffer zone of the Corbett Tiger Reserve: Protected area-people relationship. International Journal of Ecology and Environmental Sciences. 32(3): 241-257.	No institutional subscription/Not able to track it online
1	15	Loesch M A; (1978) The attitudes of residents in selected Minnesota communities toward Voyageurs National Park.. Dissertation Abstracts International, A. 39(2): p.1103.	No institutional subscription/Not able to track it online
1	16	MacKinnon KathyBE Bermingham, Eldredge; Dick Christopher W; Moritz Craig (2005) Parks, people and policies: conflicting agendas for forests in southeast Asia.. Tropical rainforests: past, present, and future..	No institutional subscription/Not able to track it online
1	17	Malugu Isaac O. E; (2007) Resource-use conflicts and management challenges for Pugu and Kazimzumbwi forest reserves in kisarawe and Ilala districts, Tanzania. DISCOVERY AND INNOVATION. 19:	No institutional subscription/Not able to track it online
1	18	Manakadan Ranjit Swaminathan, S. Daniel, J. C. Desai, Ajay A; (2009) HUMAN-ELEPHANT CONFLICT IN A COLONISED SITE OF DISPERSED ELEPHANTS: KOUNDINYA WILDLIFE SANCTUARY (ANDHRA PRADESH, INDIA). Journal of the Bombay Natural History Society. 106(3):	No institutional subscription/Not able to track it online
1	19	Martinez R, Espejel I (1999) Conservation and Management of Ecosystems within and without Protected Natural Areas in Baja California, Mexico. Environments. 27(3): x4-43.	No institutional subscription/Not able to track it online
1	20	Martinez R Espejel, RBE Nelson, JG; Day JC, Sportza L (2003) Conservation and management of ecosystems within and without protected natural areas, Baja California, Mexico. PROTECTED AREAS AND THE REGIONAL PLANNING IMPERATIVE IN NORTH AMERICASE PARKS AND HERITAGE SERIES. 7	No institutional subscription/Not able to track it online
1	21	McCabe J Terrence; (2003) Disequilibrium Ecosystems and Livelihood Diversification among the Maasai of Northern Tanzania: Implications for Conservation Policy in Eastern Africa. Nomadic Peoples. 7(1): 74-91	No institutional subscription/Not able to track it online
1	22	Mehta J (1996) Park-people interface in Parsa Wildlife Reserve, Nepal.. TRI News. 15(1): 11-12.	No institutional subscription/Not able to track it online
1	23	Mukamuri B B; Manjengwa J M; Anstey S (2009) Beyond	No institutional

		Proprietorship Murphree's Laws on Community-Based Natural Resource Management in Southern Africa. Harare: Weaver Press & IDRC, Ottawa, ON, CA.	subscription/Not able to track it online
1	24	Olthof I, Pouliot D (2005) Evaluation of a signature extension approach for monitoring ecological integrity in and around protected areas: A case study for Prince Albert National Park. Proceedings of the 26th Canadian Symposium on Remote Sensing, .	No institutional subscription/Not able to track it online
1	25	Pan H, Le T C; Luo C L; Tan F L; Chen G R; Fang B Z; Xie S Z; (2006) Investigation of dependence degree of adjacent communities' economy on resources of the Zhangjiangkou Mangrove Forestry National Nature Reserve. Wetland Science. 4(4): 274-279.	No institutional subscription/Not able to track it online
1	26	Peckett Marilyn K; (1998) Narrowing the Road: Co-Management with Anishnabe at the Riding Mountain National Park (Winnipeg, Manitoba). Crossing Boundaries, the Seventh Biennial Conference of the International Association for the Study of Common Property, Vancouver, British Columbia, Canada.	No institutional subscription/Not able to track it online
1	27	Powell G V. N; Palminteri S, Carlson B, Boza M A; (2002) Successes and failings of the Monteverde Reserve Complex and Costa Rica's system of national protected areas.. In: . Washington: Island Press, pages 156-171.	No institutional subscription/Not able to track it online
1	28	Rueda Ximena (2007) Landscapes in transition: Forest-cover change, conservation, and structural adjustment in the southern Yucatan. : .	No institutional subscription/Not able to track it online
1	29	Sharma Diwakar Gavali, Deepa; (2006) Protected areas in Gujarat: Prospects and perspectives. Indian Forester. 132(10):	No institutional subscription/Not able to track it online
1	30	Simsik MJGP SAF; (1997) The forest conservation approaches of an integrated conservation and development project: The case of the Andohahela ICDP, Fort Dauphin, Madagascar. MEETING IN THE MIDDLE, PROCEEDINGS.	No institutional subscription/Not able to track it online
1	31	Singh Neera Mendiratta; (2010) Environmental subjectivity, democratic assertions and reimagination of forest governance in Orissa, India. : .	No institutional subscription/Not able to track it online
1	32	Srivastava Aseem (1997) People's participation. A vital component in management of Gir Protected Area. Indian Forester. 123(6):	No institutional subscription/Not able to track it online
1	33	Srivastava Sanjay (2006) Dependence of local people and issues in conserving local resources: Case of Dalma Wildlife Sanctuary, Jharkhand. Indian Forester. 132(1): .	No institutional subscription/Not able to track it online
1	34	Stahl Johannes Sikor, Thomas Dorondel, Stefan; (2009) The institutionalisation of property rights in Albanian and Romanian biodiversity conservation. International Journal of Agricultural Resources Governance and Ecology. 8(1):	No institutional subscription/Not able to track it online
1	35	Stern Marc Jonathan; (2006) Understanding local reactions to national parks: The nature and consequences of local interpretations of park policies, management, and outreach (North Carolina, Tennessee, United States Virgin Islands, Ecuador).	No institutional subscription/Not able to track it online
1	36	Tacconi L (2000) Biodiversity and ecological economics.	No institutional

		Participation, values and resource management.. London: Earthscan Publications Ltd.	subscription/Not able to track it online
1	37	Tamrakar A, Sharma B K; (2002) Conservation and development of local forest resources and wildlife through community forestry: a case study from Baghmara community forest, Chitwan.. Banko Janakari. 12(1): 49-53.	No institutional subscription/Not able to track it online
1	38	Tiwari B K. Tynsong, H. Lynser, M. B; (2010) FOREST MANAGEMENT PRACTICES OF THE TRIBAL PEOPLE OF MEGHALAYA, NORTH-EAST INDIA. <i>JOURNAL OF TROPICAL FOREST SCIENCE</i> . 22(3):	No institutional subscription/Not able to track it online
1	39	Toillier Aurelie, Lardon Sylvie, Herve Dominique (2009) An environmental governance support tool: community-based forest management contracts (Madagascar). <i>International Journal of Sustainable Development</i> . 11(2-3-4): 187-205	No institutional subscription/Not able to track it online
1	40	Trusty Teresa (2010) The Politics of Representing Nature, Culture, and Conservation in Northwestern Bolivia.	No institutional subscription/Not able to track it online
1	41	Tshiguvho Thidinalei (2008) Sacred traditions and biodiversity conservation in the forest montane region of Venda, South Africa.	No institutional subscription/Not able to track it online
1	42	Usongo L Nkanje, BT; (2004) Participatory approaches towards forest conservation: The case of Lobeke National Park, South east Cameroon. <i>INTERNATIONAL JOURNAL OF SUSTAINABLE DEVELOPMENT AND WORLD ECOLOGY</i> . 11(2): .	No institutional subscription/Not able to track it online
1	43	Zanotti Laura C; (2008) Re-envisioning indigenous territoriality: Nature, place and space in the Kayapo Reserve. :	No institutional subscription/Not able to track it online
1	44	Zou Lue-liu Dao Zhi-ling Long Chun-lin; (2009) Study on community forest resource management of the Zhuang nationality in Southeast Yunnan of China. <i>Journal of Plant Resources and Environment</i> . 18(1):	No institutional subscription/Not able to track it online
1	45	Bakarr MohamedBA Robles Gil, Patricio Mittermeier, Russell A. K; (2005) West Africa's upper Guinea forest region: transboundary conservation in a conflict zone.. <i>Transboundary conservation: a new vision for protected areas</i> . [Cemex Books on Nature.].. :	No institutional subscription/Not able to track it online
1	46	BROTHERTON I (1983) DETERMINANTS OF LANDSCAPE CHANGE - THE CASE OF AFFORESTATION IN THE NATIONAL-PARKS OF ENGLAND AND WALES. <i>LANDSCAPE PLANNING</i> . 9(3-4): .	No institutional subscription/Not able to track it online
1	47	BROTHERTON I HETHERINGTON, M; (1989) CONSERVATION AS A RESTRAINT ON AFFORESTATION IN PRESSURED AND PROTECTED AREAS OF UPLAND BRITAIN. <i>BIOLOGICAL CONSERVATION</i> . 48(2): .	No institutional subscription/Not able to track it online
1	48	Cawley R M; Freemuth J (1993) Tree farms, mother earth, and other dilemmas: the politics of ecosystem management in Greater Yellowstone. <i>Society &amp; natural resources</i> .. 6(1): 41-53.	No institutional subscription/Not able to track it online
1	49	Kui L Q; (1998 ) Conflict management in Nangun River	No institutional



		Nature Reserve, Yunnan, China. Conflict and collaboration : eighth Workshop on Community Management of Forest Lands /. : 116-135.	subscription/Not able to track it online
1	50	CRABB P (1981) GROS-MORNE NATIONAL-PARK, NEWFOUNDLAND, AND PARKS CANADA POLICIES. ENVIRONMENTAL CONSERVATION. 8(4): .	No institutional subscription/Not able to track it online
1	51	Denisiuk Z Stoyko, S; (1993) International Polish-Slovak-Ukrainian biosphere reserve "Eastern Carpathians". Ukrayins'kyi Botanichnyi Zhurnal. 50(3): .	No institutional subscription/Not able to track it online
1	52	Singh V K; (1998 ) Designed domains: a legal analysis of issues related to the proposed Rajaji National Park, India. Conflict and collaboration : eighth Workshop on Community Management of Forest Lands /. : 96-115.	No institutional subscription/Not able to track it online
1	53	EMANUELSSON U (1991) MAKING CHANGES FOR PRESERVATION. LARSSON, E. (ED.). NATURSKYDDSFÖRENINGENS ARSBOK, ARGANG 82. FORÄNDERLIG NATUR; (NATURE PROTECTION SOCIETY YEARBOOK, VOL. 82. EVER-CHANGING NATURE). 143P. NATURSKYDDSFÖRENINGEN: STOCKHOLM, SWEDEN. ILLUSTRATIONS. MAPSSE Naturskyddsforeningens Arsbok. : .	No institutional subscription/Not able to track it online
1	54	Flint Carmel Pugh, Dailan Beaver, DanielBE Lunney, Daniel; (2004) The good, the bad and the ugly: science, process and politics in forestry reform and the implications for conservation of forest fauna in north-east New South Wales.. Conservation of Australia's forest fauna. Second edition.. : .	No institutional subscription/Not able to track it online
1	55	Franklin TM Burke, CA Fritsky, RS; (2003) Restoring the Kodiak National Wildlife Refuge: Turning tragedy into conservation achievement. WILDLIFE SOCIETY BULLETIN. 31(2):	No institutional subscription/Not able to track it online
1	56	Hashimoto Zentaro (1997) An institutional evaluation study on prefectural natural parks in Japan.. Bulletin of the Tokyo University Forests. 98: .	No institutional subscription/Not able to track it online
1	57	Hemam Natar S. Reddy, B. Mohan Leonetti, Donna L. BE Bhasin; Bhasin Veena (2000) Maintenance of village forest reserves: A dying traditional-conservation practice among the tribals of Manipur, NE India.. Man-environment relationshipSE Human Ecology Special Issue. : .	No institutional subscription/Not able to track it online
1	58	Johnson Arlyne (0 ) A model for forest conservation in Papua New Guinea: Processes for engaging landowner participation in the planning and management of a national protected area. Bulletin of the Ecological Society of America. 77(3 SUPPL. PART 2): .	No institutional subscription/Not able to track it online
1	59	Lopez Pizarro, E BA des Clers; B (1986) Cano Negro National Wildlife Refuge. A case of multiple use and rural development based on wildlife and other natural resources.. Wildlife management in Neotropical moist forest. Conservation status of the jaguar (Panthera onca). Manaus, State of Amazonas (Brazil) April 4-5, 1986.. : .	No institutional subscription/Not able to track it online
1	60	Muhonen T (1997) From Karelianism to national park - 100 years of tourism and nature conservation at Koli.. (14): 249-256.	No institutional subscription/Not able to track it online

1	61	Ngo M (1997) Nest disputes: promoting a structural mediation process for the Punan and Bentuang Karimun National Park, West Kalimantan. Conflict and collaboration : eighth Workshop on Community Management of Forest Lands / . : 136-152.	No institutional subscription/Not able to track it online
1	62	Ntiamoa-Baidu Yaa (2001) Indigenous versus introduced biodiversity conservation strategies. The case of protected area systems in Ghana.. In: Weber William, White Lee J.T; Vedder Amy, Naughton-Treves Lisa African rain forest ecology and conservation: an interdisciplinary perspective.. : , pages .	No institutional subscription/Not able to track it online
1	63	REDFORD K H; (1989) MONTE PASCOAL BRAZIL INDIGENOUS RIGHTS AND CONSERVATION IN CONFLICT. Oryx. 23(1): .	No institutional subscription/Not able to track it online
1	64	Wayburn E, McCloskey M, Howard B (1984) Redwood National Park: a case study in preserving a vanishing resource. National parks, conservation, and development : the role of protected areas in sustaining society : proceedings of the World Congress on National Parks, Bali, Indonesia, 11-22 Oct 1982 / ed. J.A. McNeely and K.R. Miller.. : 503-507.	No institutional subscription/Not able to track it online
1	65	Remis M J; Hardin R, Remis MJ (2007) Lessons from collaborative bio-cultural anthropological research for improving conservation of African apes and protected area management.. AMERICAN JOURNAL OF PHYSICAL ANTHROPOLOGY. : .	No institutional subscription/Not able to track it online
1	66	Reynolds McKinney, Bonnie Robles Gil; Patricio Skiles, Raymond Delgadillo, Jonas A Rojo; JaimeBA Robles Gil; Patricio Mittermeier, Russell A Kormos; Cyril F Mittermeier; Cristina G Sandwith; Trevor Besancon, Charles (2005) El Carmen-Big Bend: an emerging model for private public partnership in transboundary conservation.. Transboundary conservation: a new vision for protected areas. [Cemex Books on Nature.].. : .	No institutional subscription/Not able to track it online
1	67	Ross C Hill, C. M. Warren, Y; (0 ) Friends or foes? Farmers' attitudes towards primate crop raiders.. Animal Welfare. 13(Supplement): .	No institutional subscription/Not able to track it online
1	68	Salmon G BE Hutching, H; Potton C (1987) The politics of preservation. Maturing as a nation.. Forests, fiords and glaciers. New Zealand's world heritage. The case for a south-west New Zealand World Heritage Site.. : .	No institutional subscription/Not able to track it online
1	69	Singh Lal (1997) People's participation for biodiversity conservation at Keladevi Sanctuary. A new dimension in P.A. management. Indian Forester. 123(6): .	No institutional subscription/Not able to track it online
1	70	Warren C R; (1999) National parks: The best way forward for Scotland?. Scottish Forestry. 53(2): .	No institutional subscription/Not able to track it online
1	71	Roth H H; (1984) We all want the trees: Resource conflict in the Tai National Park, Ivory Coast. National parks, conservation, and development : the role of protected areas in sustaining society : proceedings of the World Congress on National Parks, Bali, Indonesia, 11-22 Oct 1982 / ed. J.A. McNeely and K.R. Miller.. : 127-129.	No institutional subscription/Not able to track it online
1	72	Xu Yangqian Lu, Baiwei Li, Hongtao; (1992) Establishment	No institutional

		of forest and fauna nature reserve in Guangdong and their trend of development. <i>Forest Research</i> . 5(4): .	subscription/Not able to track it online
1	73	ZUBE EH (1986) LOCAL AND EXTRA-LOCAL PERCEPTIONS OF NATIONAL-PARKS AND PROTECTED AREAS. <i>LANDSCAPE AND URBAN PLANNING</i> . 13(1): .	No institutional subscription/Not able to track it online
1	74	Cheng S, Zhang J, Xu F (2010) Factors influencing local residents' attitude towards nature conservation in natural tourism destination: A comparative study on China's Jiuzhaigou National park and UK's new Forest National Park. <i>Shengtai Xuebao/ Acta Ecologica Sinica</i> . 30(23): 6487-6494.	Not in English
1	75	Cohenca Daniel (2007) Annual evolution of deforestation in the Tapajos National Forest: 1997-2005. <i>NATUREZA &amp; CONSERVACAO</i> . 5(1):	Not in English
1	76	Doumenge Charles Yuste, Juan-Enrique Garcia Gartlan, Steve Lang; (2001) [Forest biodiversity conservation in Atlantic regions of central Africa: Is the protected area system efficient?] <i>FT Conservation de la biodiversite forestiere en Afrique centrale Atlantique: Le reseau d'aires protegees est-il adequat? Bois et Forets des Tropiques</i> . (268):	Not in English
1	77	Dünckmann F, Wehrhahn R (1998) Nature conservation in Brazil's coastal rain forests. Concepts and conflicts. <i>Naturschutz im Brasilianischen küstenregenwald. Konzepte und konflikte</i> . 50(5): 299-305.	Not in English
1	78	Durand Leticia (2010) TO THINK POSITIVE IS NOT ENOUGH. ATTITUDES CONCERNING CONSERVATION IN THE SIERRA DE HUAUTLA BIOSPHERE RESERVE, MEXICO. <i>INTERCIENCIA</i> . 36(6)	Not in English
1	79	Fialová J, Vyskot I, Schneider J (2009) The evaluation of nature conservation and forest functions interests on the example of the Český les protected landscape area. <i>Hodnocení zájmů ochrany přírody a funkcí lesů na příkladu chráněné krajinné oblasti český les</i> . 57(1): 35-40.	Not in English
1	80	Kufner Maura B. Claver, Silvia; (2002) Nacunan biosphere reserve and sustainable development in the Monte Desert, Argentina <i>FT La reserva de biosfera de Nacunan y el desarrollo sustentable en el Desierto del Monte, Argentina. Gestion Ambiental</i> . (8): .	Not in English
1	81	Li Zuo-Zhou Huang Hong-Wen Tang Deng-Kui Wang Li-Jun Pu (2006) Situation and strategy of biodiversity conservation in the Houhe National Nature Reserve, Hubei province, China II. Situation, threaten and strategy of biodiversity conservation. <i>Wuhan Zhiwuxue Yanjiu</i> . 24(3):	Not in English
1	82	Liu Jing Miao Hong Ouyang Zhi-yun Li Xiao-guang; (2008A) Typical patterns on the relationships between protected areas and local communities. <i>Shengtaixue Zazhi</i> . 27(9): .	Not in English
1	83	Liu Jing Miao, Hong Ouyang, Zhiyun Xu, Weihua Zheng (2008B) Analyzing the effectiveness of community management in Chinese nature reserves. <i>Shengwu Duoyangxing</i> . 16(4):	Not in English
1	84	Liu J, Miao H, Zheng H, Ouyang Z Y; Wang X K; Li X G; Jiang B (2009) Discussion about the relationship pattern	Not in English

		between Wolong Nature Reserve and local community. Shengtai Xuebao/ Acta Ecologica Sinica. 29(1): 259-271.	
1	85	Mori Akira S; (2009) Forest management for conserving biodiversity: matrix management in Swedish forests.. Hozen Seitai gaku Kenkyu. 14(2): .	Not in English
1	86	Nucci J C; Fávero O A; (2003) Sustainable development and conservation of the nature in protected areas: The case of Ipanema National Forest (Iperó/SP). Desenvolvimento sustentável e conservação da natureza em unidades de conservação: o caso da Floresta Nacional de Ipanema (Iperó/SP). 7(7): 63-77.	Not in English
1	87	Ribeiro Maria Beatriz N. Verissimo, Adalberto; (2007) Patterns and causes of deforestation in protected areas of Rondonia-Brazil. NATUREZA & CONSERVACAO. 5(1): .	Not in English
1	88	Roldan Mateo Carminati, Alejandra Biganzoli, Fernando Parue; (2010) Are private refuges effective for conserving ecosystem properties? FT Las reservas privadas son efectivas para conservar las propiedades de los ecosistemas?. Ecologia Austral. 20(2):	Not in English
1	89	Schiavetti A, Magro T C; Santos M S; (2012) Implementation of Protected Areas for central Corridor of Atlantic forest in Bahia: Challenges and limits. Implementação das unidades de conservação do Corredor Central da mata Atlântica no estado da Bahia: Desafios E Limites. 36(4): 611-623.	Not in English
1	90	Tejeda-Cruz C (2009) Biodiversity conservation and local communities: Conflicts in protected natural areas in the Lacandona Forest, Chiapas, Mexico. Conservación de la biodiversidad y comunidades locales: conflictos en áreas naturales protegidas de la selva lacandona, Chiapas, México. 34(68): 57-88.	Not in English
1	91	Wu Wei-ming Ge Da-bing; (2008) Threat and Protection for the Biodiversity Conservation about Shunhuangshan Mountain National Forest Park. Hunan Shifan Daxue Ziran Kexue Xuebao. 31(3): .	Not in English
2	92	Santamarina Campos, Beatriz , Bodi Ramiro, Julio (2013) RURAL PLACES VERSUS NATURALIZED SPACES. THE LOGIC OF KNOWLEDGE AND ACKNOWLEDGMENT IN THE PROTECTED HERITAGE AREAS. Aibr-Revista De Antropologia Iberoamericana. 8: 112-138.	Not in English
2	93	Adekunle Victor Ajibola; Nair Narayanan K; Srivastava Awadhesh K; Singh N K; (2014) Volume yield, tree species diversity and carbon hoard in protected areas of two developing countries. Forest Science and Technology. 10: 89-103.	No institutional subscription/Not able to track it online
2	94	Cao Huiming, Tang Mingfang, Deng Hongbing, Dong Rencai (2014) Analysis of management effectiveness of natural reserves in Yunnan Province, China. International Journal of Sustainable Development and World Ecology. 21: 77-84.	No institutional subscription/Not able to track it online
2	95	Casanova Catarina, Sousa Claudia, Costa Susana (2014) Are Primates and the Forest Forever? Perceptions of Non-Human Primates at Cantanhez Forest National Park, Guinea-Bissau. Folia Primatologica. 85: 49-50.	No institutional subscription/Not able to track it online

2	96	Chowdhury Mohammad Shaheed Hossain; Koike Masao, Rana Parvez, Muhammed Nur (2013) Community development through collaborative management of protected areas: evidence from Bangladesh with a case of Rema-Kalenga Wildlife Sanctuary. <i>International Journal of Sustainable Development and World Ecology</i> . 20: 63-74.	No institutional subscription/Not able to track it online
2	97	Chowdhury Mohammad Shaheed Hossain; (2014) A Review Discussion on the State of Collaborative Protected Area Management Around the World and Comparison with That of Bangladesh. In: Chowdhury M S. H; Forest Conservation in Protected Areas of Bangladesh: Policy and Community Development Perspectives. . , pages 201-230.	No institutional subscription/Not able to track it online
2	98	Chowdhury Mohammad Shaheed Hossain; Izumiyama Shigeyuki, Koike Masao (2014) Assessment of the Community Participation in and Attitudes Towards Co-management Programs in Rema-Kalenga Wildlife Sanctuary. In: Chowdhury M S. H; Forest Conservation in Protected Areas of Bangladesh: Policy and Community Development Perspectives. . , pages 143-169.	No institutional subscription/Not able to track it online
2	99	Chowdhury Mohammad Shaheed Hossain; Koike Masao, Izumiyama Shigeyuki (2014) Forest Conservation in Protected Areas of Bangladesh Policy and Community Development Perspectives Introduction. In: Chowdhury M S. H; Forest Conservation in Protected Areas of Bangladesh: Policy and Community Development Perspectives. . , pages 1-21.	No institutional subscription/Not able to track it online
2	100	Chowdhury Mohammad Shaheed Hossain; Koike Masao, Izumiyama Shigeyuki (2014) Impact of Co-management on Rural Development: Evidence from Community Survey in and Around Rema-Kalenga Wildlife Sanctuary. In: Chowdhury M S. H; Forest Conservation in Protected Areas of Bangladesh: Policy and Community Development Perspectives. . , pages 111-141.	No institutional subscription/Not able to track it online
2	101	Dressler Wolfram (2014) Green governmentality and swidden decline on Palawan Island. <i>Transactions of the Institute of British Geographers</i> . 39: 250-264.	No institutional subscription/Not able to track it online
2	102	Elgert Laureen (2014) Governing portable conservation and development landscapes: reconsidering evidence in the context of the Mbaracayu Biosphere Reserve. <i>Evidence &amp; Policy</i> . 10: 205-222.	No institutional subscription/Not able to track it online
2	103	Gargano D, Mingozi A, Massolo A, Rinaldo S, Bernardo L (2012) Patterns of vegetation cover/dynamics in a protected Mediterranean mountain area: Influence of the ecological context and protection policy. <i>Plant Biosystems</i> . 146: 9-18.	No institutional subscription/Not able to track it online
2	104	Juneja Shelja K; Sobti Nupur (2013) Restoring Ecosystems through Sacred Groves Strengthened by Inclusive Government and Community Approaches. <i>Annals of Biology (Hissar)</i> . 29: 439-442.	No institutional subscription/Not able to track it online
2	105	Mai Daria, Wetzel Fabienne, Lanwehr Ralf (2013) POWER TO THE PEOPLE!? THE ROLE OF PROCEDURAL FAIRNESS WITHING DECISION PROCESSES OF COMMUNITY-BASED NATURAL RESOURCE MANAGEMENT IN NAMIBIA. . .	No institutional subscription/Not able to track it online

2	106	Mukul S A; Herbohn J, Rashid A Z. M. M; Uddin M B; (2014) Comparing the effectiveness of forest law enforcement and economic incentives to prevent illegal logging in Bangladesh. <i>International Forestry Review</i> . 16: 363-375.	No institutional subscription/Not able to track it online
2	107	Nielsen Martin Reinhardt; Meilby Henrik (2013) Determinants of compliance with hunting regulations under Joint Forest Management in Tanzania. <i>South African Journal of Wildlife Research</i> . 43: 120-137.	No institutional subscription/Not able to track it online
2	108	Rashid A Z. M. Manzoor; Khan Niaz Ahmed; (2014) Role of Co-management Organizations in Protected Area Governance: Some Observations from the Chunati Wildlife Sanctuary. In: Chowdhury M S. H; <i>Forest Conservation in Protected Areas of Bangladesh: Policy and Community Development Perspectives</i> . . , pages 181-200.	No institutional subscription/Not able to track it online
2	109	Reisland Melissa A; Lambert Joanna E; (2013) Shared space in a sacred forest: Habitat use by humans and Javan gibbons ( <i>Hylobates moloch</i> ). <i>American Journal of Physical Anthropology</i> . 150: 231-232.	No institutional subscription/Not able to track it online
2	110	van Lavieren , Els (2013) The Endangered Barbary Macaque ( <i>Macaca sylvanus</i> ): Conservation Efforts, Struggles and Success Stories in Morocco. <i>Folia Primatologica</i> . 84: 337-337.	No institutional subscription/Not able to track it online
4	111	Colfer CJP (2010) <i>The Complex Forest:" Communities, Uncertainty, and Adaptive Collaborative Management"</i> . . .	No institutional subscription/Not able to track it online
4	112	Jaireth H, Smyth D (2003) <i>Innovative governance: indigenous peoples, local communities, and protected areas</i> . . . .	No institutional subscription/Not able to track it online
4	113	Kramer R, Schaik C, Johnson J (1997) <i>Last stand: protected areas and the defense of tropical biodiversity</i> .. . .	No institutional subscription/Not able to track it online
4	114	Nelson F (2012) <i>Community rights, conservation and contested land: The politics of natural resource governance in Africa</i> . . . .	No institutional subscription/Not able to track it online
4	115	Oates JF (1999) <i>Myth and reality in the rain forest: How conservation strategies are failing in West Africa</i> . . . .	No institutional subscription/Not able to track it online
4	116	Ojha HR, Timsina NP, Kumar C (2008) <i>Communities, forests and governance: Policy and institutional innovations from Nepal</i> . . . .	No institutional subscription/Not able to track it online
4	117	Primack RB, Bray D, Galletti HA, Ponciano I (2013) <i>Timber, Tourists, and Temples: Conservation And Development In The Maya Forest Of Belize Guatemala And Mexico</i> . . . .	No institutional subscription/Not able to track it online
3	118	Nelson, A., Chomitz, K.M., 2009. Do protected areas reduce deforestation? A global assessment with implications for REDD. In: <i>Dialogue on Forests, Governance and Climate Change</i> . IEG, Washington, DC .	No institutional subscription/Not able to track it online
3	119	Brockington D 2002 <i>Fortress conservation: the preservation of the Mkomazi Game Reserve, Tanzania</i> James Currey, Oxford	No institutional subscription/Not able to track it online
3	120	Albers HJ, Grinspoon E. 1997. A comparison of the enforcement of access restrictions between Xishuangbanna Nature Reserve (China) and Khao Yai National Park	No institutional subscription/Not able to track it online

		(Thailand). <i>Environ. Conserv.</i> 24:351–62	
3	121	Alexander SE. 2000. Resident attitudes towards conservation and black howler monkeys in Belize: the Community Baboon Sanctuary. <i>Environ. Conserv.</i> 27(4):341–50	No institutional subscription/Not able to track it online
3	122	Baviskar A. 2003. States, communities and conservation: the practice of ecodevelopment in the Great Himalayan National Park. In <i>Battles Over Nature: Science and the Politics of Conservation</i> , ed. V Saberwal, M Rangarajan, pp. 256–83. Delhi: Permanent Black	No institutional subscription/Not able to track it online
3	123	Ganguly V. 2004. <i>Conservation, Displacement and Deprivation: Maldhari of Gir Forest of Gujarat</i> . New Delhi: Indian Soc. Inst.	No institutional subscription/Not able to track it online
3	124	Igoe J. 2004. <i>Conservation and Globalisation: A Study of National Parks and Indigenous Communities from East Africa to South Dakota</i> . Belmont, CA:Wadsworth/Thomson Learning	No institutional subscription/Not able to track it online
3	125	Nyhus P. 1999. <i>Elephants, tigers and transmigrants: conflict and conservation at Way Kambas National Park, Sumatra, Indonesia</i> . PhD thesis. Univ. Wisc., Madison	No institutional subscription/Not able to track it online
3	126	Paudel NS. 2005. <i>Conservation and livelihoods: an exploration of the local responses to conservation interventions in Royal Chitwan National Park in Nepal</i> . PhD thesis. Univ. Reading, United Kingdom	No institutional subscription/Not able to track it online
3	127	Shyamsundar P, Kramer R. 1997. Biodiversity conservation— at what cost? A study of households in the vicinity of Madagascar’s Mantadia National Park. <i>Ambio</i> 26(3):180–84	No institutional subscription/Not able to track it online
3	128	McShane T, Wells M. 2004. <i>Getting Biodiversity Projects to Work: Towards More Effective Conservation and Development</i> . New York City: Columbia Univ. Press	No institutional subscription/Not able to track it online
3	129	Oates J. 1999. <i>Myth and Reality in the Rain Forest: How Conservation Strategies Are Failing in West Africa</i> . Berkeley: Univ. Calif. Press	No institutional subscription/Not able to track it online
3	130	Brandon, K., Redford, K.H. and Sanderson, S.E. 1998. <i>Parks in Peril: People, Politics, and Protected Areas</i> . The Nature Conservancy and Island, Washington DC, 540 pp.	No institutional subscription/Not able to track it online
3	131	Joppa, L. & A. Pfaff. 2009. <i>Global Park Impacts: How Much Deforestation Has Protection Avoided?</i> Duke University Nicholas School of the Environment Working Paper.	No institutional subscription/Not able to track it online
3	132	Zepeda, Y. et al . 2009. <i>Evaluating the Impacts of Mexican Protected Areas on Deforestation from 1993–2000</i> . Resources for the Future Working Paper.	No institutional subscription/Not able to track it online
3	133	Delgado, C. et al. 2008. <i>Will Nearby Protected Areas Constrain Road Impacts On Deforestation?</i> Presentation at the NASA LBA conference ‘Amazon In Perspective’, Manaus.	No institutional subscription/Not able to track it online
3	134	Pfaff, A. 2009. <i>Evaluating deforestation impacts of protected areas</i> . Presented at Connecting Amazon Protected Areas and Indigenous Lands to REDD Frameworks, Stanford, CA.	No institutional subscription/Not able to track it online
3	135	Garcia, C.A., Pascal, J.P., 2005. Sacred forests of Kodagu: ecological value and social role. In: Cederlof, G., Sivaramakrishnan, K. (Eds.), <i>Ecological Nationalisms: Nature, Livelihoods and Identities in South Asia</i> . University of Washington Press, Seattle, pp. 199–232.	No institutional subscription/Not able to track it online
3	136	Johari, R., 2007. <i>Of paper tigers and invisible people: the</i>	No institutional

		cultural politics of nature in Sariska. In: Shahabuddin, G., Rangarajan, M. (Eds.), Making Conservation Work: Securing Biodiversity in this New Century. Permanent Black, Delhi, India, pp. 48–80.	subscription/Not able to track it online
3	137	Poffenberger, M., McGean, B., Khare, A., 1996. Communities sustaining India's forests in the twenty-first century. In: Poffenberger, M., McGean, B. (Eds.), Voices, Forest Choices, Joint Forest Management in India. Oxford University Press, Delhi, pp. 17–55.	No institutional subscription/Not able to track it online
3	138	Deb Roy, S. and P. Jackson. 1993. Mayhem in Manas: The threats to India's wildlife reserves. In Indigenous Peoples and Protected Areas (ed. E. Kermf), pp. 156-161. Earthscan, London.	No institutional subscription/Not able to track it online
3	139	Grove, R.H. 1990. Colonial conservation, ecological hegemony and popular resistance: Towards a global synthesis. In Imperialism and the Natural World (ed. J.M. MacKenzie), pp. 15-50. Manchester University Press, Manchester.	No institutional subscription/Not able to track it online
3	140	Haenn, N. 2005. Fields of Power, Forests of Discontent: Culture, Conservation and the State in Mexico. University of Arizona Press, Tucson.	No institutional subscription/Not able to track it online
3	141	Jacoby, K. 2001. Crimes Against Nature: Squatters, Poachers, Thieves and the Hidden History of American Conservation. University of California Press, London.	No institutional subscription/Not able to track it online
3	142	Norgrove, L. 2002. Parking Resistance and Resisting the Park: The Theory and Practice of National Park Management. Ph.D thesis. Manchester: Institute for Development Policy and Management, University of Manchester. UK.	No institutional subscription/Not able to track it online
3	143	Nygren, A. 2003. Conflicts Over Wilderness Protection and Local Livelihoods in Rio San Juan, Nicaragua. In Ethnographies of Conservation: Environmentalism and the Distribution of Privilege (eds. D. Anderson and E. Berglund), pp. 33-49. Berghahn, Oxford.	No institutional subscription/Not able to track it online
3	144	Sullivan, S. 2003. Dissent or Libel in Resistance to a Conservancy in North-West Namibia. In Ethnographies of Conservation: Environmentalism and the Distribution of Privilege (eds. D. Anderson and E. Berglund), pp. 69-86. Bergahn, Oxford.	No institutional subscription/Not able to track it online
5	145	IUCN (2006) Gobernanza de las Áreas Protegidas en los Andes Tropicales. Memorias del Taller Regional, 11 y 12 de mayo de 2006. UICN. Quito, Ecuador. : . file:///Users/biljanamacura/Dropbox/MapReview all files/Grey Literature/24.10 Conserve online_Mendeley/IUCN 2006.pdf	Not in English



## ANNEX 7: LIST OF EXCLUDED STUDIES WITH REASONS FOR EXCLUSION

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A brief clarification of "rejection" codes

Total rejected	CODE	Example or further explanation
111	No relevant intervention	E.g. focus on ecotourism, (agro)forestry or war/armed conflict in PAs, empowerment or describes conflict during establishment of PA
144	No appropriate or relevant comparator	Comparator non-existent or inappropriate
175	No relevant outcomes	Study outcomes cannot be classified as attitudes, behaviour, ecological or spill-over effects
241	No sufficient information on governance	Information provided is not sufficient for the governance comparison of any conclusion regarding governance role in effectiveness
30	Not forest protected area	The study setting is located in a PA, but not in the forest ecosystem
21	Country-level/policy analysis	Not focusing on local level governance
95	Comment paper or relevant review	Includes: non-primary research papers, methodological, comment or theoretical papers, essays, brief discussions, editorials
<b>817</b>	<b>TOTAL</b>	

SRC. = source from where an article was obtained from and it is coded as follows: 1st search via 15 publication databases (=1), update search on WOK (=2), bibliography (=3), googlescholar (=4), grey literature (=5). More explanations on different sources and searches can be found in the main text.

S R C.	No	Full reference	Reason for rejection
1	1	Ambastha K R. Hussain, S. A. Badola, R. Roy, P. S; (2010) Spatial analysis of anthropogenic disturbances in mangrove forests of Bhitarkanika Conservation Area, India. JOURNAL OF THE INDIAN SOCIETY OF REMOTE SENSING. 38(1):	No appropriate or relevant comparator
1	2	Amoah M, Wiafe E D; (2012) Livelihoods of fringe communities and the impacts on the management of conservation area: The case of Kakum National Park in Ghana. International Forestry Review. 14(2): 131-144.	No appropriate or relevant comparator
1	3	Ansong M, Røskaft E (2011) Determinants of attitudes of primary stakeholders towards forest conservation management: A case study of Subri Forest Reserve, Ghana. <i>International Journal of Biodiversity Science, Ecosystems Services and Management</i> . 7(2): 98-107.	No appropriate or relevant comparator
1	4	Anthony Brandon (2007) The dual nature of parks: attitudes of neighbouring communities towards Kruger National Park, South Africa. ENVIRONMENTAL CONSERVATION. 34(3):	No appropriate or relevant comparator
1	5	Badola Ruchi Barthwal, Shivani Hussain, Syed Ainul; (2012) Attitudes of local communities towards conservation of mangrove forests: A case study from the east coast of India. ESTUARINE COASTAL AND SHELF SCIENCE. 96: .	No appropriate or relevant comparator
1	6	Becker CD (2003) Grassroots to grassroots: Why forest preservation was rapid at Loma Alta, Ecuador. <i>WORLD DEVELOPMENT</i> . 31(1):	No appropriate or relevant comparator
1	7	Byers BA Cunliffe, RN Hudak, AT; (2001) Linking the conservation of culture and nature: A case study of sacred forests in Zimbabwe. <i>HUMAN ECOLOGY</i> . 29(2): .	No appropriate or relevant comparator
1	8	Chandrashekara U M; Sankar S (1998) Ecological and social importance of conservation of sacred groves in Kerala.. . (152): iii + 43 pp..	No appropriate or relevant comparator
1	9	Chandrashekara UM Sankar, S; (1998) Ecology and management of sacred groves in Kerala, India. FOREST ECOLOGY AND MANAGEMENT. 112(1-2): .	No appropriate or relevant comparator
1	10	Costanza Torri, Maria (2011) Conservation, relocation and the social consequences of conservation policies in protected areas: Case study of the Sariska Tiger Reserve, India	No appropriate or relevant comparator
1	11	Delcore Henry D; (2007) The racial distribution of privilege in a Thai national park. JOURNAL OF SOUTHEAST ASIAN STUDIES. 38(1): .	No appropriate or relevant comparator
1	12	Frias Gisela, Meredith Thom (2004) Resistance to Conservation in the Land of Zapata. The Commons in an Age of Global Transition:	No appropriate

		Challenges, Risks and Opportunities, Tenth Conference of the International Association for the Study of Common Property, Oaxaca, Mexico.	or relevant comparator
1	13	Gaveau David L. A. Linkie, Matthew Suyadi Levang, Patrice; (2009b) Three decades of deforestation in southwest Sumatra: Effects of coffee prices, law enforcement and rural poverty. <i>BIOLOGICAL CONSERVATION</i> . 142(3):	No appropriate or relevant comparator
1	14	Gaveau David L. A. Wandono, Hagnyo Setiabudi, Firman; (2007) Three decades of deforestation in southwest Sumatra: Have protected areas halted forest loss and logging, and promoted re-growth?. <i>BIOLOGICAL CONSERVATION</i> . 134(4):	No appropriate or relevant comparator
1	15	Gockel Catherine Kilbane Gray, Leslie C; (2009) Integrating Conservation and Development in the Peruvian Amazon. <i>ECOLOGY AND SOCIETY</i> . 14(2AR 11): .	No appropriate or relevant comparator
1	16	Gorner Tomas, Najmanova Klara, Cihar Martin (2012) Changes in Local People's Perceptions of the Sumava National Park in the Czech Republic over a Ten Year Period (1998–2008). <i>Sustainability</i> . 4(6): 1354-1370	No appropriate or relevant comparator
1	17	Grundy I M; Campbell B M; White R M; Prabhu R, Jensen S, Ngamile T N; (2004) Participatory forest management in conservation areas: The case of Cwebe, South Africa. <i>Forests Trees and Livelihoods</i> . 14(2-4): 149-165.	No appropriate or relevant comparator
1	18	Harada K (2003) Attitudes of local people towards conservation and Gunung Halimun national park in west Java, Indonesia. <i>Journal of Forest Research</i> . 8(4): 271-282.	No appropriate or relevant comparator
1	19	Hariyadi Bambang (2012) The entwined tree: Traditional natural resource management of Serampas, Jambi, Indonesia.	No appropriate or relevant comparator
1	20	Honey-Roses Jordi (2009 B) Illegal Logging in Common Property Forests. <i>SOCIETY &amp; NATURAL RESOURCES</i> . 22(10):	No appropriate or relevant comparator
1	21	Horowitz LS (1998) Integrating indigenous resource management with wildlife conservation: A case study of Batang Ai National Park, Sarawak, Malaysia. <i>HUMAN ECOLOGY</i> . 26(3)	No appropriate or relevant comparator
1	22	Ite UE (1996) Community perceptions of the Cross River National Park, Nigeria. <i>ENVIRONMENTAL CONSERVATION</i> . 23(4): .	No appropriate or relevant comparator
1	23	Ite UE Adams, WM; (1998) Forest conversion, conservation and forestry in Cross River State, Nigeria. <i>APPLIED GEOGRAPHY</i> . 18(4): .	No appropriate or relevant comparator
1	24	Jachmann Hugo (2008 A) Illegal wildlife use and protected area management in Ghana. <i>BIOLOGICAL CONSERVATION</i> . 141(7):	No appropriate or relevant comparator
1	25	Jachmann Hugo (2008 B) Monitoring law-enforcement performance	No

		in nine protected areas in Ghana. BIOLOGICAL CONSERVATION. 141(1):	appropriate or relevant comparator
1	26	Jim C Y Y; Xu Steve S W S; (2002) Stifled stakeholders and subdued participation: interpreting local responses toward Shimentai Nature Reserve in South China.. Environmental management. 30(3): 327-41.	No appropriate or relevant comparator
1	27	Joshi P K; Narula S, Rawat A, Ghosh A (2011) Landscape characterization of Sariska National Park (India) and its surroundings. Geo-Spatial Information Science. 14(4): 303-310	No appropriate or relevant comparator
1	28	Kangalawe R Y.M; Noe C (2012) Biodiversity conservation and poverty alleviation in Namtumbo District, Tanzania. : .	No appropriate or relevant comparator
1	29	Katel Om N. Schmidt-Vogt, Dietrich; (2011) Use of Forest Resources by Residents of Jigme Singye Wangchuck National Park, Bhutan Practices and Perceptions in a Context of Constraints. MOUNTAIN RESEARCH AND DEVELOPMENT. 31(4): .	No appropriate or relevant comparator
1	30	Kibet S Nyamweru, C; (2008) Cultural and Biological Heritage at Risk; The Case of the Rabai Kaya Forests in Coastal Kenya. Journal of Human Ecology. 24(4): .	No appropriate or relevant comparator
1	31	Nagendra Harini, Paul Somajita, Pareeth Sajid, Dutt Sugato (2009A) Landscapes of protection: forest change and fragmentation in Northern West Bengal, India.. Environmental management. 44(5): 853-64.	No appropriate or relevant comparator
1	32	Ormsby A, Kaplin BA (2005) A framework for understanding community resident perceptions of Masoala National Park, Madagascar. ENVIRONMENTAL CONSERVATION. 32(2):	No appropriate or relevant comparator
1	33	Knorn Jan Kuemmerle, Tobias Radeloff, Volker C. Szabo, A; (2012) Forest restitution and protected area effectiveness in post-socialist Romania. BIOLOGICAL CONSERVATION. 146(1): .	No appropriate or relevant comparator
1	34	Kuemmerle T, Kozak J, Radeloff V C; Hostert P (2009) Differences in forest disturbance among land ownership types in Poland during and after socialism. Journal of Land Use Science. 4(1-2): 73-83.	No appropriate or relevant comparator
1	35	Lee Tien Ming; Sodhi Navjot S. Prawiradilaga, Dewi M; (2009) Determinants of local people's attitude toward conservation and the consequential effects on illegal resource harvesting in the protected areas of Sulawesi (Indonesia). ENVIRONMENTAL CONSERVATION. 36(2):	No appropriate or relevant comparator
1	36	Mackenzie Catrina A. Chapman, Colin A. Sengupta, Raja; (2012) Spatial patterns of illegal resource extraction in Kibale National Park, Uganda. ENVIRONMENTAL CONSERVATION. 39(1):	No appropriate or relevant comparator
1	37	Maikhuri RK Nautiyal, S Rao, KS Saxena, KG; (2001) Conservation policy-people conflicts: a case study from Nanda Devi Biosphere Reserve (a World Heritage Site), India. FOREST POLICY AND ECONOMICS. 2(3-4): .	No appropriate or relevant comparator

1	38	Huang Chengquan Kim, Sunghee Altstatt, Alice Townshend, John R; (2007) Rapid loss of Paraguay's Atlantic forest and the status of protected areas - A Landsat assessment. REMOTE SENSING OF ENVIRONMENT. 106(4): .	No appropriate or relevant comparator
1	39	Huang Yi Deng, Jinyang Li, Jian Zhong, Yongde; (2008) Visitors' attitudes towards China's national forest park policy, roles and functions, and appropriate use. JOURNAL OF SUSTAINABLE TOURISM. 16(1): .	No appropriate or relevant comparator
1	40	Baker J E; (2004) Evaluating conservation policy: integrated conservation and development in Bwindi Impenetrable National Park, Uganda. : Kent.	No appropriate or relevant comparator
1	41	Baker Julia Milner-Gulland, E. J. Leader-Williams, Nigel; (2012) Park Gazettement and Integrated Conservation and Development as Factors in Community Conflict at Bwindi Impenetrable Forest, Uganda. CONSERVATION BIOLOGY. 26(1): .	No appropriate or relevant comparator
1	42	Shahabuddin G, Kumar R, Shrivastava M (2007) Creation of 'inviolable space': lives, livelihoods and conflict in Sariska Tiger Reserve.. Economic and Political Weekly. 42(20): 1855-1862.	No appropriate or relevant comparator
1	43	Kepe Thembela (2008) Land claims and comanagement of protected areas in South Africa: Exploring the challenges. ENVIRONMENTAL MANAGEMENT. 41(3): .	No appropriate or relevant comparator
1	44	McCrary JK Hammett, AL Barany, ME Machado, HE Garcia, D; (2004) Illegal extraction of forest products in Laguna de Apoyo Nature Reserve, Nicaragua. CARIBBEAN JOURNAL OF SCIENCE. 40(2): .	No appropriate or relevant comparator
1	45	Mehta JN, Kellert SR (1998) Local attitudes toward community-based conservation policy and programmes in Nepal: a case study in the Makalu-Barun Conservation Area. ENVIRONMENTAL CONSERVATION. 25(4): .	No appropriate or relevant comparator
1	46	Mubalama Leonard Bashigg, Eulalie; (2006) Caught in the crossfire: the forest elephant and law enforcement in a region of political instability, eastern Democratic Republic of Congo.. Pachyderm. 40: .	No appropriate or relevant comparator
1	47	Mukherjee A Borad, CK; (2004) Integrated approach towards conservation of Gir National Park: the last refuge of Asiatic Lions, India. BIODIVERSITY AND CONSERVATION. 13(11): .	No appropriate or relevant comparator
1	48	Mukherjee A (2011) Local perceptions of conservation intervention in Kanha National Park. Economic and Political Weekly. 46(25): 60-69.	No appropriate or relevant comparator
1	49	Mukul S A; Quazi S A; (2009) Communities in conservation: protected area management and enhanced conservation in Bangladesh.. (03): 143-159	No appropriate or relevant comparator
1	50	Mukul S A; Manzoor Rashid, A Z M; Quazi S A; Uddin M B; Fox J (2012A) Local peoples' responses to co-management regime in protected areas: A case study from Satchari National Park, Bangladesh. Forests Trees and Livelihoods. 21(1): 16-29.	No appropriate or relevant comparator

1	51	Nagendra H, Pareeth S, Ghate R (2006) People within parks - Forest villages, land-cover change and landscape fragmentation in the Tadoba Andhari Tiger Reserve, India. <i>Applied Geography</i> . 26(2): 96-112.	No appropriate or relevant comparator
1	52	Nagendra Harini Rocchini, Duccio Ghate, Rucha; (2010) Beyond parks as monoliths: Spatially differentiating park-people relationships in the Tadoba Andhari Tiger Reserve in India. <i>BIOLOGICAL CONSERVATION</i> . 143(12):	No appropriate or relevant comparator
1	53	Navarrete Jose-Luis Isabel Ramirez, M. Perez-Salicrup, Diego R; (2011) Logging within protected areas: Spatial evaluation of the monarch butterfly biosphere reserve, Mexico. <i>FOREST ECOLOGY AND MANAGEMENT</i> . 262(4):	No appropriate or relevant comparator
1	54	NEPAL SK WEBER, KE; (1995) THE QUANDARY OF LOCAL PEOPLE-PARK RELATIONS IN NEPALS ROYAL-CHITWAN-NATIONAL-PARK. <i>ENVIRONMENTAL MANAGEMENT</i> . 19(6): .	No appropriate or relevant comparator
1	55	Nielsen M R; (2011) Improving the conservation status of the Udzungwa Mountains, Tanzania? The effect of joint forest management on bushmeat hunting in the Kilombero nature reserve. <i>Conservation and Society</i> . 9(2): 106-118.	No appropriate or relevant comparator
1	56	O'Kelly Hannah J; Evans Tom D; Stokes Emma J; Clements Tom J; Dara An, Gately Mark, Menghor Nut, Pollard Edward H. B; Soriyun Men, Walston Joe (2012) Identifying Conservation Successes, Failures and Future Opportunities; Assessing Recovery Potential of Wild Ungulates and Tigers in Eastern Cambodia. <i>PLoS ONE</i> . 7(10): e40482-.	No appropriate or relevant comparator
1	57	Oltremari JV Jackson, RG; (2006) Conflicts, perceptions, and expectations of indigenous communities associated with natural areas in Chile. <i>NATURAL AREAS JOURNAL</i> . 26(2): .	No appropriate or relevant comparator
1	58	Ormsby Alison A; (2011) The Impacts of Global and National Policy on the Management and Conservation of Sacred Groves of India. <i>HUMAN ECOLOGY</i> . 39(6):	No appropriate or relevant comparator
1	59	Parul Rishi (2004) Pluralism in protected area management: a case study on Keoladeo National Park in India.. <i>Forests, Trees and Livelihoods</i> . 14(1): 19-31.	No appropriate or relevant comparator
1	60	Pfeffer MJ Schelhas, JW Day, LA; (2001) Forest conservation, value conflict, and interest formation in a Honduran national park. <i>RURAL SOCIOLOGY</i> . 66(3): .	No appropriate or relevant comparator
1	61	Phuc To Xuan; (2009) Why did the forest conservation policy fail in the Vietnamese uplands? Forest conflicts in Ba Vi National Park in Northern Region. <i>International Journal of Environmental Studies</i> . 66(1): .	No appropriate or relevant comparator
1	62	Priess Joerg A. Mimler, Matthias Weber, Robert Faust, Hei; Kulasiri D (2007) Socio-Environmental Impacts of Land Use and Land Cover Change at a Tropical Forest Frontier. <i>MODSIM 2007: INTERNATIONAL CONGRESS ON MODELLING AND SIMULATION: LAND, WATER AND ENVIRONMENTAL MANAGEMENT: INTEGRATED SYSTEMS FOR</i>	No appropriate or relevant comparator

		SUSTAINABILITY. :	
1	63	Rao K S; Nautiyal S, Maikhuri R K; Saxena K G; (2003) Local peoples' knowledge, aptitude and perceptions of planning and management issues in Nanda Devi Biosphere Reserve, India. <i>Environmental Management</i> . 31(2): 168-181.	No appropriate or relevant comparator
1	64	Reza Leylian Mohammad; Aryan Amirkhani, Mojtaba Ansari, Reza Bemanian Mohammad; (2010) Investigating the Perceptions of Residents in Golestan National Park, Iran. <i>Asian Social Science</i> . 6(9): .	No appropriate or relevant comparator
1	65	Rinzin C, Vermeulen W J.V; Wassen M J; Glasbergen P (2009) Nature conservation and human well-being in Bhutan: An assessment of local community perceptions. <i>Journal of Environment and Development</i> . 18(2): 177-202.	No appropriate or relevant comparator
1	66	Robbins Paul F. Chhangani, Anil K. Rice, Jennifer Trigosa; (2007) Enforcement authority and vegetation change at Kumbhalgarh wildlife sanctuary, Rajasthan, India. <i>ENVIRONMENTAL MANAGEMENT</i> . 40(3): .	No appropriate or relevant comparator
1	67	Robbins Paul McSweeney, Kendra Chhangani, Anil K. Rice, Jen; (2009) Conservation as It Is: Illicit Resource Use in a Wildlife Reserve in India. <i>HUMAN ECOLOGY</i> . 37(5): .	No appropriate or relevant comparator
1	68	Robinson Carolyn A. Jost Daspit, Lesley L. Remis, Melissa J; (2011) Multi-faceted approaches to understanding changes in wildlife and livelihoods in a protected area: a conservation case study from the Central African Republic. <i>ENVIRONMENTAL CONSERVATION</i> . 38(2): .	No appropriate or relevant comparator
1	69	Román-Cuesta María Rosa R; Martínez-Vilalta Jordi (2006) Effectiveness of protected areas in mitigating fire within their boundaries: case study of Chiapas, Mexico.. <i>Conservation biology : the journal of the Society for Conservation Biology</i> . 20(4): 1074-86.	No appropriate or relevant comparator
1	70	Sharma S Rikhari, HC Palni, LMS; (1999) Conservation of natural resources through religion: A case study from Central Himalaya. <i>SOCIETY &amp; NATURAL RESOURCES</i> . 12(6): .	No appropriate or relevant comparator
1	71	Sheridan Michael J; (2009) The Environmental and Social History of African Sacred Groves: A Tanzanian Case Study. <i>AFRICAN STUDIES REVIEW</i> . 52(1): .	No appropriate or relevant comparator
1	72	Shova Thapa Hubacek, Klaus; (2011) Drivers of illegal resource extraction An analysis of Bardia National Park, Nepal. <i>JOURNAL OF ENVIRONMENTAL MANAGEMENT</i> . 92(1): .	No appropriate or relevant comparator
1	73	Silori Chandra Shekhar; (2007) Perception of local people towards conservation of forest resources in Nanda Devi Biosphere Reserve, north-western Himalaya, India. <i>BIODIVERSITY AND CONSERVATION</i> . 16(1): .	No appropriate or relevant comparator
1	74	Sirivongs Khamfeua Tsuchiya, Toshiyuki; (2012) Relationship between local residents' perceptions, attitudes and participation towards national protected areas: A case study of Phou Khao Khouay National Protected Area, central Lao PDR. <i>FOREST POLICY AND ECONOMICS</i> . 21: .	No appropriate or relevant comparator
1	75	Tengoe Maria Johansson, Kristin Rakotondrasoa, Fanambinantsoa;	No

		(2007) Taboos and forest governance: Informal protection of hot spot dry forest in southern Madagascar. <i>AMBIO</i> . 36(8): .	appropriate or relevant comparator
1	76	Tomicevic Jelena Shannon, Margaret A. Vuletic, Dijana; (2010) DEVELOPING LOCAL CAPACITY FOR PARTICIPATORY MANAGEMENT OF PROTECTED AREAS: THE CASE OF TARA NATIONAL PARK. <i>SUMARSKI LIST</i> . 134(9-10):	No appropriate or relevant comparator
1	77	Tomicevic Jelena Shannon, Margaret A. Milovanovic, Marina; (2010) Socio-economic impacts on the attitudes towards conservation of natural resources: Case study from Serbia. <i>FOREST POLICY AND ECONOMICS</i> . 12(3):	No appropriate or relevant comparator
1	78	Triguero-Mas Margarita Olomi-Sola, Marc Jha, Naveen Zorondo-Rodriguez; (2009) Urban and rural perceptions of protected areas: a case study in Dandeli Wildlife Sanctuary, Western Ghats, India. <i>ENVIRONMENTAL CONSERVATION</i> . 36(3): .	No appropriate or relevant comparator
1	79	Tucker CM (2004) Community institutions and forest management in Mexico's Monarch butterfly reserve. <i>SOCIETY &amp; NATURAL RESOURCES</i> . 17(7): .	No appropriate or relevant comparator
1	80	Van Der Ploeg , J , Van Weerd , M , Masipiqueña A, Persoon G (2011) Illegal logging in the Northern Sierra Madre Natural Park, the Philippines. <i>Conservation and Society</i> . 9(3): 202-215.	No appropriate or relevant comparator
1	81	Vodouhe FG Coulibaly, O, Adegbidi A, Sins; (2010) Community perception of biodiversity conservation within protected areas in Benin. <i>FOREST POLICY AND ECONOMICS</i> . 12(7):	No appropriate or relevant comparator
1	82	Wala K, Woegan A Y; Borozi W, Dourma M, Atato A, Batawila K, Akpagana K (2012) Assessment of vegetation structure and human impacts in the protected area of Alédjo (Togo). <i>African Journal of Ecology</i> . 50(3): 355-366.	No appropriate or relevant comparator
1	83	Wang Sonam Wangyel Lassoie, James P. Curtis, Paul D; (2006) Farmer attitudes towards conservation in Jigme Singye Wangchuck National Park, Bhutan. <i>ENVIRONMENTAL CONSERVATION</i> . 33(2): .	No appropriate or relevant comparator
1	84	Wassie A, Teketay D, Powell N (2005) Church forests in North Gonder administrative zone, northern Ethiopia. <i>Forests Trees and Livelihoods</i> . 15(4): 349-373.	No appropriate or relevant comparator
1	85	Wyman Miriam S. Stein, Taylor V; (2010b) Modeling social and land-use/land-cover change data to assess drivers of smallholder deforestation in Belize. <i>APPLIED GEOGRAPHY</i> . 30(3): .	No appropriate or relevant comparator
1	86	Xu JY Chen, LD Lu, YH Fu, BJ; (2006) Local people's perceptions as decision support for protected area management in Wolong Biosphere Reserve, China. <i>JOURNAL OF ENVIRONMENTAL MANAGEMENT</i> . 78(4):	No appropriate or relevant comparator
1	87	Zimmerman B Peres, CA Malcolm, JR Turner, T; (2001) Conservation and development alliances with the Kayapo of south-eastern Amazonia, a tropical forest indigenous people. <i>ENVIRONMENTAL CONSERVATION</i> . 28(1): .	No appropriate or relevant comparator
1	88	Dressler WH (2006) Co-opting conservation: Migrant resource	No



		control and access to national park management in the Philippine uplands. DEVELOPMENT AND CHANGE. 37(2): .	appropriate or relevant comparator
1	89	Roth Robin J; (2008) "Fixing" the forest: The spatiality of conservation conflict in Thailand. ANNALS OF THE ASSOCIATION OF AMERICAN GEOGRAPHERS. 98(2): .	No appropriate or relevant comparator
1	90	Purwanto Semiarto AjiBE Sodhi, NS; Acciaioli G, Erb M, Tan AKJ (2008) Another way to live: developing a programme for local people around Tanjung Puting National Park, Central Kalimantan. In: ; BIODIVERSITY AND HUMAN LIVELIHOODS IN PROTECTED AREAS: CASE STUDIES FROM THE MALAY ARCHIPELAGO. : , pages .	No appropriate or relevant comparator
3	91	Campbell, M.O., 2004. Traditional forest protection and woodlots in the coastal savannah of Ghana. Environmental Conservation 31, 225–232.	No appropriate or relevant comparator
2	92	Damnyag Lawrence, Saastamoinen Olli, Blay Dominic, Dwomoh Francis K; Anglaaere Luke C. N; Pappinen Ari (2013) Sustaining protected areas: Identifying and controlling deforestation and forest degradation drivers in the Ankasa Conservation Area, Ghana. Biological Conservation. 165: 86-94.	No appropriate or relevant comparator
2	93	Fischer Harry W; Chhatre Ashwini (2013) Environmental citizenship, gender, and the emergence of a new conservation politics. Geoforum. 50: 10-19.	No appropriate or relevant comparator
2	94	Flesher Kevin M; Laufer Juliana (2013) Protecting wildlife in a heavily hunted biodiversity hotspot: a case study from the Atlantic Forest of Bahia, Brazil. Tropical Conservation Science. 6: 181-200.	No appropriate or relevant comparator
2	95	Groff Katherine, Axelrod Mark (2013) A Baseline Analysis of Transboundary Poaching Incentives in Chiquibul National Park, Belize. Conservation & Society. 11: 277-290.	No appropriate or relevant comparator
2	96	Holmes George (2013) Exploring the Relationship Between Local Support and the Success of Protected Areas. Conservation & Society. 11: 72-82.	No appropriate or relevant comparator
2	97	Holmes George (2014) Defining the forest, defending the forest: Political ecology, territoriality, and resistance to a protected area in the Dominican Republic. Geoforum. 53: 1-10.	No appropriate or relevant comparator
2	98	Martin Esmond, Vigne Lucy (2012) Successful rhino conservation continues in West Bengal, India. Pachyderm. 51: 27-37.	No appropriate or relevant comparator
2	99	Martinez-Reyes Jose E; (2014) Beyond Nature Appropriation: Towards Post-development Conservation in the Maya Forest. Conservation & Society. 12: 162-174.	No appropriate or relevant comparator
2	100	Petursson Jon Geir; Vedeld Paul, Sassen Marieke (2013a) An institutional analysis of deforestation processes in protected areas:	No appropriate

		The case of the transboundary Mt. Elgon, Uganda and Kenya. <i>Forest Policy and Economics</i> . 26: 22-33.	or relevant comparator
2	101	Sassen Marieke, Sheil Douglas, Giller Ken E; ter Braak, Cajo J F; (2013) Complex contexts and dynamic drivers: Understanding four decades of forest loss and recovery in an East African protected area. <i>Biological Conservation</i> . 159: 257-268.	No appropriate or relevant comparator
2	102	Sieber Anika, Kuemmerle Tobias, Prishchepov Alexander V; Wendland Kelly J; Baumann Matthias, Radeloff Volker C; Baskin Leonid M; Hostert Patrick (2013) Landsat-based mapping of post-Soviet land-use change to assess the effectiveness of the Oksky and Mordovsky protected areas in European Russia. <i>Remote Sensing of Environment</i> . 133: 38-51.	No appropriate or relevant comparator
4	103	Schultz L, Duit A, Folke C (2011) Participation, adaptive co-management, and management performance in the world network of biosphere reserves. <i>World Development</i> . : .	No appropriate or relevant comparator
1	104	Mondal Pinki Southworth, Jane; (2010A) Evaluation of conservation interventions using a cellular automata-Markov model. <i>FOREST ECOLOGY AND MANAGEMENT</i> . 260(10):	No appropriate or relevant comparator
1	105	Mondal Pinki Southworth, Jane; (2010B) Protection vs. commercial management: Spatial and temporal analysis of land cover changes in the tropical forests of Central India. <i>FOREST ECOLOGY AND MANAGEMENT</i> . 259(5):	No appropriate or relevant comparator
3	106	Sanchez-Azofeifa, G.A., Alvard, B., Calvo, J., Moorthy, I., 2002. Dynamics of Tropical Deforestation around National Parks: remote sensing of forest change on the Osa Peninsula of Costa Rica. <i>Mountain Research and Development</i> 22, 352–358.	No appropriate or relevant comparator
3	107	Hoole A and Berkes F 2010 Breaking down fences: recoupling social-ecological systems for biodiversity conservation in Namibia <i>Geoforum</i> 41 304–17	No appropriate or relevant comparator
3	108	Kaltenborn B P, Riese H and Hundeide M 1999 National park planning and local participation: some reflections from a mountain region in southern Norway <i>Mountain Research and Development</i> 19 51–61	No appropriate or relevant comparator
3	109	Liu J, Ouyang Z and Miao H 2010 Environmental attitudes of stakeholders and their perceptions regarding protected area-community conflicts: a case study in China. <i>Journal of Environmental Management</i> 91 2254–62	No appropriate or relevant comparator
3	110	Phong LT. 2004. Analysis of forest cover dynamics and their driving forces in Bach Ma National Park and its buffer zone using using remote sensing and GIS. MSc thesis. Int. Inst. Geoinf. Sci. Earth Obs. (ITC), Enschede Neth. 66 pp.	No appropriate or relevant comparator
3	111	Abbot, J. I., Mace, R. 1999. Managing Protected Woodlands: Fuelwood Collection and Law Enforcement in Lake Malawi National Park. <i>Conservation Biology</i> 13(2):418-421	No appropriate or relevant comparator
3	112	Infield, M., Namara, A. 2001. Community attitudes and behaviour towards conservation: an assessment of a community conservation programme around Lake Mburo National Park, Uganda. <i>Oryx</i> 35(1):48-60	No appropriate or relevant comparator

3	113	Luque, S.S. 2000. Evaluating temporal changes using Multi-Spectral Scanner and Thematic Mapper data on the landscape of a natural reserve: the New Jersey Pine Barrens, a case study. <i>Int. J. Remote Sens.</i> 21, 2589–2611.	No appropriate or relevant comparator
3	114	Bleher, B., D. Uster & T. Bergsdorf. 2006. Assessment of threat status and management effectiveness in Kakamega Forest, Kenya. <i>Biodivers. Conserv.</i> 15:00 1159–1177.	No appropriate or relevant comparator
1	115	Abbot JIO Thomas, DHL Gardner, AA Neba, SE Khen, MW; Understanding the links between conservation and development in the bamenda highlands, Cameroon	No relevant intervention
1	116	ABEL N BLAIKIE, P; (1986) ELEPHANTS, PEOPLE, PARKS AND DEVELOPMENT - THE CASE OF THE LUANGWA VALLEY, ZAMBIA. <i>ENVIRONMENTAL MANAGEMENT.</i> 10(6):	Comment paper or relevant review
1	117	Adeney J Marion M; Christensen Norman L L; Pimm Stuart L L; (2009) Reserves protect against deforestation fires in the Amazon.. <i>PloS one.</i> 4(4): e5014.	No sufficient information on governance
1	118	Agrawal A (2000) Adaptive management in transboundary protected areas: The Bialowieza National Park and Biosphere Reserve as a case study. <i>ENVIRONMENTAL CONSERVATION.</i> 27(4):	Comment paper or relevant review
1	119	Albrecht Moritz (2010) Transboundary governance of the Curonian Spit World Heritage Site. <i>Journal of Environmental Planning and Management.</i> 53(6): 725-742.	No relevant outcomes
1	120	Alkan Hasan Korkmaz, Mehmet Tolunay, Ahmet; (2009) ASSESSMENT OF PRIMARY FACTORS CAUSING POSITIVE OR NEGATIVE LOCAL PERCEPTIONS ON PROTECTED AREAS. <i>JOURNAL OF ENVIRONMENTAL ENGINEERING AND LANDSCAPE MANAGEMENT.</i> 17(1): .	No sufficient information on governance
1	121	Allendorf Teri D; (2010) A framework for the park-people relationship: insights from protected areas in Nepal and Myanmar. <i>INTERNATIONAL JOURNAL OF SUSTAINABLE DEVELOPMENT AND WORLD ECOLOGY.</i> 17(5)	Comment paper or relevant review
1	122	Alo Clement Aga Pontius, Robert Gilmore, Jr; (2008) Identifying systematic land-cover transitions using remote sensing and GIS: the fate of forests inside and outside protected areas of Southwestern Ghana. <i>ENVIRONMENT AND PLANNING B-PLANNING &amp; DESIGN.</i> 35(2):	No sufficient information on governance
1	123	Alpert P (1996) Integrated conservation and development projects: examples from Africa.. <i>BioScience.</i> 46(11): 845-855	No relevant outcomes
1	124	Ambus Lisa, Hoberg George (2011) The Evolution of Devolution: A Critical Analysis of the Community Forest Agreement in British Columbia. <i>Society &amp; Natural Resources.</i> 24(9): 933-950.	Not forest protected area
1	125	Amirante D (2000) Nature protection areas of the Indian Union: Legal profile. <i>Le aree naturali protette nell'Unione indiana: Profili giuridici.</i> 15(1): 177-192.	Country-level/policy analysis
1	126	Amita Shah (2007) Management of protected areas: exploring an alternative in Gir.. <i>Economic and Political Weekly.</i> 42(27/28): 2923-2930.	No relevant outcomes

1	127	Andam Kwaw S. Ferraro, Paul J. Pfaff, Alexander Sanchez; (2008) Measuring the effectiveness of protected area networks in reducing deforestation. PROCEEDINGS OF THE NATIONAL ACADEMY OF SCIENCES OF THE UNITED STATES OF AMERICA. 105(42):	No sufficient information on governance
1	128	Angelstam Per Andersson, Kjell Axelsson, Robert Elbakidze, M; (2011) Protecting Forest Areas for Biodiversity in Sweden 1991-2010: the Policy Implementation Process and Outcomes on the Ground. SILVA FENNICA. 45(5):	No sufficient information on governance
1	129	Anthony Brandon P; Scott Peter, Antypas Alexios (2010) Sitting on the fence? policies and practices in managing human-wildlife conflict in Limpopo province, South Africa. <i>Conservation and Society</i> . 8(3): .	No relevant intervention
1	130	Anthwal A Gupta N, Sharma, Archana Anthwal, Smriti; (2010) Conserving biodiversity through traditional beliefs in sacred groves in Uttarakhand Himalaya, India. RESOURCES CONSERVATION AND RECYCLING. 54(11):	No relevant outcomes
1	131	Badola R (1999) People and protected areas in India. <i>Unasylva</i> . 50(199): 12-15.	Comment paper or relevant review
1	132	Baird Ian G G; Dearden Philip (2003) Biodiversity conservation and resource tenure regimes: a case study from northeast Cambodia.. <i>Environmental management</i> . 32(5): 541-50.	No sufficient information on governance
1	133	Banda Tasila Schwartz, Mark W. Caro, Tim; (2006) Woody vegetation structure and composition along a protection gradient in a miombo ecosystem of western Tanzania. FOREST ECOLOGY AND MANAGEMENT. 230(1-3): .	No sufficient information on governance
1	134	Barahona GM Guzman, HM; (1998) Socio-ecological survey of resident populations in Cayos Cochinos Biological Reserve, Honduras. <i>REVISTA DE BIOLOGIA TROPICAL</i> . 46: .	Not forest protected area
1	135	Baral Nabin Heinen, Joel T; (2007) Decentralization and people's participation in conservation: a comparative study from the Western Terai of Nepal. <i>INTERNATIONAL JOURNAL OF SUSTAINABLE DEVELOPMENT AND WORLD ECOLOGY</i> . 14(5): .	No relevant outcomes
1	136	Barany ME Hammett, AL Murphy, BR McCrary, JK; (2002) Resource use and management of selected Nicaraguan protected areas: A case study from the Pacific region. <i>NATURAL AREAS JOURNAL</i> . 22(1): .	Not forest protected area
1	137	Bassi M, Tache B (2011) The community conserved landscape of the Borana Oromo, Ethiopia: Opportunities and problems. <i>Management of Environmental Quality</i> . 22(2): 174-186.	Not forest protected area
1	138	Bates D Rudel, TK; (2000) The political ecology of conserving tropical rain forests: A cross-national analysis. <i>SOCIETY &amp; NATURAL RESOURCES</i> . 13(7):	No relevant intervention
1	139	Bauer H (2003) Local perceptions of Waza National Park, northern Cameroon. <i>ENVIRONMENTAL CONSERVATION</i> . 30(2): .	No sufficient information

			on governance
1	140	Beaumont Linda J; Duursma Daisy (2012) Global Projections of 21st Century Land-Use Changes in Regions Adjacent to Protected Areas. PLoS ONE. 7(8): e43714	No sufficient information on governance
1	141	Berkes F, Adhiraki T (2006) Development and conservation: Indigenous businesses and the UNDP Equator Initiative. International Journal of Entrepreneurship and Small Business. 3(6): 671-690.	No relevant intervention
1	142	Berkes Fikret (2009) Community conserved areas: policy issues in historic and contemporary context. <i>CONSERVATION LETTERS</i> . 2(1):	Comment paper or relevant review
1	143	Beyers Rene L L; Hart John A A; Sinclair Anthony R E R; Grossmann Falk, Klinkenberg Brian, Dino Simeon (2011) Resource wars and conflict ivory: the impact of civil conflict on elephants in the Democratic Republic of Congo--the case of the Okapi Reserve.. PloS one. 6(11): e27129.	No relevant intervention
1	144	Bhagwat Shonil A. Rutte, Claudia; (2006) Sacred groves: potential for biodiversity management. <i>FRONTIERS IN ECOLOGY AND THE ENVIRONMENT</i> . 4(10):	Comment paper or relevant review
1	145	Bhakat R K. Pandit, P. A. Maity, P. P; (2007) Conservation of local ethno-medicinal trees of Midnapore District, West Bengal through a sacred grove. Indian Forester. 133(9): .	No appropriate or relevant comparator
1	146	Bhardwaj A K. Krishnan, Pramod G. Geetha, K. Veeramani,; (2006) Conservation of tiger ( <i>Panthera tigris</i> ) and its habitats - Experiences of co-existence of people and protected area from Periyar Tiger Reserve, Kerala, India. Indian Forester. 132(10): .	No relevant outcomes
1	147	Blom A, Yamindou J, Prins H H. T; (2004) Status of the protected areas of the Central African Republic.. <i>Biological Conservation</i> . 118(4): 479-487.	No sufficient information on governance
1	148	Bonham Curan A. Sacayon, Eduardo Tzi, Ernesto; (2008) Protecting imperiled "paper parks": potential lessons from the Sierra Chinajai, Guatemala. <i>BIODIVERSITY AND CONSERVATION</i> . 17(7): .	Comment paper or relevant review
1	149	Bonta M (2005) Becoming-forest, becoming-local: transformations of a protected area in Honduras. <i>GEOFORUM</i> . 36(1): .	No relevant outcomes
1	150	Bosak Keith (2008) Nature, Conflict and Biodiversity Conservation in the Nanda Devi Biosphere Reserve. <i>Conservation and Society</i> . 6:	No relevant outcomes
1	151	Brandon Katrina (1997) Policy and practical considerations in land-use strategies for biodiversity conservation.. In: Kramer Randall, van Schaik Carel, Johnson Jul Last stand: protected areas and the defense of tropical biodiversity.. : , p .	Comment paper or relevant review
1	152	Bray David, Duran Elvira, Molina-Gonzalez Oscar Antonio; (2012) Beyond harvests in the commons: multi-scale governance and turbulence in indigenous/community conserved areas in Oaxaca,	No relevant intervention

		Mexico. : Igitur.	
1	153	Bray David Barton; Velazquez Alejandro (2009) From Displacement-based Conservation to Place-based Conservation. <i>Conservation and Society</i> . 7: .	Comment paper or relevant review
1	154	Brockington Dan (2007) Forests, community conservation, and local government performance: The village forest reserves of Tanzania. <i>SOCIETY &amp; NATURAL RESOURCES</i> . 20(9): .	No relevant outcomes
1	155	Browder JO (2002) Conservation and development projects in the Brazilian Amazon: Lessons from the community initiative program in Rondonia. <i>ENVIRONMENTAL MANAGEMENT</i> . 29(6): .	No relevant outcomes
1	156	Bruner A G; Gullison R E; Rice R E; Fonseca G A. B. da; (2000) Effectiveness of parks in protecting tropical biodiversity.. <i>Science (Washington)</i> . 291(5501): 125-128.	No sufficient information on governance
1	157	Bunnell JF Zampella, RA Lathrop, RG Bogner, JA; (2003) Landscape changes in the Mullica river basin of the Pinelands National Reserve, New Jersey, USA. <i>ENVIRONMENTAL MANAGEMENT</i> . 31(6): .	Not forest protected area
1	158	Butchart Stuart H. M. Scharlemann, Joern P. W. Evans, Mike I. (2012) Protecting Important Sites for Biodiversity Contributes to Meeting Global Conservation Targets. <i>PLOS ONE</i> . 7(3AR e32529):	No sufficient information on governance
1	159	Campbell A, Clark S, Coad L, Miles L, Bolt K, Roe D (2008) Protecting the future: Carbon, forests, protected areas and local livelihoods. <i>Biodiversity</i> . 9(3-4): 117-121.	Comment paper or relevant review
1	160	Capotorti G Zavattoni, L. Anzellotti, I. Burrascano, S. (2012) Do National Parks play an active role in conserving the natural capital of Italy?. <i>PLANT BIOSYSTEMS</i> . 146(2):	No sufficient information on governance
1	161	Cardozo M (2011) Economic displacement and local attitude towards protected area establishment in the Peruvian Amazon. <i>Geoforum</i> . 42(5): 603-614	No relevant intervention
1	162	Caro Tim Gardner, Toby A. Stoner, Chantal Fitzherbert (2009) Assessing the effectiveness of protected areas: paradoxes call for pluralism in evaluating conservation performance. <i>DIVERSITY AND DISTRIBUTIONS</i> . 15(1): .	Comment paper or relevant review
1	163	Carr D (2006) A tale of two roads: Land tenure, poverty, and politics on the Guatemalan frontier. <i>GEOFORUM</i> . 37(1): .	No relevant outcomes
1	164	Chandrakanth M G; Bhat Mahadev G; Accavva (2004) Socio-economic Changes and Sacred Groves in South India: Protecting a Community-Based Resource Management Institution. <i>Natural Resources Forum, UN</i> . 28(2): 102-102.	No relevant outcomes
1	165	Chandy S Euler, DLBE Watson, AE; Aplet GH, Hendee JC (2000) Can community forestry conserve tigers in India?. <i>PERSONAL, SOCIETAL, AND ECOLOGICAL VALUES OF WILDERNESS: SIXTH WORLD WILDERNESS CONGRESS PROCEEDINGS ON RESEARCH, MANAGEMENT, AND ALLOCATION, VOL</i>	Comment paper or relevant review

		IISE USDA FOREST SERVICE ROCKY MOUNTAIN RESEARCH STATION PROCEEDINGS. 2(14):	
1	166	Chapman CA Struhsaker, TT Lambert, JE; (2005) Thirty years of research in Kibale National Park, Uganda, reveals a complex picture for conservation. INTERNATIONAL JOURNAL OF PRIMATOLOGY. 26(3):	No sufficient information on governance
1	167	Chatelain C Bakayoko, A. Martin, P. Gautier, L; (2010) Monitoring tropical forest fragmentation in the Zagne-Tai area (west of Tai National Park, Cote d'Ivoire). BIODIVERSITY AND CONSERVATION. 19(8):	No appropriate or relevant comparator
1	168	Chaturvedi Alka G; Phani Kumar (2006) Developmental Conflict and Its Impact on Biodiversity of Pench National Park, Maharashtra, India. Indian Forester. 132(10):	No relevant outcomes
1	169	Chhatre A Saberwal, V; (2005) Political incentives for biodiversity conservation. CONSERVATION BIOLOGY. 19(2): .	Comment paper or relevant review
1	170	Chowdhury M S. H. Koike, M. Muhammed, N; (2009) Embracing collaborative protected area management for conservation: an analysis of the development of the forest policy of Bangladesh. INTERNATIONAL FORESTRY REVIEW. 11(3): .	Country-level/policy analysis
1	171	Clapp RA (2004) Wilderness ethics and political ecology: remapping the Great Bear Rainforest. POLITICAL GEOGRAPHY. 23(7):	No sufficient information on governance
1	172	Clark S G; Cherney D N; Angulo I, de Leon , R B, Moran-Cahusac C (2009a) A problem-oriented overview of management policy for podocarpus national park, Ecuador. Journal of Sustainable Forestry. 28(6-7): 663-679.	No relevant outcomes
1	173	Clark S G; Cherney D N; Ashton M S; (2009b) Development and environmental challenges, podocarpus national park, Ecuador. Journal of Sustainable Forestry. 28(6-7): 597-613.	Comment paper or relevant review
1	174	Clarke Pepe Jupiter, Stacy D; (2010) Law, custom and community-based natural resource management in Kubulau District (Fiji). ENVIRONMENTAL CONSERVATION. 37(1): .	Not forest protected area
1	175	Colchester M (2004) Conservation policy and indigenous peoples. Environmental Science & Policy. 7(3): 145-153.	Comment paper or relevant review
1	176	Convery I, Dutson T (2007) Case study rural communities and landscape change: a case study of Wild Ennerdale.. Journal of Rural and Community Development. 3(1): 104-118	No relevant intervention
1	177	Cortina-Villar Sergio Plascencia-Vargas, Hector Vaca, Raul Schroth (2012) Resolving the Conflict Between Ecosystem Protection and Land Use in Protected Areas of the Sierra Madre de Chiapas, Mexico. ENVIRONMENTAL MANAGEMENT. 49(3):	No appropriate or relevant comparator
1	178	Cottle Morgan A; Howard Theodore E; (2012) Conflict management and community support for conservation in the Northern Forest: Case studies from Maine. Forest Policy and Economics. 20(C): 66-	No relevant intervention

		71.	
1	179	Cox P A; Elmqvist T (1997) Ecocolonialism and indigenous-controlled rainforest preserves in Samoa. <i>AMBIO</i> . 26(2): 84-89.	Comment paper or relevant review
1	180	COX PA ELMQVIST, T; (1991) INDIGENOUS CONTROL OF TROPICAL RAIN-FOREST RESERVES - AN ALTERNATIVE STRATEGY FOR CONSERVATION. <i>AMBIO</i> . 20(7):	Comment paper or relevant review
1	181	Cox Paul Alan Elmqvist, Thomas; (1993) Ecocolonialism and indigenous knowledge systems: Village controlled rainforest preserves in Samoa. <i>Pacific Conservation Biology</i> . 1(1):	Comment paper or relevant review
1	182	diez Maria-Angeles, Etxano Iker, Garmendia Eneko ( ) Evaluating Governance and Participatory Processes in Natura 2000: Lessons Learned and Guidance for Future Prospects. : BC3. <a href="http://EconPapers.repec.org/RePEc:bcc:wpaper:2012-09">http://EconPapers.repec.org/RePEc:bcc:wpaper:2012-09</a>	Comment paper or relevant review
1	183	da Veiga Mendonça, C (2010) A comparison of the management models of protected areas between China and the southern Africa region. <i>Forestry Studies in China</i> . 12(3): 151-157.	No sufficient information on governance
1	184	Dahlberg Annika, Rohde Rick, Sandell Klas (2010) National parks and environmental justice: Comparing access rights and ideological legacies in three countries. <i>Conservation and Society</i> . 8(3):	Country-level/policy analysis
1	185	Dai L, Wang Y, Lewis B J; Xu D, Zhou L, Gu X, Jiang L (2012) The trend of land-use sustainability around the Changbai Mountain Biosphere Reserve in northeastern China: 1977-2007. <i>International Journal of Sustainable Development and World Ecology</i> . 19(4): 369-377.	No sufficient information on governance
1	186	Dobson Andy, Lynes Laura (2008) How does poaching affect the size of national parks?. <i>Trends in ecology &amp; evolution</i> . 23(4): 177-80.	Comment paper or relevant review
1	187	Dowsley Martha (2007) Developing Multi-Level Institutions from Top-Down Ancestors. : Igitur.	Country-level/policy analysis
1	188	Durand Leticia Lazos, Elena; (2008) The local perception of tropical deforestation and its relation to conservation policies in Los Tuxtlas biosphere reserve, Mexico. <i>HUMAN ECOLOGY</i> . 36(3):	No sufficient information on governance
1	189	Durbin J C; (1994) Integrating conservation and development: the role of local people in the maintenance of protected areas in Madagascar.. : Kent	No relevant outcomes
1	190	Edwards V M; Sharp B M.H; (1990) Institutional arrangements for conservation on private land in New Zealand. <i>Journal of Environmental Management</i> . 31(4): 313-326	No relevant intervention
1	191	Eghenter C (2000) What is tana ulen good for? Considerations on indigenous forest management, conservation, and research in the interior of Indonesian Borneo. <i>HUMAN ECOLOGY</i> . 28(3): .	No relevant outcomes
1	192	Elías S (2012) From communal forests to protected areas: The	No relevant



		implications of tenure changes in natural resource management in Guatemala. <i>Conservation and Society</i> . 10(2): 151-160.	outcomes
1	193	Ellis E A; Porter-Bolland L (2008) Is community-based forest management more effective than protected areas? A comparison of land use/land cover change in two neighboring study areas of the Central Yucatan Peninsula, Mexico. <i>FOREST ECOLOGY AND MANAGEMENT</i> . 256(11)	No sufficient information on governance
1	194	Elmqvist Thomas, Pyykönen Markku, Tengö Maria, Rakotondraso Fanambinantsoa, Rabakonandrianina Elisabeth, Radimilahy Chantal (2007) Patterns of Loss and Regeneration of Tropical Dry Forest in Madagascar: The Social Institutional Context. <i>PLoS ONE</i> . 2(5): e402-.	Not forest protected area
1	195	Eneji C V. O; Gubo Q, Umoren G, Omoogun A C; Nicholas S O; Enu D B; Edet P B; (2009) Socio-economic impacts of the Cross River National Park, Nigeria.. <i>Journal of Agriculture, Biotechnology and Ecology</i> . 2(1): 57-68.	No relevant outcomes
1	196	Escamilla A Sanvicente, M Sosa, M Galindo-Leal, C; (2000) Habitat mosaic, wildlife availability, and hunting in the tropical forest of Calakmul, Mexico. <i>CONSERVATION BIOLOGY</i> . 14(6): .	No sufficient information on governance
1	197	Ewers Robert M; Rodrigues Ana S.L; (2008) Estimates of reserve effectiveness are confounded by leakage. <i>Trends in Ecology &amp; Evolution</i> . 23(3): 113-116.	Comment paper or relevant review
1	198	Ezebilo Eugene E; Mattsson Leif (2010) Socio-economic benefits of protected areas as perceived by local people around Cross River National Park, Nigeria. <i>Forest policy and economics</i> .. 12(3): 189-193.	No relevant outcomes
1	199	Fabricius C Koch, E Magome, H; (2001) Towards strengthening collaborative ecosystem management: lessons from environmental conflict and political change in southern Africa. <i>JOURNAL OF THE ROYAL SOCIETY OF NEW ZEALAND</i> . 31(4): .	Comment paper or relevant review
1	200	Fay D (2007) Struggles over resources and community formation at Dwesa-Cwebe, South Africa.. <i>International Journal of Biodiversity Science &amp; Management</i> . 3(2): 88-101.	No relevant intervention
1	201	Fay Derick (2009) Land Tenure, Land Use, and Land Reform at Dwesa-Cwebe, South Africa: Local Transformations and the Limits of the State. <i>WORLD DEVELOPMENT</i> . 37(8): .	No relevant intervention
1	202	Fedreheim Gunn Elin; Sandberg Audun (2009) NATIONAL PARKS – FROM PUBLIC PLAYGROUNDS TO REGIONAL COMMONS. Panel XY: Protected areas as Common-Pool Resources or Public Goods?, Indiana University, Bloomington.	No relevant outcomes
1	203	Fiallo EA Jacobson, SK; (1995) Local communities and protected areas: Attitudes of rural residents towards conservation and machalilla national park, Ecuador. <i>ENVIRONMENTAL CONSERVATION</i> . 22(3): .	No sufficient information on governance
1	204	Figueroa Fernanda, Sanchez-Corder Victor (2008) Effectiveness of Natural Protected Areas to Prevent Land Use and Land Cover Change in Mexico. <i>Biodiversity and Conservation</i> . 17(13): 3223-3223.	No sufficient information on

			governance
1	205	Fiorino Theresa Ostergren, David; (2012) Institutional Instability and the Challenges of Protected Area Management in Russia. SOCIETY & NATURAL RESOURCES. 25(1-3):	No relevant outcomes
1	206	Forrestel A, Peay K G; (2006) Deforestation in a complex landscape: La Amistad Biosphere Reserve. Journal of Sustainable Forestry. 22(1-2): 49-71.	No sufficient information on governance
1	207	Fujita W (2003) Dealing with contradictions: Examining national forest reserves in Thailand. Southeast Asian Studies. 41(2): 206-238.	No relevant outcomes
1	208	Fujita Yayoi (2004) Augmenting Missing Linkages: Conservation and Community Resource Management in Lao PDR. The Commons in an Age of Global Transition: Challenges, Risks and Opportunities, the Tenth Biennial Conference of the International Association for the Study of Common Property. : .	No relevant outcomes
1	209	Galicia Leopoldo Garcia-Romero, Arturo; (2007) Land use and land cover change in highland temperate forests in the Izta-Popo National Park, central Mexico. MOUNTAIN RESEARCH AND DEVELOPMENT. 27(1): .	No sufficient information on governance
1	210	Galvin M Thorndahl, M; (2005) Institutional strengthening of the Amarakaeri Communal Reserve (Madre de Dios River, Peruvian Amazon Basin). MOUNTAIN RESEARCH AND DEVELOPMENT. 25(2):	Comment paper or relevant review
1	211	García-Amado L R; Pérez M R; Iniesta-Arandia I, Dahringer G, Reyes F, Barrasa S (2012) Building ties: Social capital network analysis of a forest community in a biosphere reserve in Chiapas, Mexico. Ecology and Society. 17(3):	No relevant outcomes
1	212	Gaveau D L.A; Epting J, Lyne O, Linkie M, Kumara I, Kanninen M, Leader-Williams N (2009) Evaluating whether protected areas reduce tropical deforestation in Sumatra. Journal of Biogeography. 36(11): 2165-2175.	Country-level/policy analysis
1	213	Ghate Rucha (1998) Andhari Tiger Sanctuary (Maharashtra) : A case for people's participation in the management of protected areas. Indian Forester. 124(10): .	Comment paper or relevant review
1	214	Gimmi U, Schmidt S L; Hawbaker T J; Alcántara C, Gafvert U, Radeloff V C; (2011) Increasing development in the surroundings of U.S. National Park Service holdings jeopardizes park effectiveness. Journal of Environmental Management. 92(1): 229-239.	Not forest protected area
1	215	Gjertsen Heidi, Barrett Christopher B; (2004) Context-Dependent Biodiversity Conservation Management Regimes: Theory and Simulation. Land Economics. 80(3): 321-339	No relevant outcomes
1	216	Gokhale Y (2010) Traditional conservation practices, biodiversity conservation and ecosystems. Asian Biotechnology and Development Review. 12(3): 35-47.	No appropriate or relevant comparator
1	217	Gotmark Frank (2009) Conflicts in conservation: Woodland key habitats, authorities and private forest owners in Sweden. SCANDINAVIAN JOURNAL OF FOREST RESEARCH. 24(6): .	Not forest protected area
1	218	Grafton R Quentin (2000) Governance of the Commons: A Role for	Comment

		the State?. Land Economics. 76(4): 504-504.	paper or relevant review
1	219	Greenberg JA Kefauver, SC Stimson, HC Yeaton, CJ Ustin, S; (2005) Survival analysis of a neotropical rainforest using multitemporal satellite imagery. REMOTE SENSING OF ENVIRONMENT. 96(2): .	No sufficient information on governance
1	220	Greve Michelle Svenning, Jens-Christian; (2011) A paper park-as seen from the air. JOURNAL FOR NATURE CONSERVATION. 19(6): .	Comment paper or relevant review
1	221	Gruber James (2011) Perspectives of effective and sustainable community-based natural resource management: An application of Q methodology to forest projects. Conservation and Society. 9(2): 159.	No relevant outcomes
1	222	Grujicic I, Milijic V, Nonic D (2008) Conflict management in protected areas: The Lazar Canyon natural monument, Eastern Serbia. International Journal of Biodiversity Science & Management. 4(4):	No relevant outcomes
1	223	Guthiga Paul M. Mburu, John Holm-Mueller, Karin; (2008) Factors influencing local communities' satisfaction levels with different forest management approaches of Kakamega forest, Kenya. ENVIRONMENTAL MANAGEMENT. 41(5): .	No sufficient information on governance
1	224	Haenn N (1999) The power of environmental knowledge: Ethnoecology and environmental conflicts in Mexican conservation. HUMAN ECOLOGY. 27(3): .	Comment paper or relevant review
1	225	Hamilton A Cunningham, A Byarugaba, D Kayanja, F; (2000) Conservation in a region of political instability: Bwindi Impenetrable forest, Uganda. CONSERVATION BIOLOGY. 14(6):	Comment paper or relevant review
1	226	Hamilton L S; (1999) Managing mountain parks: Special challenges. Unasylva. 50(196): 20-24.	Comment paper or relevant review
1	227	Hanks J (2003) Transfrontier Conservation Areas (TFCAs) in South Africa: Their role in conserving biodiversity, socioeconomic development and promoting a culture of peace. Journal of Sustainable Forestry. 17(1-2): 127-148.	No relevant outcomes
1	228	Hares Minna (2009) Forest Conflict in Thailand: Northern Minorities in Focus. ENVIRONMENTAL MANAGEMENT. 43(3):	No appropriate or relevant comparator
1	229	Hartter J (2009A) Attitudes of rural communities toward wetlands and forest fragments around Kibale national park, Uganda. Human Dimensions of Wildlife. 14(6): 433-447.	No sufficient information on governance
1	230	Hartter Joel Goldman, Abraham; (2011A) Local responses to a forest park in western Uganda: alternate narratives on fortress	No sufficient

		conservation. ORYX. 45(1): .	information on governance
1	231	Hartter Joel Goldman, Abraham Southworth, Jane; (2011B) Responses by households to resource scarcity and human-wildlife conflict: Issues of fortress conservation and the surrounding agricultural landscape. JOURNAL FOR NATURE CONSERVATION. 19(2): .	No sufficient information on governance
1	232	Hartter Joel Southworth, Jane; (2009B) Dwindling resources and fragmentation of landscapes around parks: wetlands and forest patches around Kibale National Park, Uganda. LANDSCAPE ECOLOGY. 24(5): .	No sufficient information on governance
1	233	Harvey CA Gonzalez, J Somarriba, E; (2006) Dung beetle and terrestrial mammal diversity in forests, indigenous agroforestry systems and plantain monocultures in Talamanca, Costa Rica. BIODIVERSITY AND CONSERVATION. 15(2): .	No sufficient information on governance
1	234	Hausser Yves, Weber Helene, Meyer Britta (2009) Bees, farmers, tourists and hunters: conflict dynamics around Western Tanzania protected areas. Biodiversity and Conservation. 18(10): 2679-2703.	No relevant intervention
1	235	Hawken I F; Granoff I M.E; (2010) Reimagining park ideals: Toward effective human-inhabited protected areas. Journal of Sustainable Forestry. 29(2): 122-134	Comment paper or relevant review
1	236	Hayes DJ Sader, SA Schwartz, NB; (2002) Analyzing a forest conversion history database to explore the spatial and temporal characteristics of land cover change in Guatemala's Maya Biosphere Reserve. LANDSCAPE ECOLOGY. 17(4): .	No sufficient information on governance
1	237	Hayes Tanya M; (2006) Parks, people, and forest protection: An institutional assessment of the effectiveness of protected areas. WORLD DEVELOPMENT. 34(12):	No sufficient information on governance
1	238	Heltberg R (2001) Determinants and impact of local institutions for common resource management. ENVIRONMENT AND DEVELOPMENT ECONOMICS. 6: .	No sufficient information on governance
1	239	Hill Catherine M; (1998) Conflicting attitudes towards elephants around the Budongo Forest Reserve, Uganda. Environmental Conservation. 25(3): .	No sufficient information on governance
1	240	Himberg N, Omoro L, Pellikka P, Luukkanen O (2009) The benefits and constraints of participation in forest management. The case of Taita hills, Kenya. Fennia. 187(1): 61-76.	No relevant intervention
1	241	Himmelfarb David (2006) Moving People, Moving Boundaries: The Socio-economic Effects of Protectionist Conservation, Involuntary Resettlement and Tenure Insecurity on the Edge of Mt. Elgon National Park, Uganda. : World Agroforestry Centre, Tropical	No relevant outcomes

		Resources Institute of Yale University, and the University of Georgia.	
1	242	Hoffman David M; (2011) Do Global Statistics Represent Local Reality and Should they Guide Conservation Policy?: Examples from Costa Rica. <i>Conservation and Society</i> . 9: .	No sufficient information on governance
1	243	Hoffmann Dirk (2007) The Sajama National Park in Bolivia: A model for cooperation among state and local authorities and the indigenous population. <i>MOUNTAIN RESEARCH AND DEVELOPMENT</i> . 27(1): .	Comment paper or relevant review
1	244	Holder CD (2004) Changes in structure and cover of a common property pine forest in Guatemala, 1954-1996. <i>ENVIRONMENTAL CONSERVATION</i> . 31(1):	No relevant intervention
1	245	Holmes-Watts Tania Watts, Scotney; (2008) Legal frameworks for and the practice of participatory natural resources management in South Africa. <i>FOREST POLICY AND ECONOMICS</i> . 10(7-8): .	Comment paper or relevant review
1	246	Honey-Roses J (2009 A) DISENTANGLING THE PROXIMATE FACTORS OF DEFORESTATION: THE CASE OF THE MONARCH BUTTERFLY BIOSPHERE RESERVE IN MEXICO. <i>LAND DEGRADATION &amp; DEVELOPMENT</i> . 20(1): .	Comment paper or relevant review
1	247	Honey-Rosés Jordi, Baylis Kathy, Ramírez M Isabel I; (2011) A spatially explicit estimate of avoided forest loss.. <i>Conservation biology : the journal of the Society for Conservation Biology</i> . 25(5): 1032-43.	No sufficient information on governance
1	248	Hoole Frederick, Arthur (2009) Place-power-prognosis: Community-based conservation, partnerships, and ecotourism enterprises in Namibia. : <i>Igitur</i> .	No relevant intervention
1	249	Horwich Robert H. Islari, Rajen Bose, Arnab Dey, Bablu Mo; (2010) Community protection of the Manas Biosphere Reserve in Assam, India, and the Endangered golden langur <i>Trachypitecus geei</i> . <i>ORYX</i> . 44(2):	No appropriate or relevant comparator
1	250	Hovardas Tasos Poirazidis, Kostas; (2007) Environmental policy beliefs of stakeholders in protected area management. <i>ENVIRONMENTAL MANAGEMENT</i> . 39(4):	Comment paper or relevant review
1	251	Howard S M; (1998) Land conflict and Mayangna territorial rights in Nicaragua's Bosawás reserve. <i>Bulletin of Latin American Research</i> . 17(1): 17-34.	No relevant intervention
1	252	Howlett Michael, Rayner Jeremy, Tollefson Chris (2009) From government to governance in forest planning? Lessons from the case of the British Columbia Great Bear Rainforest initiative. <i>Forest policy and economics</i> .. 11(5-6): 383-391	Comment paper or relevant review
1	253	Hu Liang Li, Zhen Liao, Wen-bo Fan, Qiang; (2011) Values of village fengshui forest patches in biodiversity conservation in the Pearl River Delta, China. <i>BIOLOGICAL CONSERVATION</i> . 144(5):	No sufficient information on governance
1	254	Ibarra J T. Barreau, A. Del Campo, C. Camacho, C. I. (2011) When formal and market-based conservation mechanisms disrupt food	No relevant outcomes

		sovereignty: impacts of community conservation and payments for environmental services on an indigenous community of Oaxaca, Mexico. <i>INTERNATIONAL FORESTRY REVIEW</i> . 13(3): .	
1	255	Ioja C I; Pătroescu M, Rozyłowicz L, Popescu V D; Vergheteș M, Zotta M I; Felciuc M (2010) The efficacy of Romania's protected areas network in conserving biodiversity.. <i>Biological Conservation</i> . 143(11): 2468-2476	No relevant outcomes
1	256	Ite UE (1997) Small Farmers and Forest loss in Cross River National Park, Nigeria. <i>GEOGRAPHICAL JOURNAL</i> . 163: .	No relevant outcomes
1	257	Izquierdo Andrea E. Grau, H. Ricardo; (2009) Agriculture adjustment, land-use transition and protected areas in Northwestern Argentina. <i>JOURNAL OF ENVIRONMENTAL MANAGEMENT</i> . 90(2):	No relevant intervention
1	258	Izurieta Arturo, Sithole Bevlyne, Stacey Natasha, Hunter-Xenie Hmalan, Campbell Bruce, Donohoe Paul, Brown Jessie, Wilson Lincoln (2011) Developing Indicators for Monitoring and Evaluating Joint Management Effectiveness in Protected Areas in the Northern Territory, Australia. <i>Ecology and Society</i> . 16(3):	Comment paper or relevant review
1	259	Jamir SA, Pandey HN (2003) Vascular plant diversity in the sacred groves of Jaintia Hills in northeast India. <i>BIODIVERSITY AND CONSERVATION</i> . 12(7):	No sufficient information on governance
1	260	Jha Mohan (2002) Protected areas of the new millennium: For the welfare of local community and wildlife.. <i>Indian Forester</i> . 128(10): .	Comment paper or relevant review
1	261	Jha S (2000) Conservation and Preservation through Community Participation in Two Indian Projects: A Policy Perspective. <i>Ambio</i> . 29(8): 527-528	Comment paper or relevant review
1	262	Jones S (2007) Tigers, trees and Tharu: An analysis of community forestry in the buffer zone of the Royal Chitwan National Park, Nepal. <i>GEOFORUM</i> . 38(3): .	No relevant outcomes
1	263	Joppa LN, Loarie SR, Pimm SL (2008) On the protection of "protected areas". <i>PROCEEDINGS OF THE NATIONAL ACADEMY OF SCIENCES OF THE UNITED STATES OF AMERICA</i> . 105(18):	No sufficient information on governance
1	264	Joppa LN, Pfaff A (2011) Global protected area impacts. <i>PROCEEDINGS OF THE ROYAL SOCIETY B-BIOLOGICAL SCIENCES</i> . 278(1712): .	No sufficient information on governance
1	265	Kabiri Ngeta (2010) The Political Economy of Wildlife Conservation and Decline in Kenya. <i>Journal of Environment and Development</i> . 19(4): 424-445	No relevant outcomes
1	266	Kaimowitz D, Faune A, Mendoza R (2003) Your biosphere is my backyard: the story of Bosawas in Nicaragua. <i>Policy Matters</i> . (12): .	No relevant outcomes
1	267	Kaltenborn B P; Nyahongo J W; Kideghesho J R; (2011) The attitudes of tourists towards the environmental, social and managerial attributes of Serengeti National Park, Tanzania.. <i>Tropical</i>	No relevant outcomes

		Conservation Science. 4(2): 132-148.	
1	268	Kaltenborn Bjorn P. Bjerke, Tore Nyahongo, Julius W. Williams; (2006) Animal preferences and acceptability of wildlife management actions around Serengeti National Park, Tanzania. BIODIVERSITY AND CONSERVATION. 15(14): .	No sufficient information on governance
1	269	Khan S R; Rahman S A; Sunderland T C. H; (2011) Commons becoming non-commons in the efforts for reconciliation between conservation and livelihoods: A case study of northern Pakistan. Journal of Horticulture and Forestry. (3):	Comment paper or relevant review
1	270	Khatri T B; (2010) Conservation governance in Nepal: Protecting forest biodiversity and people's livelihoods. Unasylva. 61(236): 34-40.	Country-level/policy analysis
1	271	Khumbongmayum AD Khan, ML Tripathi, RS; (2005) Sacred groves of Manipur, northeast India: biodiversity value, status and strategies for their conservation. BIODIVERSITY AND CONSERVATION. 14(7): .	No appropriate or relevant comparator
1	272	Kiehn C E. O; (2004) Strategies for managing protected areas: community management agreements in the Cayambe-Coca Ecological Reserve, Central Ecuador.. Journal of Sustainable Forestry. 18(2/3): 197-222.	No relevant intervention
1	273	Kijazi Martin Herbert Kant, Shashi; (2011) Social acceptability of alternative forest regimes in Mount Kilimanjaro, Tanzania, using stakeholder attitudes as metrics of uncertainty. FOREST POLICY AND ECONOMICS. 13(4):	Not forest protected area
1	274	Kisekka-Ntale F (2009) Carnage In Paradise: Law and Decision-Making Rights In Protected Area Management In Western Kenya. International Journal of Rural Management. 5(2): 145-173.	No relevant outcomes
1	275	Leverington F, Costa K L; Pavese H, Lisle A, Hockings M (2010) A global analysis of protected area management effectiveness.. Environmental Management. 46(5): 685-698.	Comment paper or relevant review
1	276	Maguranyanga Brian (2009) "Our battles also changed": Transformation and black empowerment in South African National Parks, 1991--2008	No relevant outcomes
1	277	McNally Catherine G G; Uchida Emi, Gold Arthur J J; (2011) The effect of a protected area on the tradeoffs between short-run and long-run benefits from mangrove ecosystems.. Proceedings of the National Academy of Sciences of the United States of America. 108(34): 13945-50.	No sufficient information on governance
1	278	Mwima H K; (2001) A Brief History of Kafue National Park, Zambia. . .	No relevant outcomes
1	279	Robert Aiken, S , Leigh C H; (1984) A second national park for peninsular Malaysia? the endau-rompin controversy. Biological Conservation. 29(3): 253-276.	No relevant intervention
1	280	Satyanarayana Behara Bhanderi, Preetika Debry, Melanie Maniatis, Da; (2012) A socio-ecological assessment aiming at improved forest resource management and sustainable ecotourism development in the mangroves of tanbi wetland national park, the gambia, west Africa.. Ambio. 41(5): .	No sufficient information on governance
1	281	Sutrisno Hari (2009) A Comparison on Biodiversity between Private Conservation and Wildlife Reserve Forests in Riau by using Macro-	No sufficient

		moths as an Indicator.. Biodiversitas. 10(1): .	information on governance
1	282	Tomićević Jelena, Bjedov Ivana, Obratov-Petković Dragica, Milovanović Marina (2011) Exploring the park-people relation: collection of <i>Vaccinium myrtillus</i> L. by local people from Kopaonik National Park in Serbia.. Environmental management. 48(4): 835-46.	No appropriate or relevant comparator
1	283	Klein J, Réau B, Kalland I, Edwards M (2007) Conservation, development, and a heterogeneous community: The case of ambohitantely special reserve, Madagascar. Society and Natural Resources. 20(5): 451-467.	No sufficient information on governance
1	284	Kothari Ashish (2008) The 4C factor: Community conservation and climate change. Biodiversity (Ottawa). 9(3-4): .	Comment paper or relevant review
1	285	Kramer Daniel B. Doran, Patrick J; (2010) Land conversion at the protected area's edge. CONSERVATION LETTERS. 3(5):	No sufficient information on governance
1	286	Krishna AP Chhetri, S Singh, KK; (2002) Human dimensions of conservation in the Kangchendzonga Biosphere Reserve: The need for conflict prevention. MOUNTAIN RESEARCH AND DEVELOPMENT. 22(4): .	No relevant outcomes
1	287	Lagan P, Mannan S, Matsubayashi H (2007) Sustainable use of tropical forests by reduced-impact logging in Deramakot Forest Reserve, Sabah, Malaysia. Ecological Research. 22(3): 414-421	No relevant intervention
1	288	Lai Q (2003) Community participation in the management of nature reserves: Experiences and lessons from China. Unasylva. 54(214-215): 51-57.	Comment paper or relevant review
1	289	Lange Eckart Hehl-Lange, Sigrid; (2011) Citizen participation in the conservation and use of rural landscapes in Britain: the Alport Valley case study. LANDSCAPE AND ECOLOGICAL ENGINEERING. 7(2): .	No relevant outcomes
1	290	Langholz J Lassoie, J Schelhas, J; (2000) Incentives for biological conservation: Costa Rica's Private Wildlife Refuge Program. CONSERVATION BIOLOGY. 14(6): .	No relevant outcomes
1	291	Larson A M. Barry, D. Dahal, Ganga Ram; (2010) New rights for forest-based communities? Understanding processes of forest tenure reform. INTERNATIONAL FORESTRY REVIEW. 12(1): .	No relevant intervention
1	292	Leal IR Da Silva, JMC Tabarelli, M Lacher, TE; (2005) Changing the course of biodiversity conservation in the Caatinga of northeastern Brazil. CONSERVATION BIOLOGY. 19(3): .	No appropriate or relevant comparator
1	293	Lejju JB Oryem-Origa, H Kasenene, JM; (2001) Regeneration of indigenous trees in Mgahinga Gorilla National Park, Uganda. AFRICAN JOURNAL OF ECOLOGY. 39(1): .	No appropriate or relevant comparator
1	294	LILIEHOLM RJ ROMM, J; (1992) PINELANDS-NATIONAL-	No relevant



		RESERVE - AN INTERGOVERNMENTAL APPROACH TO NATURE PRESERVATION. ENVIRONMENTAL MANAGEMENT. 16(3): .	outcomes
1	295	Linkie M, Smith R J; Zhu Y, Martyr D J; Suedmeyer B, Pramono J, Leader-Williams N (2008) Evaluating biodiversity conservation around a large Sumatran protected area. Conservation Biology. 22(3): 683-690.	No sufficient information on governance
1	296	Linkie M Smith, RJ Leader-Williams, N; (2004) Mapping and predicting deforestation patterns in the lowlands of Sumatra. BIODIVERSITY AND CONSERVATION. 13(10): .	No relevant intervention
1	297	Linkie Matthew Rood, Ente Smith, Robert J; (2010) Modelling the effectiveness of enforcement strategies for avoiding tropical deforestation in Kerinci Seblat National Park, Sumatra. BIODIVERSITY AND CONSERVATION. 19(4):	No sufficient information on governance
1	298	Lo Cascio, Amanda Beilin, Ruth (2010) Of biodiversity and boundaries: a case study of community-based natural resource management practice in the Cardamom Mountains, Cambodia. ENVIRONMENTAL CONSERVATION. 37(3): .	No relevant outcomes
1	299	Long CL Zhou, YL; (2001) Indigenous community forest management of Jinuo people's swidden agroecosystems in southwest China. BIODIVERSITY AND CONSERVATION. 10(5): .	No relevant intervention
1	300	Lopez Garcia, Jose (2011) Deforestation and forest degradation in the Monarch Butterfly Biosphere Reserve, Mexico, 2003-2009. JOURNAL OF MAPS. :	No sufficient information on governance
1	301	Lovett-Doust J Kuntz, K; (2001) Land ownership and other landscape-level effects on biodiversity in southern Ontario's Niagara Escarpment Biosphere Reserve, Canada. LANDSCAPE ECOLOGY. 16(8): .	No sufficient information on governance
1	302	Ludwig M, Grüninger F, Rothfuss E, Heurich M (2012) Discourse analysis as an instrument to reveal the pivotal role of the media in local acceptance or rejection of a wildlife management project. A case study from the Bavarian Forest National Park. Erdkunde. 66(2): 143-156.	No relevant intervention
1	303	Madhu Ramnath (1999) People, politics and forest management in Bastar. An ethnobotanical perspective.. In: . London: Zed Books, pages 41-57..	No relevant outcomes
1	304	Maikhuri R K; Rao K S; Kandari L S; Chauhan K, Nautiyal S, Purohit A, Semwal R L; Saxena K G; (2005) Conservation policy and social conflicts in protected areas of the Indian himalaya and options for conflict resolution: A case study from nanda devi biosphere reserve. International Journal of Ecology and Environmental Sciences. 31(1): 21-28.	No sufficient information on governance
1	305	Maikhuri RK Nautiyal, S Rao, KS Chandrasekhar, K Gavali,; (2000) Analysis and resolution of protected area - people conflicts in Nanda Devi Biosphere Reserve, India. ENVIRONMENTAL CONSERVATION. 27(1): .	No relevant outcomes
1	306	Malleson R (2002) Changing perspectives on forests, people and	Comment

		'development': Reflections on the case of the Korup Forest. IDS BULLETIN-INSTITUTE OF DEVELOPMENT STUDIES. 33(1):	paper or relevant review
1	307	Marcus RR (2001) Seeing the forest for the trees: Integrated conservation and development projects and local perceptions of conservation in Madagascar. HUMAN ECOLOGY. 29(4):	No sufficient information on governance
1	308	Lopez-Carr David Davis, Jason Jankowska, Marta M. Grant, Laura (2012) Space versus place in complex human-natural systems: Spatial and multi-level models of tropical land use and cover change (LUCC) in Guatemala. ECOLOGICAL MODELLING. 229: .	Country-level/policy analysis
1	309	Martin Thomas Edward; Blackburn George Alan; (2009) The effectiveness of a Mesoamerican 'paper park' in conserving cloud forest avifauna. BIODIVERSITY AND CONSERVATION. 18(14):	No appropriate or relevant comparator
1	310	Mascia Michael B. Pailler, Sharon; (2011) Protected area downgrading, downsizing, and degazettement (PADDD) and its conservation implications. CONSERVATION LETTERS. 4(1)	Comment paper or relevant review
1	311	Matose F (2006) Co-management options for reserved forests in Zimbabwe and beyond: Policy implications of forest management strategies. FOREST POLICY AND ECONOMICS. 8(4):	No relevant intervention
1	312	Maxime Ngbo-Ngbangbo Louis; Jiwen Ge, Alphonse Nahayo (2010) Assessment of Socioeconomic Factors and Stakeholders Involved in Dzanga Sangha Complex Protected Area, Central African Republic. Journal of Sustainable Development. 3(2):	No relevant outcomes
1	313	Mbile P, Vabi M, Meboka M, Okon D, Arrey-Mbo J, Nkongho F, Ebong E (2005) Linking management and livelihood in environmental conservation: case of the Korup National Park Cameroon.. Journal of environmental management. 76(1): 1-13.	No relevant outcomes
1	314	McAlpin Maria (2008) Conservation and community-based development through ecotourism in the temperate rainforest of southern Chile. POLICY SCIENCES. 41(1):	No relevant intervention
1	315	Hull Vanessa Xu, Weihua Liu, Wei Zhou, Shiqiang Vina, And; (2011) Evaluating the efficacy of zoning designations for protected area management. BIOLOGICAL CONSERVATION. 144(12): .	No sufficient information on governance
1	316	Abdulkadir-Sunito Melani Sitorus, M. T. FelixBE Tschardtke, T; Leuschner C, Zeller M, Guhardja E, Bidin A (2007) From ecological to political buffer zone: ethnic politics and forest encroachment in Upland Central Sulawesi. Stability of Tropical Rainforest Margins: Linking Ecological, Economic and Social Constraints of Land Use and ConservationSE Environmental Science and Engineering: Environmental Engineering.	No sufficient information on governance
1	317	Bajracharya Siddhartha B. Furley, Peter A. Newton, Adrian C; (2006) Impacts of community-based conservation on local communities in the annapurna conservation area, nepal. BIODIVERSITY AND CONSERVATION. 15(8): .	No relevant outcomes
1	318	Brannlund Runar Sidibe, Amadou Gong, Peichen; (2009) Participation to forest conservation in National Kabore Tambi Park	No relevant outcomes

		in Southern Burkina Faso. <i>FOREST POLICY AND ECONOMICS</i> . 11(7):	
1	319	Carr DL (2005) Forest clearing among farm households in the Maya Biosphere Reserve. <i>PROFESSIONAL GEOGRAPHER</i> . 57(2): .	No sufficient information on governance
1	320	Chaudhry Shivaji Veeraswami, Gopi Govindhan Mazumdar, Kripaljyoti; (2010) CONFLICT IDENTIFICATION AND PRIORITIZATION IN PROPOSED TSANGYANG GYATSO BIOSPHERE RESERVE, EASTERN HIMALAYA, INDIA. <i>Journal of the Bombay Natural History Society</i> . 107(3):	No sufficient information on governance
1	321	Cocheba Donald J; Ndiangu James (1998) THE GOLINI-MWALUGANJE COMMUNITY ELEPHANT SANCTUARY: A COMMUNITY CONSERVATION POISED FOR SUCCESS BUT PLAGUED BY AN ELEPHANT MANAGEMENT DILEMMA. Crossing Boundaries, the Seventh Biennial Conference of the International Association for the Study of Common Property, Vancouver, British Columbia, Canada.	No sufficient information on governance
1	322	Corson Catherine (2011) Territorialization, enclosure and neoliberalism: non-state influence in struggles over Madagascar's forests. <i>JOURNAL OF PEASANT STUDIES</i> . 38(4): .	No relevant outcomes
1	323	Dang Ngoc Can Mahood; Simon Tran Van Hung; (2008) The illegal wildlife trade network around Bac Huong Hoa Nature Reserve, Quang Tri Province, Vietnam.. <i>BirdLife International Vietnam Programme Conservation Report</i> . 36: .	No sufficient information on governance
1	324	Davalos Liliana M. Bejarano, Adriana C. Hall, Mark A. Correa; (2011) Forests and Drugs: Coca-Driven Deforestation in Tropical Biodiversity Hotspots. <i>ENVIRONMENTAL SCIENCE &amp; TECHNOLOGY</i> . 45(4): .	No sufficient information on governance
1	325	Eeley HAC Lawes, MJ Reyers, B; (2001) Priority areas for the conservation of subtropical indigenous forest in southern Africa: a case study from KwaZulu-Natal. <i>BIODIVERSITY AND CONSERVATION</i> . 10(8): .	No sufficient information on governance
1	326	Mallard F, François D ( ) Effectiveness of the legal framework for natural areas protection relative to French road projects. <i>Land Use Policy</i> . 30(1): 582-591.	Country-level/policy analysis
1	327	Eneji V C.O; Gubo Q, Okpiliya F I; Aniah E J; Eni D D; Afangide D (2009) Problems of public participation in biodiversity conservation: The nigerian scenario. <i>Impact Assessment and Project Appraisal</i> . 27(4): 301-307.	No relevant outcomes
1	328	Ezebilo E E; (2010) Community-Based Preferences for Economic Incentives to Promote Biodiversity Conservation in a Tropical Rainforest. <i>INTERNATIONAL JOURNAL OF ENVIRONMENTAL RESEARCH</i> . 4(3): .	No relevant outcomes
1	329	Faude Ulrike Feilhauer, Hannes Schmittlein, Sebastian; (2010) ESTIMATING THE IMPACT OF FOREST USE ON BIODIVERSITY IN PROTECTED AREAS OF DEVELOPING TROPICAL REGIONS. <i>ERDKUNDE</i> . 64(1): .	No appropriate or relevant comparator

1	330	Fearnside PM (2003) Conservation policy in Brazilian Amazonia: Understanding the dilemmas. WORLD DEVELOPMENT. 31(5):	Comment paper or relevant review
1	331	Firkowski Carlos (2007) Environmental Protected Area: facts, desires dreamed and propaganda. NATUREZA & CONSERVACAO. 5(1):	Comment paper or relevant review
1	332	Ganjanapan Anan (1996) State Conservation Policy and the Complexity of Local Control of Forest Land in Northern Thailand. Voices from the Commons, the Sixth Biennial Conference of the International Association for the Study of Common Property, Berkeley, CA.	Comment paper or relevant review
1	333	Gerber JD, Knoepfel P (2008) Towards integrated governance of landscape development - The Swiss model of Regional Nature Parks. MOUNTAIN RESEARCH AND DEVELOPMENT. 28(2): .	No relevant intervention
1	334	Green Michael J. B. Misra, Manoj Bansal, Arun K. Prasad, R; (2010) Eco-development in Orissa's protected areas: a participatory approach to conserving forest biodiversity and alleviating poverty piloted in Satkosia. Biodiversity (Ottawa). 11(1-2, Sp. Iss. SI):	No appropriate or relevant comparator
1	335	Hardin R (2011) Concessionary Politics Property, Patronage, and Political Rivalry in Central African Forest Management. CURRENT ANTHROPOLOGY. 52:	No relevant outcomes
1	336	Hjortso Carsten Nico Straede, Steffen Helles, Finn; (2006) Applying multi-criteria decision-making to protected areas and buffer zone management: A case study in the Royal Chitwan National Park, Nepal. JOURNAL OF FOREST ECONOMICS. 12(2):	No sufficient information on governance
1	337	Jha Mohan (2000) Channelising people's power towards protection and management of protected areas. Indian Forester. 126(10):	No relevant intervention
1	338	Kaltenborn B P; Williams D R; (2002) The meaning of place: Attachments to Femundsmarka National Park, Norway, among tourists and locals. Norsk Geografisk Tidsskrift. 56(3): 189-198	No sufficient information on governance
1	339	Kaltenborn Bjorn P. Qvenild, Marte Nellemann, Christian; (2011) Local governance of national parks: The perception of tourism operators in Dovre-Sunndalsfjella National Park, Norway. NORSK GEOGRAFISK TIDSSKRIFT-NORWEGIAN JOURNAL OF GEOGRAPHY. 65(2):	No relevant outcomes
1	340	Kitamura Kenji, Clapp Roger A; (2004) Grassroots Nature Reserves and Common Property Protected Areas. The Commons in an Age of Global Transition: Challenges, Risks and Opportunities, the Tenth Biennial Conference of the International Association for the Study of Common Property, Oaxaca, Mexico.	Comment paper or relevant review
1	341	Kothari A, Suri S, Singh N (1995) People and protected areas: rethinking conservation in India. Ecologist. 25(5): 188-194.	Comment paper or relevant review
1	342	Le Trong Trai Mahood; Simon Luong Huu Thanh Mai Duc Vinh; (2008) The illegal wildlife and timber trade network around Chu Yang Sin National Park, Dak Lak Province, Vietnam.. BirdLife	No sufficient information

		International Vietnam Programme Conservation Report. 34: .	on governance
1	343	Lund Dorthe H; (2009) Metagovernance of the national park process in Denmark. Local Environment. 14(3): 245-257.	No relevant outcomes
1	344	Macdonald David W. Johnson, Paul J. Albrechtsen, Lise Seymou; (2012) Bushmeat trade in the Cross-Sanaga rivers region: Evidence for the importance of protected areas. BIOLOGICAL CONSERVATION. 147(1): .	No sufficient information on governance
1	345	Mannigel Elke (2008) Integrating parks and people: How does participation work in protected area management?. SOCIETY & NATURAL RESOURCES. 21(6): .	No relevant outcomes
1	346	McConnell WJ (2002) Misconstrued land use in Vohibazaha: participatory planning in the periphery of Madagascar's Mantadia National Park. LAND USE POLICY. 19(3): .	No relevant intervention
1	347	McDonald Robert I. Yuan-Farrell, Chris Fievet, Charles Moell; (2007) Estimating the effect of protected lands on the development and conservation of their surroundings. CONSERVATION BIOLOGY. 21(6): .	Not forest protected area
1	348	McElwee Pamela D D; (2010) Resource use among rural agricultural households near protected areas in Vietnam: the social costs of conservation and implications for enforcement.. Environmental management. 45(1): 113-31.	No relevant outcomes
1	349	Mishra B K. Badola, Ruchi Bhardwaj, A. K; (2010) CHANGING DIMENSIONS OF BIODIVERSITY CONSERVATION WITH STAKEHOLDERS PARTICIPATION IN INDIA-PATH AHEAD. Indian Forester. 139(10):	Comment paper or relevant review
1	350	Mishra B K; (2010) CONSERVATION AND MANAGEMENT EFFECTIVENESS OF SIMILIPAL BIOSPHERE RESERVE, ORISSA, INDIA. Indian Forester. 139(10):	No relevant outcomes
1	351	Misra S Maikhuri, R. K. Dhyani, D. Rao, K. S; (2009) Assessment of traditional rights, local interference and natural resource management in Kedarnath Wildlife Sanctuary. INTERNATIONAL JOURNAL OF SUSTAINABLE DEVELOPMENT AND WORLD ECOLOGY. 16(6): .	No relevant outcomes
1	352	Mistry Jayalaxshmi Berardi, Andrea Simpson, Matthew Davis, Odacy (2010) Using a systems viability approach to evaluate integrated conservation and development projects: assessing the impact of the North Rupununi Adaptive Management Process, Guyana. GEOGRAPHICAL JOURNAL. 176: .	No relevant outcomes
1	353	Moosvi AH Mutch, RWBE Watson, AE; Aplet GH, Hendee JC (2000) Global voices, village choices: Fire management strategies for people and wildlife in Wyanad, Kerala, India. PERSONAL, SOCIETAL, AND ECOLOGICAL VALUES OF WILDERNESS: SIXTH WORLD WILDERNESS CONGRESS PROCEEDINGS ON RESEARCH, MANAGEMENT, AND ALLOCATION, VOL I IISE USDA FOREST SERVICE ROCKY MOUNTAIN RESEARCH STATION PROCEEDINGS. 2(14):	Comment paper or relevant review
1	354	Mukul S A; Rashid A Z.M.M; Uddin M B; (2012B) The role of spiritual beliefs in conserving wildlife species in religious shrines of Bangladesh. Biodiversity. 13(2): 108-114.	Not forest protected area
1	355	Mutamba Emmanuel (2004) Community Participation in Natural	No relevant

		Resources Management: Reality or Rhetoric?. Environmental Monitoring and Assessment. 99(1-3): 105-113.	outcomes
1	356	Mwase W F; Bjørnstad Å, Bokosi J M; Kwapata M B; Stedje B (2007) The role of land tenure in conservation of tree and shrub species diversity in miombo woodlands of southern Malawi. New Forests. 33(3): 297-307	No sufficient information on governance
1	357	Myint Aung, U (2007) Policy and practice in Myanmar's protected area system.. Journal of environmental management. 84(2):	Country-level/policy analysis
1	358	Nagendra Harini (2008A) Do parks work? Impact of protected areas on land cover clearing.. Ambio. 37(5): 330-7.	Comment paper or relevant review
1	359	Nagendra Harini Gokhale, Yogesh; (2008B) Management regimes, property rights, and forest biodiversity in Nepal and India. ENVIRONMENTAL MANAGEMENT. 41(5): .	No relevant intervention
1	360	Nagendra Harini (2009B) Drivers of regrowth in South Asia's human impacted forests. CURRENT SCIENCE. 97(11):	Comment paper or relevant review
1	361	Nath Tapan K. Alauddin, M; (2006) Sitakunda Botanical Garden and Eco-park, Chittagong, Bangladesh: Its impacts on a rural community. International Journal of Biodiversity Science & Management. 2(1):	No relevant outcomes
1	362	Naughton-Treves L (2002) Wild animals in the garden: Conserving wildlife in amazonian agroecosystems. ANNALS OF THE ASSOCIATION OF AMERICAN GEOGRAPHERS. 92(3): .	Not forest protected area
1	363	Naughton-Treves L, Salafsky N (2004) Wildlife conservation in agroforestry buffer zones: opportunities and conflict.. In: . Washington: Island Press, pages 319-345.	Not forest protected area
1	364	Nautiyal Sunil Kaechele, Harald; (2009) Natural resource management in a protected area of the Indian Himalayas: a modeling approach for anthropogenic interactions on ecosystem. ENVIRONMENTAL MONITORING AND ASSESSMENT. 153(1-4): .	No sufficient information on governance
1	365	Negi Chandra Singh; (2010) Traditional Culture and Biodiversity Conservation: Examples From Uttarakhand, Central Himalaya. MOUNTAIN RESEARCH AND DEVELOPMENT. 30(3): .	No relevant outcomes
1	366	Nelson Fred Collins, Elisa Frechette, Alain Koenig, Cynthi; (2008) Preservation or degradation? Communal management and ecological change in a southeast Michigan forest. BIODIVERSITY AND CONSERVATION. 17(11): .	No relevant intervention
1	367	NEPAL SK WEBER, KE; (1994) A BUFFER ZONE FOR BIODIVERSITY CONSERVATION - VIABILITY OF THE CONCEPT IN NEPAL ROYAL CHITWAN-NATIONAL-PARK. ENVIRONMENTAL CONSERVATION. 21(4): .	No relevant intervention
1	368	Nepal SK (2002) Involving indigenous peoples in protected area management: Comparative perspectives from Nepal, Thailand, and China. ENVIRONMENTAL MANAGEMENT. 30(6):	No relevant outcomes
1	369	Nepali S C; (2010) Assessing the causes of conflict and its effect on livelihoods: a study from Bardia National Park and Khata Corridor,	No relevant intervention

		Nepal.. Banko Janakari. 20(1): 37-43.	
1	370	Newcomer David William V; (2007) Innovations in private land conservation: An integrated evaluation of payment for environmental services in the Path of the Tapir Biological Corridor in Costa Rica.	No relevant intervention
1	371	Nguyen Thuy Ngoc; (2007) Role of social capital in natural resource conservation: A case study of Cat Tien National Park in Vietnam. : .	No sufficient information on governance
1	372	Nie Martin (2008) The underappreciated role of regulatory enforcement in natural resource conservation. POLICY SCIENCES. 41(2): .	No sufficient information on governance
1	373	Niedzialkowski Krzysztof Paavola, Jouni Jedrzejewska, Bogumila; (2012) Participation and Protected Areas Governance: the Impact of Changing Influence of Local Authorities on the Conservation of the Bialowieza Primeval Forest, Poland. ECOLOGY AND SOCIETY. 17(1AR 2):	No relevant outcomes
1	374	Nielsen M R; Treue T (2012) Conserving the Eastern Afromontane biodiversity hotspot - effects of joint forest management on bushmeat hunting in Tanzania.. . (19): 4 pp..	Comment paper or relevant review
1	375	Niesenbaum R A; Salazar M E; Diop A M; (2004) Community forestry in the Mayan Biosphere Reserve in Guatemala. Journal of Sustainable Forestry. 19(4): 11-28.	No appropriate or relevant comparator
1	376	Nielsen Eduard Zurita, Patricia Banks, Sarah; (2010) Conservation agreements as a tool to generate direct incentives for biodiversity conservation. Biodiversity (Ottawa). 11(1-2, Sp. Iss. SI): .	No appropriate or relevant comparator
1	377	Nimachow Gibji Joshi, R. C. Dai, Oyi; (2011) Role of indigenous knowledge system in conservation of forest resources-A case study of the Aka tribes of Arunachal Pradesh. INDIAN JOURNAL OF TRADITIONAL KNOWLEDGE. 10(2):	No appropriate or relevant comparator
1	378	Noknoi C, Boripunt W, Ngowsiri S, Itsararuk S (2012) Ecotourism management of Khao Pu - Khao Ya national park, Thailand. European Journal of Social Sciences. 31(4): 518-526.	No relevant intervention
1	379	Noss AJ Cuellar, RL; (2001) Community attitudes towards wildlife management in the Bolivian Chaco. ORYX. 35(4):	No sufficient information on governance
1	380	Nygren A (2004) Contested lands and incompatible images: The political ecology of struggles over resources in Nicaragua's Indio-Maiz reserve. SOCIETY & NATURAL RESOURCES. 17(3): .	No relevant outcomes
1	381	Oestreicher Jordan S. Benessaiah, Karina Ruiz-Jaen, Maria C. Sl; (2009) Avoiding deforestation in Panamanian protected areas: An analysis of protection effectiveness and implications for reducing emissions from deforestation and forest degradation. GLOBAL ENVIRONMENTAL CHANGE-HUMAN AND POLICY	No sufficient information on governance

		DIMENSIONS. 19(2):	
1	382	Okello M M. D'Amour, D. E; (2008) Agricultural expansion within Kimana electric fences and implications for natural resource conservation around Amboseli National Park, Kenya. JOURNAL OF ARID ENVIRONMENTS. 72(12): .	No relevant intervention
1	383	Olupot William Barigyira, Robert Chapman, Colin A; (2009) The status of anthropogenic threat at the people-park interface of Bwindi Impenetrable National Park, Uganda. ENVIRONMENTAL CONSERVATION. 36(1): .	No sufficient information on governance
1	384	Oonyu J C; (2009) Conservation education and the attitudes of local communities living adjacent to Mt. elgon national park, Uganda. Applied Environmental Education and Communication. 8(3-4): 153-164.	No sufficient information on governance
1	385	Ormsby A, Mannle K (2006) Ecotourism benefits and the role of local guides at Masoala National Park, Madagascar. Journal of Sustainable Tourism. 14(3): 271-287.	No relevant intervention
1	386	Ostrom Elinor, Nagendra Harini (2006) Insights on linking forests, trees, and people from the air, on the ground, and in the laboratory.. Proceedings of the National Academy of Sciences of the United States of America. 103(51): 19224-31.	Comment paper or relevant review
1	387	Otto Ilona M; Shkaruba Anton, Kireyeu Viktor (2011) The rise of multilevel governance for biodiversity conservation in Belarus. Environment and Planning C: Government and Policy. 29(1): 113-132.	No relevant outcomes
1	388	Palao Leo Kris M. Dressler, Wolfram H. Cruz, Rex Victor (2010) Land Cover Change in Cabayugan, Puerto Princesa Subterranean River National Park, Palawan, Philippines. JOURNAL OF ENVIRONMENTAL SCIENCE AND MANAGEMENT. 13(2): .	No sufficient information on governance
1	389	Pandey S Wells, MP; (1997) Ecodevelopment planning at India's Great Himalayan National Park for biodiversity conservation and participatory rural development. BIODIVERSITY AND CONSERVATION. 6(9): .	No relevant intervention
1	390	Parathian Hannah E. Maldonado, Angela M; (2010) Human-Nonhuman Primate Interactions Amongst Tikuna People: Perceptions and Local Initiatives for Resource Management in Amacayacu in the Colombian Amazon. AMERICAN JOURNAL OF PRIMATOLOGY. 72(10): .	No sufficient information on governance
1	391	Pare Souleymane Tigabu, Mulualem Savadogo, Patrice Oden, Per C; (2010) Does designation of protected areas ensure conservation of tree diversity in the Sudanian dry forest of Burkina Faso?. AFRICAN JOURNAL OF ECOLOGY. 48(2): .	No sufficient information on governance
1	392	Parker P, Thapa B (2011) Distribution of benefits based on household participation roles in decentralized conservation within Kanchenjunga Conservation Area Project, Nepal. Environment, Development and Sustainability. 13(5): 879-899.	No relevant outcomes
1	393	Parker Pete Thapa, Brijesh; (2012) Natural Resource Dependency and Decentralized Conservation Within Kanchenjunga Conservation Area Project, Nepal. ENVIRONMENTAL MANAGEMENT. 49(2):	No sufficient information



		.	on governance
1	394	Parmenter AW Hansen, A Kennedy, RE Cohen, W Langner, U (2003) Land use and land cover change in the Greater Yellowstone Ecosystem: 1975-1995. ECOLOGICAL APPLICATIONS. 13(3):	Country-level/policy analysis
1	395	Pauchard A Villarroel, P; (2002) Protected areas in Chile: History, current status, and challenges. NATURAL AREAS JOURNAL. 22(4): .	Country-level/policy analysis
1	396	Paudel N S; (2002) Integrating people and nature: a perspective for environmental conservation and livelihoods in the context of Nepal.. Journal of Forest and Livelihood. 2(1): 62-67.	Comment paper or relevant review
1	397	Pemunta N V; (2011) The governance of nature as development and the erasure of the Pygmies of Cameroon. : .	No relevant intervention
1	398	Persha Lauren Fischer, Harry Chhatre, Ashwini Agrawal, Arun (2010) Biodiversity conservation and livelihoods in human-dominated landscapes: Forest commons in South Asia. BIOLOGICAL CONSERVATION. 143(12): .	No relevant intervention
1	399	Petrosillo I, Zaccarelli N, Semeraro T, Zurlini G (2009) The effectiveness of different conservation policies on the security of natural capital. Landscape and Urban Planning. 89(1-2): 49-56.	Not forest protected area
1	400	Petursson Jon Geir Vedeld, Paul Kaboggoza, John; (2011) Transboundary Biodiversity Management: Institutions, Local Stakeholders, and Protected Areas: A Case Study From Mt. Elgon, Uganda and Kenya. SOCIETY & NATURAL RESOURCES. 24(12): .	No relevant outcomes
1	401	Pfaff Alexander Robalino, Juan Sanchez-Azofeifa, G. Arturo And; (2009) Park Location Affects Forest Protection: Land Characteristics Cause Differences in Park Impacts across Costa Rica. B E JOURNAL OF ECONOMIC ANALYSIS & POLICY. 9(2AR 5):	No sufficient information on governance
1	402	Pfeifer Marion, Burgess Neil D; Swetnam Ruth D; Platts Philip J; Willcock Simon, Marchant Robert (2012) Protected Areas: Mixed Success in Conserving East Africa's Evergreen Forests. PLoS ONE. 7(6): e39337-.	No sufficient information on governance
1	403	Pfueller S L; (2008) Role of bioregionalism in Bookmark Biosphere Reserve, Australia. Environmental Conservation. 35(2): 173-186.	No relevant outcomes
1	404	Pillai K Rajasekharan Suchintha, B; (2006) Women empowerment for biodiversity conservation through self help groups: a case from Periyar Tiger Reserve, Kerala, India. International Journal of Agricultural Resources Governance and Ecology. 5(4): .	No relevant intervention
1	405	Pressey RL Whish, GL Barrett, TW Watts, ME; (2002) Effectiveness of protected areas in north-eastern New South Wales: recent trends in six measures. BIOLOGICAL CONSERVATION. 106(1): .	No sufficient information on governance
1	406	Pujadas Anna Castillo, Alicia; (2007) Social participation in conservation efforts: A case study of a biosphere reserve on private lands in Mexico. SOCIETY & NATURAL RESOURCES. 20(1):	No relevant outcomes
1	407	Purnomo H, Mendoza G A; (2011) A system dynamics model for evaluating collaborative forest management: a case study in	No relevant intervention

		Indonesia. International Journal of Sustainable Development and World Ecology. (18): .	
1	408	Pyhälä A (2003) Productive conservation in Amazonia: institutions, participation and markets. : University of East Anglia (United Kingdom).	No relevant outcomes
1	409	Raik Daniela Beth; (2008) Governance in community-based forest management: The case of Madagascar.. Dissertation Abstracts International. Vol. 70, no. 01, suppl. B, 244 p. 2008.. 70(01): 244-244.	No relevant intervention
1	410	Rakesh Shukla (2004) The Kanha approach to tiger conservation.. Indian Forester. 130(10): 1105-1112	No relevant outcomes
1	411	Ramdas S R; (2010) Gajah and Praja: Conservation, control and conflicts. Economic and Political Weekly. 45(49): 40-43.	No relevant outcomes
1	412	Rao KS Maikhuri, RK Nautiyal, S Saxena, KG; (2002) Crop damage and livestock depredation by wildlife: a case study from Nanda Devi Biosphere Reserve, India. JOURNAL OF ENVIRONMENTAL MANAGEMENT. 66(3):	No sufficient information on governance
1	413	Rawat Megha Vasistha, H. B. Manhas, R. K. Negi, Mridula; (2011) Sacred forest of Kunjapuri Siddhapeeth, Uttarakhand, India. TROPICAL ECOLOGY. 52(2): .	No appropriate or relevant comparator
1	414	Reed Maureen G; (2007A) Uneven environmental management: a Canadian comparative political ecology. ENVIRONMENT AND PLANNING A. 39(2): .	Not forest protected area
1	415	Reed Maureen G; (2007B) Uneven environmental management: A Canadian perspective. ENVIRONMENTAL MANAGEMENT. 39(1):	Not forest protected area
1	416	Richards M (1996) Protected areas, people and incentives in the search for sustainable forest conservation in Honduras. ENVIRONMENTAL CONSERVATION. 23(3):	No relevant outcomes
1	417	Rishi P, Moghe S, Upadhyay B K; (2008) Analysis of hierarchy of needs and motivational strategies for eco-development planning in two national parks of India. Resources, Conservation and Recycling. 52(5): 707-718.	No relevant outcomes
1	418	Robbins P McSweeney, K Waite, T Rice, J; (2006) Even conservation rules are made to be broken: Implications for biodiversity. ENVIRONMENTAL MANAGEMENT. 37(2):	Comment paper or relevant review
1	419	Robertson J Lawes, MJ; (2005) User perceptions of conservation and participatory management of iGxalingenwa forest, South Africa. ENVIRONMENTAL CONSERVATION. 32(1): .	No relevant intervention
1	420	Robinson Erin L; (2009) The cross-cultural collaboration of the Community Forest. : .	No relevant intervention
1	421	Robinson E J.Z; Albers H J; Busby G M; (2012) The impact of buffer zone size and management on illegal extraction, park protection, and enforcement. : .	No relevant outcomes
1	422	Robson J P; (2007) Local approaches to biodiversity conservation: Lessons from Oaxaca, southern Mexico. International Journal of Sustainable Development. 10(3): 267-286.	Comment paper or relevant review
1	423	Rodriguez-Loinaz Gloria Amezaga, Ibone Onaindia, Miren; (2011)	Not forest

		Efficacy of Management Policies on Protection and Recovery of Natural Ecosystems in the Urdaibai Biosphere Reserve. NATURAL AREAS JOURNAL. 31(4):	protected area
1	424	Rojas-Briales E (2000) Socio-economics of nature protection policies in the perspective of the implementation of Natura 2000 Network: the Spanish case. FORESTRY. 73(2): .	Country-level/policy analysis
1	425	Rosendo S (2004) Multi-scale partnerships for tropical forest governance. Working Paper - Centre for Social and Economic Research on the Global Environment. (1): 1-21.	No relevant outcomes
1	426	Roth R (2004) On the colonial margins and in the global hotspot: Park-people conflicts in highland Thailand. Asia Pacific Viewpoint. 45(1): 13-32.	No relevant intervention
1	427	Rudel Thomas K; (2006) Shrinking tropical forests, human agents of change, and conservation policy. CONSERVATION BIOLOGY. 20(6): .	Comment paper or relevant review
1	428	Ruiz R M; (2003) Self-management as the goal of regional conservation strategies. Journal of Sustainable Forestry. 17(1-2): 7-19.	Comment paper or relevant review
1	429	SADER SA SEVER, T SMOOT, JC RICHARDS, M; (1994) FOREST CHANGE ESTIMATES FOR THE NORTHERN PETEN REGION OF GUATEMALA - 1986-1990. HUMAN ECOLOGY. 22(3): .	No sufficient information on governance
1	430	Saikia Arupjyoti (2009) The Kaziranga National Park: Dynamics of Social and Political History. Conservation and Society. 7: .	No relevant outcomes
1	431	Salafsky N, Dugelby B L; Terborgh J W; (1993) Can extractive reserves save the rain forest? An ecological and socioeconomic comparison of nontimber forest product extraction systems in Peten, Guatemala, and west Kalimantan, Indonesia. Conservation Biology. 7(1): 39-52.	No relevant outcomes
1	432	Salum Layla A; (2009) Ecotourism and biodiversity conservation in Jozani-Chwaka Bay National Park, Zanzibar. AFRICAN JOURNAL OF ECOLOGY. 47: .	No relevant intervention
1	433	Sama Danilo (2011) The Relationship between Common Management and Ecotourism Development: Tragedy or Triumph of the Commons? A Law and Economics Answer. : . <a href="http://www.ssrn.com/abstract=1763928">http://www.ssrn.com/abstract=1763928</a>	Comment paper or relevant review
1	434	Sanchez-Azofeifa GA Daily, GC Pfaff, ASP Busch, C; (2003) Integrity and isolation of Costa Rica's national parks and biological reserves: examining the dynamics of land-cover change. BIOLOGICAL CONSERVATION. 109(1):	No sufficient information on governance
1	435	Sánchez-Cuervo A M; Aide T M; Clark M L; Etter A (2012) Land Cover Change in Colombia: Surprising Forest Recovery Trends between 2001 and 2010. PLoS ONE. 7(8): .	Country-level/policy analysis
1	436	Sanjayan M A; Shen S, Jansen M (1997) Experiences with integrated-conservation development projects in Asia. World Bank Technical Paper. 288	Comment paper or relevant review
1	437	Sarfo-Mensah Paul, Oduro William (2010) Changes in Beliefs and	No relevant

		Perceptions About the Natural Environment in the Forest-Savanna Transitional Zone of Ghana: The Influence of Religion. : FEEM. <a href="http://ssrn.com/abstract=1557119">http://ssrn.com/abstract=1557119</a>	intervention
1	438	Sayer J, Elliott C, Barrow E, Gretzinger S, Maginnis S, McShane T, Shepherd G (2005) Implications for biodiversity conservation of decentralized forest resources management.. In: . London: Earthscan, pages 121-137	Country-level/policy analysis
1	439	Scales Ivan R; (2011) Farming at the Forest Frontier: Land Use and Landscape Change in Western Madagascar, 1896-2005. ENVIRONMENT AND HISTORY. 17(4):	No relevant intervention
1	440	Scales Ivan R; (2012) Lost in translation: conflicting views of deforestation, land use and identity in western Madagascar. GEOGRAPHICAL JOURNAL. 178: .	No relevant intervention
1	441	Schelhas John Sanchez-Azofeifa, G. Arturo; (2006) Post-frontier forest change adjacent to Braulio Carrillo National Park, Costa Rica. HUMAN ECOLOGY. 34(3): .	No relevant intervention
1	442	Schelhas John Pfeffer, Max J; (2009) When global environmentalism meets local livelihoods: policy and management lessons. CONSERVATION LETTERS. 2(6):	Comment paper or relevant review
1	443	Schindler Stefan Cimadom, Arno Wrbka, Thomas; (2011) The attitude towards nature and nature conservation on the urban fringes. INNOVATION-THE EUROPEAN JOURNAL OF SOCIAL SCIENCE RESEARCH. 24(3): .	No sufficient information on governance
1	444	Schmidt Paige M. Peterson, Markus J; (2009) Biodiversity Conservation and Indigenous Land Management in the Era of Self-Determination. CONSERVATION BIOLOGY. 23(6): .	Comment paper or relevant review
1	445	Schmidt-Soltau Kai Brockington, Dan; (2007) Protected areas and resettlement: What scope for voluntary relocation?. WORLD DEVELOPMENT. 35(12): .	Comment paper or relevant review
1	446	Schwartzman S Zimmerman, B; (2005) Conservation alliances with indigenous peoples of the Amazon. CONSERVATION BIOLOGY. 19(3): .	No appropriate or relevant comparator
1	447	Schwartzman Stephan Alencar, Ane Zarin, Hilary Santos Souza, Ana P; (2010) Social Movements and Large-Scale Tropical Forest Protection on the Amazon Frontier: Conservation From Chaos. JOURNAL OF ENVIRONMENT & DEVELOPMENT. 19(3): .	No relevant intervention
1	448	Scriven J N.H; (2012) Preparing for REDD: Forest Governance Challenges in Peru's Central Selva. Journal of Sustainable Forestry. 31(4-5): 421-444.	No relevant intervention
1	449	Seaba Natalie (2007) Public participation: Rhetoric or reality? An analysis of planning and management in the Nanda Devi Biosphere Reserve (India). : .	No relevant outcomes
1	450	Seeland Klaus Moser, Kuno Scheuthle, Hannah Kaiser, Florian (2002) Public acceptance of restrictions imposed on recreational activities in the peri-urban Nature Reserve Sihlwald, Switzerland.. Urban Forestry & Urban Greening. 1(1): .	No relevant outcomes
1	451	Sekhar Nagothu Udaya; Motzfeldt Ulrik A; Shanmugaratnam N	Not forest

		(1996) Park Management, Land Use Patterns and People's Perceptions: The Case of Desert National Park, Rajasthan, India. Voices from the Commons, the Sixth Biennial Conference of the International Association for the Study of Common Property, Berkeley, CA.	protected area
1	452	Semaan M Haber, RBE Mill, RR; (2003) In situ conservation of Cedrus libani in Lebanon. PROCEEDINGS OF THE FOURTH INTERNATIONAL CONIFER CONFERENCE: CONIFERS FOR THE FUTURE? SECTA HORTICULTURAE. (615): .	No sufficient information on governance
1	453	Shahabuddin Ghazala Rao, Madhu; (2010) Do community-conserved areas effectively conserve biological diversity? Global insights and the Indian context. BIOLOGICAL CONSERVATION. 143(12): .	Comment paper or relevant review
1	454	Sharma U R; (1990) An Overview of park-people interactions in Royal Chitwan National Park, Nepal. Landscape and Urban Planning. 19(2): 133-144.	No appropriate or relevant comparator
1	455	Shen Xiaoli Li, Sheng Chen, Nyima Li, Shengzhi McShea, W; (2012A) Does science replace traditions? Correlates between traditional Tibetan culture and local bird diversity in Southwest China. BIOLOGICAL CONSERVATION. 145(1):	No relevant intervention
1	456	Shen Xiaoli Lu, Zhi Li, Shengzhi Chen, Nyima; (2012B) Tibetan Sacred Sites: Understanding the Traditional Management System and Its Role in Modern Conservation. ECOLOGY AND SOCIETY. 17(2AR 13):	No relevant outcomes
1	457	Shepard G H; Jr , Rummenhoeller K, Ohl-Schacherer J, Yu D W; (2010) Trouble in paradise: indigenous populations, anthropological policies, and biodiversity conservation in Manu National Park, Peru.. Journal of Sustainable Forestry. 29(2/4): 252-301.	No relevant outcomes
1	458	Shi Jinlian Li ChaoyangBE Hung; JK , Zhao R, Zhang W (2010) Study on Ecotourism Resources of Labagoumen Nature Reserve in Beijing. PROCEEDINGS OF 2010 INTERNATIONAL SYMPOSIUM ON TOURISM RESOURCES AND MANAGEMENT	No relevant intervention
1	459	Shyamsundar P (1996) Constraints on socio-buffering around the Mantadia National Park in Madagascar. Environmental Conservation. 23(1): 67-73.	No appropriate or relevant comparator
1	460	Silori CS (2001) Status and distribution of anthropogenic pressure in the buffer zone of Nanda Devi Biosphere Reserve in western Himalaya, India. BIODIVERSITY AND CONSERVATION. 10(7): .	No relevant outcomes
1	461	Silori CS (2004) Socio-economic and ecological consequences of the ban on adventure tourism in Nanda Devi Biosphere Reserve, western Himalaya. BIODIVERSITY AND CONSERVATION. 13(12): .	No relevant intervention
1	462	Silva Hilton P. Boscolo, Odara H. Nascimento, Graziela Ob; (2005) Biodiversity conservation and human well-being: Challenges for the Populations and protected areas of the Brazilian Atlantic forest. EcoHealth. 2(4):	No relevant outcomes
1	463	Simelane T S; Kerley G I.H; Knight M H; (2007) Reflections on the	Not forest

		relationships between communities and conservation areas of South Africa: the case of five South African national parks. : .	protected area
1	464	Sims Katharine R. E; (2010) Conservation and development: Evidence from Thai protected areas. JOURNAL OF ENVIRONMENTAL ECONOMICS AND MANAGEMENT. 60(2): .	No sufficient information on governance
1	465	Sivrikaya F Cakir, G. Kadiogullari, A. I. Keles, S. Bask; (2007) Evaluating land use/land cover changes and fragmentation in the camili forest planning unit of northeastern Turkey from 1972 to 2005. LAND DEGRADATION & DEVELOPMENT. 18(4): .	No relevant intervention
1	466	Sletten M, Vedeld P, Kaboggoza J (2008) To co-operate or not to co-operate?: a study of collaborative management planning in Mount Elgon National Park, Uganda.. (46): 54 pp..	No relevant intervention
1	467	Smith JH (2003) Land-cover assessment of conservation and buffer zones in the BOSAWAS Natural Resource Reserve of Nicaragua. ENVIRONMENTAL MANAGEMENT. 31(2): .	No sufficient information on governance
1	468	Snyder Katherine A. Sulle, Emmanuel B; (2011) Tourism in Maasai communities: a chance to improve livelihoods?. JOURNAL OF SUSTAINABLE TOURISM. 19(8): .	No relevant outcomes
1	469	Sodikoff Gene (2009) The Low-Wage Conservationist: Biodiversity and Perversities of Value in Madagascar. AMERICAN ANTHROPOLOGIST. 111(4): .	No relevant outcomes
1	470	Soto B, Munthali S M; Breen C (2001) Perceptions of the Forestry and Wildlife Policy by the local communities living in the Maputo Elephant Reserve, Mozambique. Biodiversity and Conservation. 10(10): 1723-1738.	No relevant outcomes
1	471	Stem CJ Lassoie, JP Lee, DR Deshler, DD Schelhas, JW; (2003) Community participation in ecotourism benefits: The link to conservation practices and perspectives. SOCIETY & NATURAL RESOURCES. 16(5):	No relevant intervention
1	472	Stern M J; (2010) Payoffs versus process: Expanding the paradigm for park/people studies beyond economic rationality. <i>Journal of Sustainable Forestry</i> . 29(2): 174-201.	No sufficient information on governance
1	473	Straede S Treue, T; (2006) Beyond buffer zone protection: A comparative study of park and buffer zone products' importance to villagers living inside Royal Chitwan National Park and to villagers living in its buffer zone. JOURNAL OF ENVIRONMENTAL MANAGEMENT. 78(3):	No sufficient information on governance
1	474	Struhsaker TT Struhsaker, PJ Siex, KS; (2005) Conserving Africa's rain forests: problems in protected areas and possible solutions. BIOLOGICAL CONSERVATION. 123(1): .	No sufficient information on governance
1	475	Sudtongkong Chanyut, Webb Edward L; (2008) Outcomes of State-vs. Community-Based Mangrove Management in Southern Thailand. Ecology and Society. 13(2): .	No relevant intervention
1	476	Sun Daowei Carter, R. W. (Bill); (2009) Extreme Seasons and	No relevant

		Extreme Visitation: The Case of Changbai Mountain Biosphere Reserve. ASIA PACIFIC JOURNAL OF TOURISM RESEARCH. 14(1):	intervention
1	477	Sunderland-Groves J L, Slayback, D. A. Balinga, M. P. Bessike Su; (2011) Impacts of co-management on western chimpanzee ( <i>Pan troglodytes verus</i> ) habitat and conservation in Nialama Classified Forest, Republic of Guinea: a satellite perspective. BIODIVERSITY AND CONSERVATION. 20(12):	Not forest protected area
1	478	Taff Gregory N; (2007) Influence of post-Soviet land reform on the patterns of land use dynamics in Gauja National Park, Latvia. :	No sufficient information on governance
1	479	Tang Lina Shao, Guofan Piao, Zhengji Dai, Limin Jenkin; (2010) Forest degradation deepens around and within protected areas in East Asia. BIOLOGICAL CONSERVATION. 143(5):	No sufficient information on governance
1	480	Tang Zhiyao Fang, Jingyun Sun, Jinyu Gaston, Kevin J; (2011) Effectiveness of protected areas in maintaining plant production.. PloS one. 6(4):	No sufficient information on governance
1	481	Tanguilig Herminia C; Tanguilig Valerio C; (2009) Institutional aspects of local participatory strategies in natural resource management. Field Actions Science Report. 3: 7.	Not forest protected area
1	482	Thapa Shova Chapman, Daniel S; (2010) Impacts of resource extraction on forest structure and diversity in Bardia National Park, Nepal. FOREST ECOLOGY AND MANAGEMENT. 259(3): .	No sufficient information on governance
1	483	Thayyil Naveen (2009) Judicial fiats and contemporary enclosures. Conservation and Society. 7(4): 268.	Not forest protected area
1	484	Thongmanivong S, Fujita Y, Fox J (2005) Resource use dynamics and land-cover change in Ang Nhai Village and Phou Phanang National Reserve Forest, Lao PDR. Environmental Management. 36(3): 382-393.	No sufficient information on governance
1	485	Tikka PM (2003) Conservation contracts in habitat protection in southern Finland. ENVIRONMENTAL SCIENCE & POLICY. 6(3): .	No relevant outcomes
1	486	Timah Emmanuel Ambe Ajaga, Nji Tita, Divine F. Ntonga, Leon; (2008) Demographic pressure and natural resources conservation. ECOLOGICAL ECONOMICS. 64(3):	No relevant intervention
1	487	Timilsina N, Heinen J T; (2008) Forest structure under different management regimes in the Western Lowlands of Nepal. Journal of Sustainable Forestry. 26(2): 112-131.	No sufficient information on governance
1	488	Timko Joleen Satterfield, Terre; (2008) Criteria and indicators for evaluating social equity and ecological integrity in national parks	Comment paper or

		and protected areas. NATURAL AREAS JOURNAL. 28(3): .	relevant review
1	489	Timms Benjamin F; (2011) The (Mis)Use of Disaster as Opportunity: Coerced Relocation from Celaque National Park, Honduras. ANTIPODE. 43(4):	No relevant intervention
1	490	Toillier A, Serpantié G, Hervé D, Lardon S (2011) Livelihood strategies and land use changes in response to conservation: Pitfalls of community-based forest management in madagascar. Journal of Sustainable Forestry. 30(1): 20-56.	No relevant intervention
1	491	Torri Maria-Costanza Herrmann, Thora Martina; (2010) Biodiversity Conservation versus Rural Development: What Kind of Possible Harmonization? The Case Study of Alwar District, Rajasthan, India. Journal of Human Ecology. 31(2):	No relevant outcomes
1	492	Torri Maria Costanza; (2011) Conservation, Relocation and the Social Consequences of Conservation Policies in Protected Areas: Case Study of the Sariska Tiger Reserve, India. Conservation and Society. 9:	No relevant outcomes
1	493	Trakolis D (2001) Local people's perceptions of planning and management issues in Prespes Lakes National Park, Greece. JOURNAL OF ENVIRONMENTAL MANAGEMENT. 61(3): .	Not forest protected area
1	494	Trakolis D (2001b) Perceptions, preferences, and reactions of local inhabitants in Vikos-Aoos National Park, Greece. ENVIRONMENTAL MANAGEMENT. 28(5): .	Not forest protected area
1	495	Twongyirwe R, Majaliwa J G. M; Ebanyat P, Tenywa M M; Sheil D, van Heist , M , Oluka M, Kumar L (2011) Dynamics of forest cover conversion in and around Bwindi impenetrable forest, Southwestern Uganda. Journal of Applied Science and Environmental Management. (15): .	No sufficient information on governance
1	496	Vadjunec J M; (2011) Extracting a livelihood: Institutional and social dimensions of deforestation in the chico mendes extractive reserve, acre, Brazil. Journal of Latin American Geography. 10(1): 151-174.	No relevant outcomes
1	497	Valladares-Padua C, Padua S M; Cullen Jr, L (2002) Within and surrounding the Morro do Diabo State Park: Biological value, conflicts, mitigation and sustainable development alternatives. Environmental Science and Policy. 5(1): 69-78.	No sufficient information on governance
1	498	Van Rijsoort , J Zhang, JF (2005) Participatory resource monitoring as a means for promoting social change in Yunnan, China. BIODIVERSITY AND CONSERVATION. 14(11): .	No relevant intervention
1	499	Vandergeest P (1996) Property rights in protected areas: Obstacles to community involvement as a solution in Thailand. ENVIRONMENTAL CONSERVATION. 23(3): .	Comment paper or relevant review
1	500	Verburg Peter H. Overmars, Koen P. Huigen, Marco G. A. de (2006) Analysis of the effects of land use change on protected areas in the Philippines. APPLIED GEOGRAPHY. 26(2): .	No sufficient information on governance
1	501	Vermeulen SJ (1996) Cutting of trees by local residents in a communal area and an adjacent state forest in Zimbabwe. FOREST ECOLOGY AND MANAGEMENT. 81(1-3): .	No relevant intervention



1	502	Veron Rene Fehr, Garry; (2011) State power and protected areas: Dynamics and contradictions of forest conservation in Madhya Pradesh, India. POLITICAL GEOGRAPHY. 30(5): .	No relevant intervention
1	503	Virtanen P (2002) The role of customary institutions in the conservation of biodiversity: Sacred forests in Mozambique. ENVIRONMENTAL VALUES. 11(2): .	No relevant outcomes
1	504	Vuletic Dijana Stojanovska, Makedonka Avdibegovic, Mersudin N; (2010) Forest-Related Conflicts in the South-East European Region: Regional aspects and Case studies in Albania, Bosnia and Herzegovina, Croatia, Macedonia and Serbia. FOREST POLICY AND ECONOMICS IN SUPPORT OF GOOD GOVERNANCESE European Forest Institute Proceedings. 58: .	No relevant intervention
1	505	Wadley Reed Lee Colfer, Carol J. Pierce Dennis, Rona Agl; (2010) The 'Social Life' of Conservation: Lessons from Danau Sentarum. ECOLOGY AND SOCIETY. 15(4AR 39):	No relevant outcomes
1	506	Wallace George N N; Theobald David M M; Ernst Tawnya, King Katherine (2008) Assessing the ecological and social benefits of private land conservation in Colorado.. Conservation biology : the journal of the Society for Conservation Biology. 22(2): 284-96.	No sufficient information on governance
1	507	Weber Jeremy G. Sills, Erin O. Bauch, Simone Pattanayak (2011) Do ICDPs Work? An Empirical Evaluation of Forest-Based Microenterprises in the Brazilian Amazon. LAND ECONOMICS. 87(4):	No relevant outcomes
1	508	Western David, Russell Samantha, Cuthill Innes (2009) The Status of Wildlife in Protected Areas Compared to Non-Protected Areas of Kenya. PLoS ONE. 4(7): e6140-.	No sufficient information on governance
1	509	Willcox Adam S. Nambu, Diangha Mercy; (2007) Wildlife hunting practices and bushmeat dynamics of the Banyangi and Mbo people of Southwestern Cameroon. BIOLOGICAL CONSERVATION. 134(2): .	No sufficient information on governance
1	510	Wilshusen P R; Raleigh L, Russell V A; (2002) By, for and of the people: The development of two community-managed protected areas in Oaxaca, Mexico. Journal of Sustainable Forestry. 15(1): 113-126.	No sufficient information on governance
1	511	Winkler R (2011) Why do ICDPs fail?. The relationship between agriculture, hunting and ecotourism in wildlife conservation. Resource and Energy Economics. 33(1): 55-78.	No sufficient information on governance
1	512	WOOD D (1995) CONSERVED TO DEATH - ARE TROPICAL FORESTS BEING OVER-PROTECTED FROM PEOPLE. LAND USE POLICY. 12(2): .	Comment paper or relevant review
1	513	Wyman Miriam Stein, Taylor; (2010a) Examining the Linkages Between Community Benefits, Place-Based Meanings, and Conservation Program Involvement: A Study Within the Community Baboon Sanctuary, Belize. SOCIETY & NATURAL	No relevant outcomes

		RESOURCES. 23(6): .	
1	514	Xu SSW Jim, CY; (2003) Using upland forest in Shimentai Nature Reserve, China. GEOGRAPHICAL REVIEW. 93(3): .	No sufficient information on governance
1	515	Xu Jianchu Melick, David R; (2007) Rethinking the effectiveness of public protected areas in southwestern China. CONSERVATION BIOLOGY. 21(2):	Comment paper or relevant review
1	516	Yamagiwa J (2003) Bushmeat poaching and the conservation crisis in Kahuzi-Biega National Park, Democratic Republic of the Congo. Journal of Sustainable Forestry. 16(3-4): 115-135.	No relevant intervention
1	517	Yang X Xu, M; (2003) Biodiversity conservation in Changbai Mountain Biosphere Reserve, northeastern China: Status, problem, and strategy. BIODIVERSITY AND CONSERVATION. 12(5):	No relevant intervention
1	518	Yasmi Y, Colfer C J. P; Yuliani L, Indriatmoko Y, Heri V (2007) Conflict management approaches under unclear boundaries of the commons: experiences from Danau Sentarum National Park, Indonesia. International Forestry Review. (9): .	No relevant intervention
1	519	Yen P Ziegler, S Huettmann, F Onyehialam, AI; (2005) Change detection of forest and habitat resources from 1973 to 2001 in Bach Ma National Park, Vietnam, using remote sensing imagery. INTERNATIONAL FORESTRY REVIEW. 7(1):	No sufficient information on governance
1	520	Ylhaisi J (2003) Forest privatisation and the role of community in forests and nature protection in Tanzania. ENVIRONMENTAL SCIENCE & POLICY. 6(3): .	Comment paper or relevant review
1	521	Yonariza Webb, Edward L (2007) Rural household participation in illegal timber felling in a protected area of West Sumatra, Indonesia. ENVIRONMENTAL CONSERVATION. 34(1): .	No sufficient information on governance
1	522	Yuan Jianqiong Dai, Limin Wang, Qingli; (2008) State-Led Ecotourism Development and Nature Conservation: a Case Study of the Changbai Mountain Biosphere Reserve, China. ECOLOGY AND SOCIETY. 13(2AR 55):	No appropriate or relevant comparator
1	523	Yuan Juanwen Liu, Jinlong; (2009) Fengshui forest management by the Buyi ethnic minority in China. FOREST ECOLOGY AND MANAGEMENT. 257(10):	No relevant outcomes
1	524	Yves ADOU YAO Constant; Emma AKE-ASSI, Djakalia OUATTARA, Edouard N GUESSAN Kouakou; (2011) Local communities perception of parks and reserves in Cote d'Ivoire: Do the Wanne people consider the Monogaga Classified Forest as a natural patrimony. Journal of Asian Scientific Research. 1(2): 57-64.	No relevant outcomes
1	525	Zeng H Sui, DZ Wu, XB; (2005) Human disturbances on landscapes in protected areas: a case study of the Wolong Nature Reserve. ECOLOGICAL RESEARCH. 20(4): .	No sufficient information on governance
1	526	Zia A, Hirsch P, Songorwa A, Mutekanga D R; O'Connor S,	No

		McShane T, Brosius P, Norton B (2011) Cross-scale value trade-offs in managing social-ecological systems: the politics of scale in Ruaha National Park, Tanzania.. <i>Ecology and Society</i> . 16(4): 7.	sufficient information on governance
1	527	Decher J (1997) Conservation, small mammals, and the future of sacred groves in West Africa. <i>BIODIVERSITY AND CONSERVATION</i> . 6(7):	No sufficient information on governance
1	528	Agrawal Arun, Varughese George (2000) Conservation's Visions: Poverty, Participation, and Protected Area Management in Nepal's Terai. Constituting the Commons: Crafting Sustainable Commons in the New Millennium, the Eighth Biennial Conference of the International Association for the Study of Common Property, Bloomington, Indiana, USA.	No sufficient information on governance
1	529	Agrawal A Ostrom, E; (2001) Collective action, property rights, and decentralization in resource use in India and Nepal. <i>POLITICS &amp; SOCIETY</i> . 29(4): .	No relevant outcomes
1	530	Agrawal A Gupta, K; (2005) Decentralization and participation: The governance of common pool resources in Nepal's Terai. <i>WORLD DEVELOPMENT</i> . 33(7): .	No relevant outcomes
1	531	Hecht Susanna B; (2012) From eco-catastrophe to zero deforestation? Interdisciplinary, politics, environmentalisms and reduced clearing in Amazonia. <i>ENVIRONMENTAL CONSERVATION</i> . 39(1): .	Country-level/policy analysis
1	532	Hyakumura Kimihiko (2010) "Slippage' in the Implementation of Forest Policy by Local Officials: A Case Study of a Protected Area Management in Lao PDR. <i>SMALL-SCALE FORESTRY</i> . 9(3): .	No relevant intervention
1	533	Sunseri T (2005) "Something else to burn': forest squatters, conservationists, and the state in modern Tanzania. <i>JOURNAL OF MODERN AFRICAN STUDIES</i> . 43(4): .	Country-level/policy analysis
1	534	Terrie P G; (1993) "Imperishable freshness": Culture, conservation, and the Adirondack Park. <i>Forest &amp; conservation history</i> .. 37(3): 132-141.	No relevant outcomes
1	535	Xu J, Zhang Z, Liu W, McGowan P J.K; (2012) A review and assessment of nature reserve policy in China: Advances, challenges and opportunities. <i>ORYX</i> . 46(4): 554-562.	Comment paper or relevant review
1	536	Aiken S R; (1993) Struggling to save Malaysia's Endau-Rompin rain forest, 1972-92. <i>Environmental Conservation</i> . 20(2): 157-162.	No sufficient information on governance
1	537	Ancrenaz Marc, Dabek Lisa, O'Neil Susan (2007) The Costs of Exclusion: Recognizing a Role for Local Communities in Biodiversity Conservation. <i>PLoS Biol</i> . 5(11): e289-.	No relevant outcomes
1	538	Bandaratillake H M; (2003) Community participation in the management of the Kanneliya-Dediyagala-Nakiyadeniya proposed biosphere reserve. <i>Journal of the National Science Foundation of Sri Lanka</i> . 31(1-2): .	No relevant outcomes
1	539	Bander Kathleen (0 ) A case study: Bat conservation through partnership. <i>Bat Research News</i> , .	No relevant intervention

1	540	Beck Tony, Fajber Liz (2006) Exclusive, moi? Natural resource management, poverty, inequality and gender in Asia. In: Tyler Stephen R; Communities, Livelihoods and Natural Resources: Action Research and Policy: Action Research and Policy Change in Asia. Warwickshire: Intermediate Technology Publications Ltd & International Development Research Centre, pages .	No relevant intervention
1	541	Bettinger Keith A.BE Sodhi, NS; Acciaioli G, Erb M, Tan AKJ (2008) Protecting sovereignty versus protecting parks: Malaysia's federal system and incentives against the creation of a truly national park system. BIODIVERSITY AND HUMAN LIVELIHOODS IN PROTECTED AREAS: CASE STUDIES FROM THE MALAY ARCHIPELAGO. : .	Comment paper or relevant review
1	542	Bonilla-Moheno Martha, García-Frapolli Eduardo (2012) Conservation in Context: A Comparison of Conservation Perspectives in a Mexican Protected Area. Sustainability. 4(9): 2317-2333.	No sufficient information on governance
1	543	Bradley J (1995) Political considerations of park and wilderness management. General technical report INT /. 320: 320.	No relevant intervention
1	544	Brockington Dan Sachedina, Hassan Schoffield, Katherine; (2008) Preserving the New Tanzania: Conservation and Land Use Change. INTERNATIONAL JOURNAL OF AFRICAN HISTORICAL STUDIES. 41(3): .	Comment paper or relevant review
1	545	Campbell Bruce M; Sayer Jeffrey A; Walker Brian (2010) Navigating Trade-Offs: Working for Conservation and Development Outcomes. Ecology and Society. 15(2): .	Comment paper or relevant review
1	546	Dash SS (2005) Kabi sacred grove of North Sikkim. CURRENT SCIENCE. 89(3): .	Comment paper or relevant review
1	547	Engel P G. H; Hoebrechts A, Umans L (2001) Accommodating multiple interests in local forest management: a focus on facilitation, actors and practices. International journal of agricultural resources, governance and ecology.. : 4.	No relevant outcomes
1	548	FRUMHOFF PC (1995) CONSERVING WILDLIFE IN TROPICAL FORESTS MANAGED FOR TIMBER - TO PROVIDE A MORE VIABLE COMPLEMENT TO PROTECTED AREAS. BIOSCIENCE. 45(7): .	Comment paper or relevant review
1	549	Kameri-Mbote Patricia, Musaasizi Joel, Waithaka Michael (2007) Effective Natural Resource Management for Conflict Prevention: Tethering Plural Legal Norms in Diverse Contexts in Eastern Africa. Entebbe: . <a href="http://hdl.handle.net/10625/42459">http://hdl.handle.net/10625/42459</a>	Comment paper or relevant review
1	550	Loope Lloyd L. Medeiros, Arthur C; (1995) Strategies for long-term protection of biological diversity in rainforests of Haleakala National Park and East Maui, Hawaii.. Endangered Species Update. 12(6): .	No sufficient information on governance
1	551	Mallick Ross (1999) Refugee Resettlement in Forest Reserves: West Bengal Policy Reversal and the Marichjhapi Massacre. Journal of Asian Studies. 58(1): 104-104.	No relevant intervention
1	552	McGregor S, Lawson V, Christophersen P, Kennett R, Boyden J,	Not forest

		Bayliss P, Liedloff A, McKaige B, Andersen A (2010) Indigenous Wetland Burning: Conserving Natural and Cultural Resources in Australia's World Heritage-listed Kakadu National Park. HUMAN ECOLOGY. 38(6): .	protected area
1	553	Moeliono M (2008) Hands off, hands on: communities and the management of national parks in Indonesia. In: Sodhi NS, Acciaoli G, Erb M, Tan AKJ BIODIVERSITY AND HUMAN LIVELIHOODS IN PROTECTED AREAS: CASE STUDIES FROM THE MALAY ARCHIPELAGO. : , pages .	Comment paper or relevant review
1	554	Ojha Hemant R; Timsina Netra P; Chhetri Ram B; Paudel Krishna P; (2008) Knowledge Systems and Natural Resources: Management, Policy and Institutions in Nepal. New Delhi: Cambridge University Press India Pvt. Ltd. & International Development Research Centre.	No relevant intervention
1	555	Salleh Hood Bettinger, Keith A.BE Sodhi, NS; Acciaoli G, Erb M, Tan AKJ (2008) Indigenous peoples and parks in Malaysia: issues and questions. BIODIVERSITY AND HUMAN LIVELIHOODS IN PROTECTED AREAS: CASE STUDIES FROM THE MALAY ARCHIPELAGO. : .	No relevant outcomes
1	556	Shackleton C M. Willis, T. J. Brown, K. Polunin, N. V. C; (2010) Reflecting on the next generation of models for community-based natural resources management. ENVIRONMENTAL CONSERVATION. 37(1): .	Comment paper or relevant review
1	557	Sun Qiu (2007) Rebuilding Common Property Management: A case study of Community-Based Natural Resource Management in rural Guizhou, China. : Wageningen University.	No relevant intervention
1	558	Wolf Steven A; (2011) Network Governance as Adaptive Institutional Response: The Case of Multifunctional Forested Landscapes. Journal of Natural Resources Policy. 3(3): 223-235.	No relevant intervention
1	559	YOUNG KR CHURCH, WB LEO, M MOORE, PF; (1994) THREATS TO RIO-ABISEO-NATIONAL-PARK, NORTHERN PERU. AMBIO. 23(4-5): .	No sufficient information on governance
1	560	Zimmerer KS (2006) Cultural ecology: at the interface with political ecology - the new geographies of environmental conservation and globalization. PROGRESS IN HUMAN GEOGRAPHY. 30(1): .	Comment paper or relevant review
1	561	Zimmerer Karl S; (2007) Cultural ecology (and political ecology) in the 'environmental borderlands': exploring the expanded connectivities within geography. PROGRESS IN HUMAN GEOGRAPHY. 31(2): .	Comment paper or relevant review
2	562	Adhikari Sanchayeeta, Southworth Jane (2012) Simulating Forest Cover Changes of Bannerghatta National Park Based on a CA-Markov Model: A Remote Sensing Approach. Remote Sensing. 4: 3215-3243.	No relevant intervention
2	563	Allendorf Teri D; Das Raju, Bose Arnab, Ray Bubon, Chaudhuri Kingchuk D; Brock Sophie, Horwich Robert H; (2013) Motivations of the community forest protection forces of the Manas Biosphere Reserve in Assam, India. International Journal of Sustainable Development and World Ecology. 20: 426-432.	No relevant outcomes
2	564	Andersson Krister, Paul Benavides, Jean , Leon Rosario (2014) Institutional diversity and local forest governance. Environmental	No relevant intervention

		Science & Policy. 36: 61-72.	
2	565	Aymoz Benoit G. P; Randrianjafy Vololomboahangy R; Randrianjafy Zaraso J. N; Khasa Damase P; (2013) Community Management of Natural Resources: A Case Study from Ankarafantsika National Park, Madagascar. <i>Ambio</i> . 42: 767-775.	No relevant outcomes
2	566	Ball Elaine A; Gouzerh Alice, Brancalion Pedro H. S; (2014) Multi-Scalar Governance for Restoring the Brazilian Atlantic Forest: A Case Study on Small Landholdings in Protected Areas of Sustainable Development. <i>Forests</i> . 5: 599-619.	No relevant outcomes
2	567	Barton David N; Blumentrath Stefan, Rusch Graciela (2013) Polyscape-A Spatially Explicit Evaluation of Voluntary Conservation in a Policy Mix for Biodiversity Conservation in Norway. <i>Society &amp; Natural Resources</i> . 26: 1185-1201.	No relevant outcomes
2	568	Basurto Xavier (2013a) Bureaucratic Barriers Limit Local Participatory Governance in Protected Areas in Costa Rica. <i>Conservation &amp; Society</i> . 11: 16-28.	No relevant outcomes
2	569	Basurto Xavier (2013b) Linking multi-level governance to local common-pool resource theory using fuzzy-set qualitative comparative analysis: Insights from twenty years of biodiversity conservation in Costa Rica. <i>Global Environmental Change-Human and Policy Dimensions</i> . 23: 573-587.	No relevant outcomes
2	570	Bauch Simone C; Sills Erin O; Pattanayak Subhrendu K; (2014) Have We Managed to Integrate Conservation and Development? ICDP Impacts in the Brazilian Amazon. <i>World Development</i> . 64: S135-S148.	No sufficient information on governance
2	571	Bohn Jessica L; Diemont Stewart A. W; Gibbs James P; Stehman Stephen V; Mendoza Vega, Jorge (2014) Implications of Mayan agroforestry for biodiversity conservation in the Calakmul Biosphere Reserve, Mexico. <i>Agroforestry Systems</i> . 88: 269-285.	No appropriate or relevant comparator
2	572	Bonilla-Bedoya Santiago, Molina Juan R; Macedo-Pezzopane Jose E; Herrera-Machuca Miguel A; (2014) Fragmentation patterns and systematic transitions of the forested landscape in the upper Amazon region, Ecuador 1990-2008. <i>Journal of Forestry Research</i> . 25: 301-309.	No sufficient information on governance
2	573	Borrelli P, Modugno S, Panagos P, Marchetti M, Schuett B, Montanarella L (2014) Detection of harvested forest areas in Italy using Landsat imagery. <i>Applied Geography</i> . 48: 102-111.	No sufficient information on governance
2	574	Bottazzi Patrick, Dao Hy (2013) On the road through the Bolivian Amazon: A multi-level land governance analysis of deforestation. <i>Land Use Policy</i> . 30: 137-146.	No appropriate or relevant comparator
2	575	Bragg Don C; O'Neill Ricky, Holimon William, Fox Joe, Thornton Gary, Mangham Roger (2014) Moro Big Pine: Conservation and Collaboration in the Pine Flatwoods of Arkansas. <i>Journal of Forestry</i> . 112: 446-456.	No relevant outcomes
2	576	Britt Charles R; Anleu Rony Garcia; Desmond Martha J; (2014) Nest survival of a long-lived psittacid: Scarlet Macaws ( <i>Ara macao</i> cyanoptera) in the Maya Biosphere Reserve of Guatemala and Chiquibul Forest of Belize. <i>Condor</i> . 116: 265-276.	No relevant outcomes

2	577	Bulafu C, Baranga D, Mucunguzi P, Telford R J; Vandvik V (2013) Massive structural and compositional changes over two decades in forest fragments near Kampala, Uganda. <i>Ecology and Evolution</i> . 3: 3804-3823.	No relevant intervention
2	578	Cagalanan Dominique (2013) Integrated Conservation and Development: Impacts on Households in a Philippine Park. <i>Journal of Environment &amp; Development</i> . 22: 435-458.	No relevant outcomes
2	579	Carroll Clint (2014) Native enclosures: Tribal national parks and the progressive politics of environmental stewardship in Indian Country. <i>Geoforum</i> . 53: 31-40.	No relevant outcomes
2	580	Celine Ernst, Philippe Mayaux, Astrid Verhegghen, Catherine Bodart, Musampa Christophe, Pierre Defourny (2013) National forest cover change in Congo Basin: deforestation, reforestation, degradation and regeneration for the years 1990, 2000 and 2005. <i>Global Change Biology</i> . 19: 1173-1187.	No sufficient information on governance
2	581	Clements Tom, Suon Seng, Wilkie David S; Milner-Gulland E J; (2014) Impacts of Protected Areas on Local Livelihoods in Cambodia. <i>World Development</i> . 64: S125-S134.	No relevant outcomes
2	582	Clements Tom, Milner-Gulland E J; (2015) Impact of payments for environmental services and protected areas on local livelihoods and forest conservation in northern Cambodia. <i>Conservation biology</i> 29:78-87.	No relevant outcomes
2	583	Coetzer Kaera L; Erasmus Barend F. N; Witkowski Edward T. F; Reyers Belinda (2013) The Race for Space: Tracking Land-Cover Transformation in a Socio-ecological Landscape, South Africa. <i>Environmental Management</i> . 52: 595-611.	No sufficient information on governance
2	584	Czerwinski Chris J; King Douglas J; Mitchell Scott W; (2014) Mapping forest growth and decline in a temperate mixed forest using temporal trend analysis of Landsat imagery, 1987-2010. <i>Remote Sensing of Environment</i> . 141: 188-200.	No sufficient information on governance
2	585	Daldegan Gabriel Antunes; de Carvalho Junior, Osmar Abilio, Guimaraes Renato Fontes; Trancoso Gomes, Roberto Arnaldo, Ribeiro Fernanda de Figueiredo; McManus Concepta (2014) Spatial Patterns of Fire Recurrence Using Remote Sensing and GIS in the Brazilian Savanna: Serra do Tombador Nature Reserve, Brazil. <i>Remote Sensing</i> . 6: 9873-9894.	No relevant outcomes
2	586	Derkyi Mercy, Ros-Tonen Mirjam A. F; Kyereh Boateng, Dietz Ton (2013) Emerging forest regimes and livelihoods in the Tano Offin Forest Reserve, Ghana: Implications for social safeguards. <i>Forest Policy and Economics</i> . 32: 49-56.	No relevant outcomes
2	587	Dressler Wolfram H; To Phuc Xuan; Mahanty Sango (2013) How Biodiversity Conservation Policy Accelerates Agrarian Differentiation: The Account of an Upland Village in Vietnam. <i>Conservation &amp; Society</i> . 11: 130-143.	No relevant outcomes
2	588	Elizabeth Lee, Alison (2014) Territorialisation, Conservation, and Neoliberalism in the Tehuacan-Cuicatlan Biosphere Reserve, Mexico. <i>Conservation &amp; Society</i> . 12: 147-161.	No relevant outcomes
2	589	Fay Derick (2013) Neoliberal conservation and the potential for lawfare: New legal entities and the political ecology of litigation at Dwesa-Cwebe, South Africa. <i>Geoforum</i> . 44: 170-181.	No relevant outcomes

2	590	Gaveau David L. A; Kshatriya Mrigesh, Sheil Douglas, Sloan Sean, Molidena Elis, Wijaya Arief, Wich Serge, Ancrenaz Marc, Hansen Matthew, Broich Mark, Guariguata Manuel R; Pacheco Pablo, Potapov Peter, Turubanova Svetlana, Meijaard Erik (2013) Reconciling Forest Conservation and Logging in Indonesian Borneo. <i>Plos One</i> . 8: .	No sufficient information on governance
2	591	Gonzalez-Roglich Mariano, Southworth Jane, Branch Lyn C; (2012) The role of private lands for conservation: Land cover change analysis in the Caldenal savanna ecosystem, Argentina. <i>Applied Geography</i> . 34: 281-288.	No sufficient information on governance
2	592	Haruna Akiko, Pfaff Alexander, van den Ende , Sander , Joppa Lucas (2014) Evolving protected-area impacts in Panama: impact shifts show that plans require anticipation. <i>Environmental Research Letters</i> . 9: .	No sufficient information on governance
2	593	Ivan Badano, Ernesto , Garcia-Guzman Jeronimo, Hernan Vergara-Briceno, Carlos , Enrique Martinez-Romero, Luis , de las Nieves Barranco-Leon; Maria , Luna-Castellanos Florencio, Maria Acuna-Cors, Ana , Angel Garcia-Valenzuela, Miguel , Renato Ramos-Palacios, Carlos (2012) Conservation value of a natural protected area in the state of Puebla, Mexico. <i>Revista Mexicana De Biodiversidad</i> . 83: 834-846.	No sufficient information on governance
2	594	Jenks Kate E; Howard JoGayle, Leimgruber Peter (2012) Do Ranger Stations Deter Poaching Activity in National Parks in Thailand?. <i>Biotropica</i> . 44: 826-833.	No sufficient information on governance
2	595	Jimoh Saka Oladunni; Ikyaagba Emmanuel Tertsea; Alarape Abideen Abiodun; Obioha Emeka E; Adeyemi Adesoji Akinwumi; (2012) The Role of Traditional Laws and Taboos in Wildlife Conservation in the Oban Hill Sector of Cross River National Park (CRNP), Nigeria. <i>Journal of Human Ecology</i> . 39: 209-219.	No relevant outcomes
2	596	Kanagavel Arun, Joseph Shijo, Pandya Revati, Raghavan Rajeev (2013a) Potential for Community and Conservation Reserves in the Western Ghats, India. <i>Asian Journal of Conservation Biology</i> . 2: 61-68.	No relevant outcomes
2	597	Kanagavel Arun, Pandya Revati, Sinclair Cynthia, Prithvi Aditya, Raghavan Rajeev (2013b) COMMUNITY AND CONSERVATION RESERVES IN SOUTHERN INDIA: STATUS, CHALLENGES AND OPPORTUNITIES. <i>Journal of Threatened Taxa</i> . 5: 5256-5265.	No relevant outcomes
2	598	Kelman Candice Carr; (2013) Governance Lessons from Two Sumatran Integrated Conservation and Development Projects. <i>Conservation &amp; Society</i> . 11: 247-263.	No relevant outcomes
2	599	Khounboline Khamkhoun (2013) Patrolling and Law Enforcement for Elephant Management in Nam Pouy National Protected Area, Xayabouly Province, Lao PDR. <i>Gajah</i> . 38: 37-38.	No sufficient information on governance
2	600	Kitamura Kenji, Clapp Roger Alex; (2013) Common property protected areas: Community control in forest conservation. <i>Land</i>	No relevant outcomes



		Use Policy. 34: 204-212.	
2	601	Li Yu, Vina Andres, Yang Wu, Chen Xiaodong, Zhang Jindong, Ouyang Zhiyun, Liang Zai, Liu Jianguo (2013) Effects of conservation policies on forest cover change in giant panda habitat regions, China. <i>Land Use Policy</i> . 33: 42-53.	No relevant intervention
2	602	Mackenzie Catrina A; Hartter Joel (2013) Demand and proximity: drivers of illegal forest resource extraction. <i>Oryx</i> . 47: 288-297.	No sufficient information on governance
2	603	Navarro-Cerrillo R M; Guzman-Alvarez J R; Clavero-Rumbao I, Ceaceros C (2013) A SPATIAL PATTERN ANALYSIS OF LANDSCAPE CHANGES BETWEEN 1956-1999 OF PINUS HALEPENSIS MILLER PLANTATIONS IN MONTES DE MALAGA STATE PARK (ANDALUSIA, SPAIN). <i>Applied Ecology and Environmental Research</i> . 11: 293-311.	No sufficient information on governance
2	604	Onyekwelu J C; Olusola J A; (2014) ROLE OF SACRED GROVE IN IN-SITU BIODIVERSITY CONSERVATION IN RAINFOREST ZONE OF SOUTH-WESTERN NIGERIA. <i>Journal of Tropical Forest Science</i> . 26: 5-15.	No sufficient information on governance
2	605	Peterson Kim, Diss-Torrance Andrea (2014) Motivations for rule compliance in support of forest health: Replication and extension. <i>Journal of Environmental Management</i> . 139: 135-145.	No sufficient information on governance
2	606	Petrosillo Irene, Semeraro Teodoro, Zaccarelli Nicola, Aretano Roberta, Zurlini Giovanni (2013) The possible combined effects of land-use changes and climate conditions on the spatial-temporal patterns of primary production in a natural protected area. <i>Ecological Indicators</i> . 29: 367-375.	Not forest protected area
2	607	Petursson Jon Geir; Vedeld Paul, Vatn Arild (2013b) Going Transboundary? An Institutional Analysis of Transboundary Protected Area Management Challenges at Mt Elgon, East Africa. <i>Ecology and Society</i> . 18: .	No relevant outcomes
2	608	Pinto Miriam Plaza; Sousa e Silva-Junior; Jose de, de Lima , Adriana Almeida, Viveiros Grelle, Carlos Eduardo (2014) Multi-Scales Analysis of Primate Diversity and Protected Areas at a Megadiverse Region. <i>Plos One</i> . 9: .	No sufficient information on governance
2	609	Plumptre Andrew J; Fuller Richard A; Rwetsiba Aggrey, Wanyama Fredrick, Kujirakwinja Deo, Driciru Margaret, Nangendo Grace, Watson James E. M; Possingham Hugh P; (2014) Efficiently targeting resources to deter illegal activities in protected areas. <i>Journal of Applied Ecology</i> . 51: 714-725.	No sufficient information on governance
2	610	Quezada Maura L; Arroyo-Rodriguez Victor, Perez-Silva Evangelina, Aide T Mitchell; (2014) Land cover changes in the Lachua region, Guatemala: patterns, proximate causes, and underlying driving forces over the last 50 years. <i>Regional Environmental Change</i> . 14: 1139-1149.	No relevant outcomes
2	611	Rahman H M. Tuihedur; Sarker Swapan Kumar; Hickey Gordon M; Haque M Mohasinul; Das Niamjit (2014) Informal Institutional	No relevant outcomes

		Responses to Government Interventions: Lessons from Madhupur National Park, Bangladesh. <i>Environmental Management</i> . 54: 1175-1189.	
2	612	Rashid A Z. M. Manzoor; Craig Donna, Mukul Sharif Ahmed; Khan Niaz Ahmed; (2013) A journey towards shared governance: status and prospects for collaborative management in the protected areas of Bangladesh. <i>Journal of Forestry Research</i> . 24: 599-605.	No relevant outcomes
2	613	Rayner Laura, Lindenmayer David B; Wood Jeffrey T; Gibbons Philip, Manning Adrian D; (2014) Are protected areas maintaining bird diversity?. <i>Ecography</i> . 37: 43-53.	No sufficient information on governance
2	614	Redowan Mohammad, Alder Sharmin, Islam Nusrat (2014) Analysis of forest cover change at Khadimnagar National Park, Sylhet, Bangladesh, using Landsat TM and GIS data. <i>Journal of Forestry Research</i> . 25: 393-400.	No sufficient information on governance
2	615	Reyes-Garcia Victoria, Ruiz-Mallen Isabel, Porter-Bolland Luciana, Garcia-Frapolli Eduardo, Ellis Edward A; Mendez Maria-Elena, Pritchard Diana J; Sanchez-Gonzalez Maria-Consuelo (2013) Local Understandings of Conservation in Southeastern Mexico and Their Implications for Community-Based Conservation as an Alternative Paradigm. <i>Conservation Biology</i> . 27: 856-865.	No relevant outcomes
2	616	Rico Garcia-Amado, Luis , Ruiz Perez, Manuel , Barrasa Garcia, Sara (2013) Motivation for conservation: Assessing integrated conservation and development projects and payments for environmental services in La Sepultura Biosphere Reserve, Chiapas, Mexico. <i>Ecological Economics</i> . 89: 92-100.	No relevant outcomes
2	617	Roy Anjan Kumer Dev; (2014) Determinants of participation of mangrove-dependent communities in mangrove conservation practices. <i>Ocean &amp; Coastal Management</i> . 98: 70-78.	No relevant intervention
2	618	Sahoo Sasmita, Puyravaud Jean-Philippe, Davidar Priya (2013) Local knowledge suggests significant wildlife decline and forest loss in insurgent affected Similipal Tiger Reserve, India. <i>Tropical Conservation Science</i> . 6: 230-240.	No sufficient information on governance
2	619	Schwartzman Stephan, Boas Andre Villas; Ono Katia Yukari; Fonseca Marisa Gesteira; Doblaz Juan, Zimmerman Barbara, Junqueira Paulo, Jerozolimski Adriano, Salazar Marcelo, Junqueira Rodrigo Prates; Torres Mauricio (2013) The natural and social history of the indigenous lands and protected areas corridor of the Xingu River basin. <i>Philosophical Transactions of the Royal Society B-Biological Sciences</i> . 368: .	No relevant outcomes
2	620	Sims Katharine R. E; (2014) Do Protected Areas Reduce Forest Fragmentation? A Microlandscapes Approach. <i>Environmental &amp; Resource Economics</i> . 58: 303-333.	No sufficient information on governance
2	621	Smith David A. Ehlers; (2014) The effects of land-use policies on the conservation of Borneo's endemic Presbytis monkeys. <i>Biodiversity and Conservation</i> . 23: 891-908.	No sufficient information on

			governance
2	622	Solorzano Garcia, Brenda , Ellis Edward A; Rodriguez-Luna Ernesto (2012) Deforestation and Primate Habitat Availability in Los Tuxtlas Biosphere Reserve, Mexico. <i>International Journal of Ecosystem</i> . 2: 61-66.	No sufficient information on governance
2	623	Stamper Terri J; Hicke Jeffrey A; Jennings Michael, Aycrigg Jocelyn (2013) Spatial and temporal patterns of changes in protected areas across the Southwestern United States. <i>Biodiversity and Conservation</i> . 22: 343-356.	No relevant outcomes
2	624	Steinberg Michael, Taylor Matthew, Kinney Kealohanuiopuna (2014) The El Cielo Biosphere Reserve: Forest Cover Changes and Conservation Attitudes in an Important Neotropical Region. <i>Professional Geographer</i> . 66: 403-411.	No sufficient information on governance
2	625	Sverdrup-Thygeson Anne, Sogaard Gunnhild, Rusch Graciela M; Barton David N; (2014) Spatial Overlap between Environmental Policy Instruments and Areas of High Conservation Value in Forest. <i>Plos One</i> . 9: .	No sufficient information on governance
2	626	Traore Lassina, Sop Tene Kwetche; Dayamba Sidzabda Djibril; Traore Salifou, Hahn Karen, Thiombiano Adjima (2013) Do protected areas really work to conserve species? A case study of three vulnerable woody species in the Sudanian zone of Burkina Faso. <i>Environment Development and Sustainability</i> . 15: 663-686.	No sufficient information on governance
2	627	Valle Denis, Clark James (2013) Conservation Efforts May Increase Malaria Burden in the Brazilian Amazon. <i>Plos One</i> . 8: .	No sufficient information on governance
2	628	Wilfred Paulo, MacColl Andrew (2014) The pattern of poaching signs in Ugalla Game Reserve, western Tanzania. <i>African Journal of Ecology</i> . 52: 543-551.	No sufficient information on governance
2	629	Wood Pete, Sheil Douglas, Syaf Rudi, Warta Zulfira (2014) The Implementation and Sustainability of Village Conservation Agreements Around Kerinci Seblat National Park, Indonesia. <i>Society &amp; Natural Resources</i> . 27: 602-620.	No relevant outcomes
2	630	Zhang Kerong, Zhang Yulong, Tian Hua, Cheng Xiaoli, Dang Haishan, Zhang Quanfa (2013) Sustainability of social-ecological systems under conservation projects: Lessons from a biodiversity hotspot in western China. <i>Biological Conservation</i> . 158: 205-213.	No sufficient information on governance
2	631	Zorondo-Rodriguez Francisco, Reyes-Garcia Victoria, Simonetti Javier A; (2014) Conservation of biodiversity in private lands: are Chilean landowners willing to keep threatened species in their lands?. <i>Revista Chilena De Historia Natural</i> . 87: .	No relevant intervention
3	632	Brower, L.P., Castilleja, G., Peralta, A., Lopez-Garcia, J., Bojorquez-Tapia, L., Diaz, S., Melgarejo, D., Missrie, M., 2002. Quantitative changes in forest quality in a principal overwintering area of the monarch butterfly in Mexico, 1971–1999. <i>Conservation</i>	No sufficient information on

		Biology 16, 346–359.	governance
3	633	Chai, S.L., Tanner, E., McLaren, K., 2009. High rates of forest clearance and fragmentation pre- and post- National Park establishment: the case of a Jamaican montane rainforest. <i>Biological Conservation</i> 142, 2484–2492.	No sufficient information on governance
3	634	Curran, L.M., Trigg, S.N., McDonald, A.K., Astiani, D., Hardiono, Y.M., Siregar, P., Caniago, I., Kasischke, E., 2004. Lowland forest loss in protected areas of Indonesian Borneo. <i>Science</i> 303, 1000–1003.	No sufficient information on governance
3	635	DeFries, R., Hansen, A., Newton, A.C., Hansen, M.C., 2005. Increasing isolation of protected areas in tropical forests over the past twenty years. <i>Ecological Applications</i> 15, 19–26.	No sufficient information on governance
3	636	Durán-Medina, A., Mas, J.F., Velázquez, A., 2005. Land use/cover change in community-based forest management regions and protected areas in Mexico. In: Barton, D.B., Merino-Pérez, L., Barry, D. (Eds.), <i>The Community Forests of Mexico: Managing for Sustainable Landscapes</i> . University of Texas Press, United States of America, pp. 215–238.	No sufficient information on governance
3	637	Jusoff, K., Manaf, M.R.A., 1995. Satellite remote sensing of deforestation in the Sungai Buloh Forest Reserve, Peninsular Malaysia. <i>International Journal of Remote Sensing</i> 16, 1981–1997.	No relevant intervention
3	638	Mapaure, I.N., Campbell, B.M., 2002. Changes in miombo woodland cover in and around Sengwa Wildlife Research Area, Zimbabwe, in relation to elephants and fire. <i>African Journal of Ecology</i> 40, 212–219.	No sufficient information on governance
3	639	Sader, S.A., Hayes, D.J., Hepinstall, J.A., Coan, M., Soza, C., 2001. Forest change monitoring of a remote biosphere reserve. <i>International Journal of Remote Sensing</i> 22, 1937–1950.	No sufficient information on governance
3	640	Southworth, J., Nagendra, H., Carlson, L.A., Tucker, C., 2004. Assessing the impact of Celaque National Park on forest fragmentation in western Honduras. <i>Applied Geography</i> , 303–322.	No sufficient information on governance
3	641	Vadjunec, J.M., Gomes, C.V., Ludewigs, T., 2009. Land-use/land-cover change among rubber tappers in the Chico Mendes Extractive Reserve, Acre, Brazil. <i>Journal of Land Use Science</i> 4, 1–26.	No relevant intervention
3	642	Wright, S.J., Sanchez-Azofeifa, G.A., Portillo-Quintero, C., Davies, D., 2007. Poverty and corruption compromise tropical forest reserves. <i>Ecological Applications</i> 17, 1259–1266.	No sufficient information on governance
3	643	Kideghesho J, Røskaft E and Kaltenborn B 2007 Factors influencing conservation attitudes of local people in Western Serengeti, Tanzania <i>Biodiversity and Conservation</i> 16 2213–30	No sufficient information on

			governance
3	644	Rutagarama E and Martin A 2006 Partnerships for protected area conservation in Rwanda <i>Geographical Journal</i> 172 291–305	No relevant intervention
3	645	Anderson DG, Ikeya K. 2001. Parks, Property and Power: Managing Hunting Practice and Identity Within State Policy Regimes. <i>Senri Ethnological Studies</i> No. 59. Osaka, Japan: Nat. Museum Ethnol.	No relevant outcomes
3	646	Eghenter C. Labo M. 2003. In search of equitable governance models for indigenous peoples in protected areas—the experience of Kayan Mentarang National Park. <i>Policy Matters</i> 12:248–53	No relevant outcomes
3	647	Hitchcock RK. 1995. Centralisation, resource depletion and coercive conservation among the Tyua of the northeastern Kalahari. <i>Hum. Ecol.</i> 23:168–98	Not forest protected area
3	648	Igoe J, Brockington D. 1999. Pastoral Land Tenure and Community Conservation: A Case Study from North-East Tanzania. <i>Pastoral Land Tenure Series</i> 11. London: IIED	No relevant outcomes
3	649	Jepson P, Momberg F, van Noord H. 2002. A review of the efficacy of the protected area system of East Kalimantan Province, Indonesia. <i>Nat. Areas J.</i> 22(1):28–42	No sufficient information on governance
3	650	Kaus A. 1993. Environmental perceptions and social relations in the Mapimi Biosphere Reserve. <i>Conserv. Biol.</i> 7:398–406	Comment paper or relevant review
3	651	Knudsen A. 1999. Conservation and controversy in the Karakoram: Khunjerab National Park, Pakistan. <i>J. Polit. Ecol.</i> 56:1–30	No relevant outcomes
3	652	McLean J, Straede S. 2003. Conservation, relocation and the paradigms of park and people management—a case study of Padampur Villages and the Royal Chitwan National Park, Nepal. <i>Soc. Nat. Res.</i> 16:509–26	No relevant intervention
3	653	Sundberg J. 1998. NGO landscapes in the Maya Biosphere Reserve, Guatemala. <i>Geogr. Rev.</i> 88(3):388–412	No relevant intervention
3	654	Barrett CB, Brandon K, Gibson C, Gjertsen H. 2001. Conserving tropical biodiversity amid weak institutions. <i>Bio-Science</i> 51:497–502	Comment paper or relevant review
3	655	Kinnaird MF, Sanderson EW, O'Brien TG, Wibisono HT, Woolmer G. 2003. Deforestation trends in a tropical landscape and implications for endangered large mammals. <i>Conserv. Biol.</i> 17:245–57	No sufficient information on governance
3	656	Liu JG, Linderman M, Ouyang ZY, An L, Yang J, Zhang HM. 2001. Ecological degradation in protected areas: the case of Wolong Nature Reserve for giant pandas. <i>Science</i> 292:98–101	No sufficient information on governance
3	657	Mas J-F. 2005. Assessing protected area effectiveness using surrounding (buffer) areas environmentally similar to the target area. <i>Environ. Monit. Assess.</i> 105:69–80	No sufficient information on governance
3	658	Wells M, Brandon K. 1992. <i>People and Parks: Linking Protected</i>	No

		Area Management with Local Communities. Washington, DC: World Bank	sufficient information on governance
3	659	Allendorf, T., Swe, K. K., Oo, T., Htut, Y., Aung, M., Aung, M., Allendorf, K., Hayek, L., Leimgruber, P., Wemmer, C. 2006. Community attitudes toward three protected areas in Upper Myanmar (Burma). <i>Environmental Conservation</i> 33(4):344-352	No sufficient information on governance
3	660	Holmes, C. 2003. The influence of protected area outreach on conservation attitudes and resource use patterns: a case study from western Tanzania. <i>Oryx</i> 37(3):305-315	No sufficient information on governance
3	661	Igoe, J. 2003. Conservation and Contested Landscapes: The Potential for Community- Based Conservation in East Africa and North America. <a href="http://www.iucn.org/themes/ceesp/Publications/SL/Potential for Community-BasedConservation- Jim Igoe.pdf">http://www.iucn.org/themes/ceesp/Publications/SL/Potential for Community-BasedConservation- Jim Igoe.pdf</a>	Comment paper or relevant review
3	662	Infield, M. 1988. Attitudes of a rural community towards conservation and a local conservation area in Natal, South Africa. <i>Biological Conservation</i> 45(1):21-46	No sufficient information on governance
3	663	Nepal, S.K. 2002. Involving Indigenous Peoples in Protected Area Management: Comparative Perspectives from Nepal, Thailand, and China. <i>Environmental Management</i> 30(6):748-763.	Comment paper or relevant review
3	664	Ongugo, P., Njguguna, J., Obonyo, E., Sigu, G. 2002. Livelihoods, natural resources entitlements and protected areas: the case of Mt Elgon Forest in Kenya. Kenya IFRI Collaborative Research Centre. <a href="http://www.cbd.int/doc/case-studies/for/cs-ecofor-ke-02-en.pdf">http://www.cbd.int/doc/case-studies/for/cs-ecofor-ke-02-en.pdf</a> .	No relevant outcomes
3	665	Sharma, A., Kabra, A., Kinhal, G.A., Panwar, H.S., Misra, M.K., Upadhyay, S., Mohan, S., Upadhyay, V. 2004. Lessons learned from eco-development experiences in India: a study. Project Tiger, Ministry of Environment and Forests, India. <a href="http://projecttiger.nic.in/pdf/peace.pdf">http://projecttiger.nic.in/pdf/peace.pdf</a> . Accessed 19 May 2008.	No relevant outcomes
3	666	Hudak, A.T. and Wessman, C.A. 2001. Textural analysis of high resolution imagery to quantify bush encroachment in Madikwe Game Reserve, South Africa, 1955–1996. <i>Int.J. Remote Sens.</i> 22, 2731–2740.	No sufficient information on governance
3	667	Larsson, H. 2002. Acacia canopy cover changes in Rawashda forest reserve, Kassala Province, Eastern Sudan, using linear regression NDVI models. <i>Int. J. Remote Sens.</i> 23, 335–339.	No sufficient information on governance
3	668	Messina, J.P., Walsh, S.J., Mena, C.F. and Delamater, P.L. 2006. Land tenure and deforestation patterns in the Ecuadorian Amazon: conflicts in land conservation in frontier settings. <i>Appl. Geog.</i> 26, 113–128.	No sufficient information on governance

3	669	Mosugelo, D.K., Moe, S.R., Ringrose, S. and Nellemann, C. 2002. Vegetation changes during a 36-year period in northern Chobe National Park, Botswana. <i>Afr. J. Ecol.</i> 40, 232–240.	No sufficient information on governance
3	670	Tinker, D.B., Romme, W.H. and Despain, D.G. 2003. Historic range of variability in landscape structure in subalpine forests of the Greater Yellowstone Area, USA. <i>Landscape Ecol.</i> 18, 427.	No sufficient information on governance
3	671	Zheng, D., Wallin, D.O. and Hao, Z. 1997. Rates and patterns of landscape change between 1972 and 1988 in the Changbai mountain area of China and North Korea. <i>Landscape Ecol.</i> 12, 241–254.	No sufficient information on governance
3	672	Newmark, W. 1995. Extinction of mammal populations in Western North American National Parks. <i>Conserv. Biol.</i> 512–526.	No sufficient information on governance
3	673	Fuller, D., T. Jessup & A. Salim. 2004. Loss of forest cover in Kalimantan, Indonesia, since the 1997–1998 El Nino. <i>Conserv. Biol.</i> 249–254	Country-level/policy analysis
3	674	Sanchez-Azofeifa, G.A. et al. 1999. Protected areas and conservation of biodiversity in the tropics. <i>Conserv. Biol.</i> 407–411.	No sufficient information on governance
3	675	Maiorano, L., A. Falcucci & L. Boitani. 2008. Size-dependent resistance of protected areas to land-use change. <i>Proc.R.Soc.B: Biol.Sci.</i> 1297–1304.	No sufficient information on governance
3	676	Cropper, M., J. Puri & C. Griffiths. 2001. Predicting the location of deforestation: the role of roads and protected areas in North Thailand. <i>Land Econ.</i> 172	No relevant intervention
3	677	Pelkey, N., C. Stoner & T. Caro. 2000. Vegetation in Tanzania: assessing long term trends and effects of protection using satellite imagery. <i>Biol. Conserv.</i> 94:297–309	No sufficient information on governance
3	678	Vogt, N.D. et al. 2006. Understanding the stability of forest reserve boundaries in the West Mengo region of Uganda. <i>Ecol. Soc.</i> 11: 1–22.	No relevant intervention
3	679	Joppa, L., S. Loarie & S. Pimm. 2009. On population growth near protected areas. <i>PLoS ONE.</i> 04: e4279.	No sufficient information on governance
3	680	Carillo, E., Wong, G., Cuaron, A.D., 2000. Monitoring mammal populations in Costa Rican protected areas under different hunting restrictions. <i>Conservation Biology</i> 14, 1580–1591.	No sufficient information

			on governance
3	681	Nawaz, M.A., Swenson, J.E., Zakaria, V., 2008. Pragmatic management increases a flagship species, the Himalayan brown bears, in Pakistan's Deosai National Park. <i>Biological Conservation</i> 141, 2230–2241.	No sufficient information on governance
3	682	Peralta, P., Mather, P., 2000. An analysis of deforestation patterns in the extractive reserves of Acre, Amazonia from satellite imagery: a landscape ecological approach. <i>International Journal of Remote Sensing</i> 21, 2555–2570.	No sufficient information on governance
3	683	Peres, C.A., Nascimento, H.S., 2006. Impact of game hunting by the Kayapo' of southeastern Amazonia: implications for wildlife conservation in tropical forest indigenous reserves. <i>Biodiversity and Conservation</i> 15, 2627–2653.	No sufficient information on governance
3	684	Setsaas, T.H., Holmern, T., Mwakalebe, G., Stokke, S., Røskaft, E., 2007. How does human exploitation affect impala populations in protected and partially protected areas? – A case study from the Serengeti Ecosystem, Tanzania. <i>Biological Conservation</i> 136, 563–570.	No sufficient information on governance
3	685	Shackleton, C.M., 2000. Comparison of plant diversity in protected and communal lands in the Bushbuckridge lowveld savanna, South Africa. <i>Biological Conservation</i> 94, 273–285.	No sufficient information on governance
3	686	Wadt, L.H.O., Kainer, K.A., Staudhammer, C.L., Serrano, O.P., 2008. Sustainable forest use in Brazilian extractive reserves: natural regeneration of Brazil nut in exploited populations. <i>Biological Conservation</i> 141, 332–346.	No sufficient information on governance
3	687	Kepe, T., B. Cousins and S. Turner. 2001. Resource tenure and power relations in community wildlife: The case of Mkambati Area, South Africa. <i>Society and Natural Resources</i> 14: 911.	No relevant outcomes
3	688	Roth, R. 2004. On the colonial margins and in the global hotspot: Park-people conflicts in high land Thailand. <i>Asia Pacific Viewpoint</i> 45(1): 13-32.	No relevant outcomes
4	689	Agrawal A, Ostrom E (1999) Collective action, property rights, and devolution of forest and protected area management. <i>Collective Action, Property Rights, and Devolution of ...</i> . .	No relevant outcomes
4	690	Andersson K, Gibson CC (2007) Decentralized governance and environmental change: local institutional moderation of deforestation in Bolivia. <i>Journal of Policy Analysis and Management</i> . . .	No relevant intervention
4	691	Clark S, Bolt K, Campbell A (2008) Protected areas: an effective tool to reduce emissions from deforestation and forest degradation in developing countries?. UNEP-WCMC, Cambridge, UK. . .	Comment paper or relevant review
4	692	Moeliono M, Limberg G (2012) The decentralization of forest governance: politics, economics and the fight for control of forests in Indonesian Borneo. . . .	No relevant intervention



4	693	Nelson A, Chomitz KM (2011) Effectiveness of strict vs. multiple use protected areas in reducing tropical forest fires: a global analysis using matching methods. PLoS One. : .	No sufficient information on governance
4	694	Newmark WD, Leonard NL (1993) Conservation attitudes of local people living adjacent to five protected areas in Tanzania. Biological Conservation. : .	No sufficient information on governance
4	695	Pressey RL, Ferrier S, Hager TC (1996) How well protected are the forests of north-eastern New South Wales?—Analyses of forest environments in relation to formal protection measures, land tenure, and. Forest Ecology and .... : .	No sufficient information on governance
4	696	Richards M (1996) Protected areas, people and incentives in the search for sustainable forest conservation in Honduras. Environmental Conservation. : .	No sufficient information on governance
4	697	Stoll-Kleemann S, Bender S, Berghöfer A (2006) Linking governance and management perspectives with conservation success in protected areas and biosphere reserves. ... on Biodiversity Governance .... : .	No appropriate or relevant comparator
4	698	Tengö M, Johansson K, Rakotondrasoa F (2007) Taboos and forest governance: informal protection of hot spot dry forest in southern Madagascar. AMBIO: A Journal of the .... : .	No sufficient information on governance
4	699	Xu J, Melick DR (2007) Rethinking the effectiveness of public protected areas in southwestern China. Conservation Biology. : .	Comment paper or relevant review
5	700	Alcorn Janis B; (2001) Good Governance , Indigenous Peoples, and Biodiversity Conservation : Recommendations for Enhancing Results across Sectors. Washington, DC: Biodiversity Support Program. : . file:///Users/biljanamacura/Dropbox/MapReview all files/Grey Literature/24.10 Conserve online_Mendeley/alcorn2001.pdf	No sufficient information on governance
5	701	Appleton MR, Texon GI, Uriarte MT (2003) Competence Standards for Protected Area Jobs in South East Asia. ASEAN Regional Centre for Biodiversity Conservation, Los Banos, Philippines. : . file:///Users/biljanamacura/Dropbox/MapReview all files/Grey Literature/24.10 Conserve online_Mendeley/appleton2003.pdf	No sufficient information on governance
5	702	Ashley Rebecca, Russell Diane, Swallow Brent (2006) The Policy Terrain in Protected Area Landscapes: Challenges for Agroforestry in Integrated Landscape Conservation. Biodiversity and Conservation. 15(2): 663-689.	No sufficient information on governance
5	703	Athanas A, Vorhies F, Ghersi F, Shadie P, Shultis J (2001) Guidelines for Financing Protected Areas in East Asia.IUCN, Gland, Switzerland and Cambridge, UK. : .	No sufficient information

			on governance
5	704	Beltrán J (2000) Indigenous and Traditional Peoples and Protected Areas: Principles, Guidelines and Case Studies. IUCN, Gland, Switzerland and Cambridge, UK and WWF International, Gland, Switzerland.. : .	No sufficient information on governance
5	705	Bishop Kevin, Dudley Nigel, Phillips Adrian, Stolton Sue (2004) Speaking a Common Language: The uses and performance of the IUCN System of Management Categories for Protected Areas. Cardiff University, IUCN – The World Conservation Union and UNEP – World Conservation Monitoring Centre. : .	No sufficient information on governance
5	706	Brouwer Roy, Vogelij Rogier, Gutowska Justyna, Beukering Pieter van; Leisher Craig, Boucher Tim, Bainbridge W R; (2011) Socioeconomic and Ecological Assessment of the Umgano Project in South Africa: Draft Report. : . file:///Users/biljanamacura/Dropbox/MapReview all files/Grey Literature/24.10 Conserve online_Mendeley/Brouwer 2011 SA Umgano assessment FINAL.docx	No sufficient information on governance
5	707	CBD (2002) Review of the status and trends of, and major threats to, the forest biological diversity. Montreal, SCBD, 164p.(CBD Technical Series no. 7). : .	No sufficient information on governance
5	708	CBD (2003) Facilitating conservation and sustainable use of biological diversity. CBD Technical Series no 9. Secretariat of the Convention on Biological Diversity.. : . file:///Users/biljanamacura/Dropbox/MapReview all files/Grey Literature/24.10 Conserve online_Mendeley/CBD 2003 Facilitating conservation.pdf	No sufficient information on governance
5	709	CBD (2004) Biodiversity issues for consideration in the planning, establishment and management of protected area sites and networks. Montreal, SCBD, 164 pages and i to iv. (CBD Technical Series no. 15). : .	No sufficient information on governance
5	710	Davey Adrian G; (1998) National System Planning for Protected Areas. IUCN, Gland, Switzerland and Cambridge, UK.. : .	No sufficient information on governance
5	711	Drumm Andy, Moore Alan, Soles Andrew, Patterson Carol, Terborgh John E; (2004) Ecotourism Development: A Manual for Conservation Planners and Managers. Volume II: The Business of Ecotourism, Development and Management.. : .	No sufficient information on governance
5	712	Dudley Nigel, Stolton Sue (2003) Running Pure: The importance of forest protected areas to drinking water. : . file:///Users/biljanamacura/Dropbox/MapReview all files/Grey Literature/24.10 Conserve online_Mendeley/dudley 2003 WB running pure report.pdf	No sufficient information on governance
5	713	Dudley N, Courrau J (2008) Filling the Gaps in protected area networks: A quick Guide for protected area practitioners. Quick	No sufficient

		Guide Series ed. J. Ervin. Arlington, VA: The Nature Conservancy.. : . file:///Users/biljanamacura/Dropbox/MapReview all files/Grey Literature/24.10 Conserve online_Mendeley/Dudley 2008 FillGapsQG-Web.pdf	information on governance
5	714	EPA (2001) Master Plan for Queensland's Parks System. Queensland Government. Parks and Wildlife Service.. : .	No sufficient information on governance
5	715	Higgins Jonathan, Unnasch Robert, Supples Christina (2007) Ecoregional Status Measures Version 1.0: Framework and technical guidance to estimate effective conservation. : . file:///Users/biljanamacura/Dropbox/MapReview all files/Grey Literature/24.10 Conserve online_Mendeley/Higgins ERSM-Framework-FINAL.pdf	No sufficient information on governance
5	716	Hockings M, Stolton S, Dudley Nigel (2000) Evaluating Effectiveness: A framework for assessing the mmanagement of protected areas. IUCN, Gland, Switzerland and Cambridge, UK. x. : .	No sufficient information on governance
5	717	ICEM (2003) Cambodia National Report on Protected Areas and Development. Review of Protected Areas and Development in the Lower Mekong River Region, Indooroopilly, Queensland, Australia. : . file:///Users/biljanamacura/Dropbox/MapReview all files/Grey Literature/24.10 Conserve online_Mendeley/icem2003.pdf	No sufficient information on governance
5	718	Kanyamibwa Samuel (2005) Towards an Effective Protected Areas Network in Africa: Experience in assessing protected area management effectiveness and future proposals. WWF International. Gland, Switzerland. : . file:///Users/biljanamacura/Dropbox/MapReview all files/Grey Literature/24.10 Conserve online_Mendeley/Kanyamibwa2005.pdf	No sufficient information on governance
5	719	Kemraj P (2007) OECS Protected Areas and Associated Livelihoods Project: Capacity Building for Protected Areas Planning and Management and Associated Livelihoods. Protected Areas Training Needs Assessment. St . Lucia Country Report.. (January): .	No sufficient information on governance
5	720	Leisher C, Sanjayan M, Blockhus J, Kontoleon A, Larsen NS (2010) Does Conserving biodiversity work to reduce poverty? A state of knowledge review. : . file:///Users/biljanamacura/Dropbox/MapReview all files/Grey Literature/24.10 Conserve online_Mendeley/Leisher Biodiversity as a Mechanism for Poverty Reduction Report FINAL2.pdf	No sufficient information on governance
5	721	Levitt JN (2003) The next level: the Pingree Forest Partnership as a private lands conservation innovation. Occasional Reserach Paper 03-01. Harvard University. : . file:///Users/biljanamacura/Dropbox/MapReview all files/Grey Literature/24.10 Conserve online_Mendeley/Levitt2003Pingree.pdf	No sufficient information on governance
5	722	Meerman Jan, Wilson J Roger; Andrade Valdemar, Woods V, Wade B, Taegar-panton Tracy (2005) The Belize National Protected Areas System Plan. : . file:///Users/biljanamacura/Dropbox/MapReview all files/Grey Literature/24.10 Conserve online_Mendeley/meermanandwilson2005.pdf	No sufficient information on governance

5	723	Munang R, Thiaw I, J Thompson, Ganz D, Girvetz E, Rivington M (2011) Sustaining Forests: Investing in our common future. UNEP policy Series.. : . file:///Users/biljanamacura/Dropbox/MapReview all files/Grey Literature/24.10 Conserve online_Mendeley/Munang Sustaining Forests PB5-1.pdf	No sufficient information on governance
5	724	Barborak Jim, Wyman M, Inamdar N, T Stein ( ) Results of a Comparative International Review of Public-Private Partnerships for Tourism Management in Protected Areas. : . file:///Users/biljanamacura/Dropbox/MapReview all files/Grey Literature/24.10 Conserve online_Mendeley/J Barborak Study on PPP.pdf	No sufficient information on governance
5	725	Sandwith Trevor, Shine Clare, Hamilton Lawrence, Sheppard David (2001) Transboundary Protected Areas for Peace and Co-operation. Best Practice Protected Area Guidelines Series no 7. IUCN, Gland, Switzerland and Cambridge, UK.. : .	No sufficient information on governance
5	726	Schmitt Christine B; Pistorius Till, Winkel Georg (2007) A Global Network of Forest Protected Areas under the CBD: Opportunities and Challenges. Proceedings of an international expert workshop held in Freiburg, Germany. May 9-11.2007. : .	No sufficient information on governance
5	727	Sithole B (2002) Where the power lies: Multiple stakeholder politics over natural resources. A participatory methods guide. CIFOR. : .	No sufficient information on governance
5	728	Stern Marc J; (2006) MEASURING CONSERVATION EFFECTIVENESS IN THE MARINE ENVIRONMENT: A review of evaluation techniques and recommendations for moving forward. : . file:///Users/biljanamacura/Dropbox/MapReview all files/Grey Literature/24.10 Conserve online_Mendeley/Stern mgmt effectiveness report.pdf	No sufficient information on governance
5	729	The Nature Conservancy; (2004) East Kalimantan Program (Indonesia): Program Review Report. : . file:///Users/biljanamacura/Dropbox/MapReview all files/Grey Literature/24.10 Conserve online_Mendeley/The Nature Conservancy 2004 East Kalimantan Program Review Report FINAL Format.pdf	No sufficient information on governance
5	730	The Nature Conservancy; (2005) Lore Lindu Program (Sulawesi): Conservation Audit Report. : . file:///Users/biljanamacura/Dropbox/MapReview all files/Grey Literature/24.10 Conserve online_Mendeley/The Nature Conservancy Sulawesi Conservation Audit Report FINAL Format.pdf	No sufficient information on governance
5	731	The Nature Conservancy; (2006) Measuring the Conservation Management Status of Biodiversity within Ecoregions. DRAFT issues and recommendations.. : .	No sufficient information on governance
5	732	The Nature Conservancy; (2007) Komodo Project (Indonesia): Conservation Audit Report. : . file:///Users/biljanamacura/Dropbox/MapReview all files/Grey	No sufficient information

		Literature/24.10 Conserve online_Mendeley/The Nature Conservancy Komodo Conservation Audit Report FINAL Format.pdf	on governance
5	733	Thomas L (2007) Money Grows on Trees: Valuing and Sustaining Natural Resources in Pacific Island Countries. A report prepared for TNC, PIFS and SPREP. TNC Pacific Island Countries Report No. 3/07.. : . file:///Users/biljanamacura/Dropbox/MapReview all files/Grey Literature/24.10 Conserve online_Mendeley/Thomas Report Final.pdf	No sufficient information on governance
5	734	Tshering K (2003) Bhutan: Management Effectiveness Assessment of Four Protected Areas using WWF's RAPPAM Methodology. WWF. Gland, Switzerland. : . file:///Users/biljanamacura/Dropbox/MapReview all files/Grey Literature/24.10 Conserve online_Mendeley/tshering 2003 bhutancasestudyfinal.pdf	No sufficient information on governance
5	735	UNU , IAS (2003) Biodiversity Access and Benefit – Sharing Policies for Protected Areas. An introduction.. : . file:///Users/biljanamacura/Dropbox/MapReview all files/Grey Literature/24.10 Conserve online_Mendeley/UNUIAS-ProtectedAreasReport.pdf	No sufficient information on governance
5	736	Wolf Steven a; Primmer Eeva (2006) Between Incentives and Action: A Pilot Study of Biodiversity Conservation Competencies for Multifunctional Forest Management in Finland. Society & Natural Resources. 19(9): 845-861.	No sufficient information on governance
5	737	WWF (2004) Are protected areas working? An analysis of forest protected areas by WWF. WWF International. Gland, Switerland.. : . file:///Users/biljanamacura/Dropbox/MapReview all files/Grey Literature/24.10 Conserve online_Mendeley/WWF 2007.pdf	No sufficient information on governance
5	738	Ioniță Alina ( ) Communities and ecotourism development in Călimani National Park, Romania: opportunities and constraints. Participating in Nature: Communities and Protected Areas in Central and Eastern Europe, .	No relevant outcomes
5	739	Jepson P, Whittaker R J; (2002) Histories of Protected Areas: Internationalisation of Conservationist Values and their Adoption in the Netherlands Indies (Indonesia). Environment and History. 8(2): 129-172.	No sufficient information on governance
5	740	Jepson Paul, Momberg F, Noord Hans Van; (2002) A Review of the Efficacy of the Protected Area System of East Kalimantan Province , Indonesia. Natural Areas Journal. 22(1): 28-42.	No sufficient information on governance
5	741	Macdonald Ewan a; Collins Murray, Johnson Paul J; Clayton Lynn M; Malhi Yadvinder, Fisher Joshua B; Milner-Gulland E J; Macdonald David W; (2011) Wildlife conservation and reduced emissions from deforestation in a case study of Nantu National Park, Sulawesi. 1. The effectiveness of forest protection - many measures, one goal. Environmental Science & Policy. 14(6): 697-708.	No sufficient information on governance
5	742	Parr Catherine L; Woinarski John C. Z; Pienaar Danie J; (2009) Cornerstones of biodiversity conservation? Comparing the management effectiveness of Kruger and Kakadu National Parks,	No sufficient information

		two key savanna reserves. <i>Biodiversity and Conservation</i> . 18(13): 3643-3662.	on governance
5	743	Román-Cuesta Rosa María; Martínez-Vilalta Jordi (2006) Effectiveness of Protected Areas in Mitigating Fire within Their Boundaries: Case Study of Chiapas, Mexico. <i>Conservation Biology</i> . 20(4): 1074-1086.	No relevant outcomes
5	744	Satyanarayana Behara, Bhanderi Preetika, Debry Mélanie, Maniatis Danae, Foré Franka, Badgie Dawda, Jammeh Kawsu, Vanwing Tom, Farcy Christine, Koedam Nico, Dahdouh-Guebas Farid (2012) A socio-ecological assessment aiming at improved forest resource management and sustainable ecotourism development in the mangroves of Tanbi Wetland National Park, The Gambia, West Africa.. <i>Ambio</i> . 41(5): 513-26.	No sufficient information on governance
5	745	Schmitt Christine B; Burgess Neil D; Coad Lauren, Belokurov Alexander, Besançon Charles, Boisrobert Lauriane, Campbell Alison, Fish Lucy, Gliddon Derek, Humphries Kate, Kapos Valerie, Loucks Colby, Lysenko Igor, Miles Lera, Mills Craig, Minnemeyer Susan, Pistorius Till, Ravilious Corinna, Steininger Marc, Winkel Georg (2009) Global analysis of the protection status of the world's forests. <i>Biological Conservation</i> . 142(10): 2122-2130.	No sufficient information on governance
5	746	Scriven Joel (2012) Developing REDD+ policies and measures from the bottom-up for the buffer zones of Amazonian protected areas. <i>Environment, Development and Sustainability</i> . 14(5): 745-765.	No relevant intervention
5	747	Thornton Thomas F; (2010) A tale of three Parks: Tlingit Conservation, representation, and repatriation in Southeast Alaska's National Parks. <i>Human Organization</i> . 69(2): 107-118.	No relevant outcomes
5	748	Berlanga Mauro, Faust Betty B; (2007) We Thought We Wanted a Reserve: One Community's Disillusionment with Government Conservation Management. <i>Conservation and Society</i> . 5(4): 450-477.	Not forest protected area
5	749	Boedhihartono A K; Gunarso Petrus, Levang Patrice, Sayer Jeff (2007) The Principles of Conservation and Development : Do They Apply in Malinau?. <i>Ecology and Society</i> . 12(2): .	No relevant outcomes
5	750	Brynard P Malan, L; (2002) Conservation Management and intergovernmental relations: the case of South African national and selected provincial protected areas. <i>Politeia</i> . 21(2): 101-122.	No relevant outcomes
5	751	Buscher Bram, Dressler Wolfram (2007) Linking Neoprotectionism and Environmental Governance: On the Rapidly Increasing Tensions between Actors in the Environment-Development Nexus. <i>Conservation and Society</i> . 5(4): 586-611.	No relevant outcomes
5	752	Castro AP, Nielsen E (2003) Overview.. In: Castro AP, Nielsen E Natural resource conflict management case studies: an analysis of power, participation and protected areas. , pages .	No sufficient information on governance
5	753	Crawford Alec, Bernstein Johannah (2008) A case study of Virunga National Park, DRC. MEAs , <i>Conservation and Conflict</i> . IISD. : . file:///Users/biljanamacura/Dropbox/MapReview all files/Grey Literature/25.10 Eldis_Mendeley/Crawford meas_cons_conf_virunga.pdf	No relevant outcomes
5	754	Deke Oliver (2004) Financing National Protected Area Networks Internationally –The Global Environment Facility as a Multilateral	No relevant intervention

		Mechanism of Transfer. Kiel Working Paper No 1227. Kiel, Germany: . file:///Users/biljanamacura/Dropbox/MapReview all files/Grey Literature/25.10 Eldis_Mendeley/deke 2004.pdf	
5	755	Fortwangler Crystal (2007) Friends with Money: Private Support for a National Park in the US Virgin Islands YR - 2007/10/1. Conservation and Society. 5(4): 504-533.	No relevant intervention
5	756	Galvin M, Haller T (2008) People, Protected Areas and Global Change: Participatory Conservation in Latin America, Africa, Asia and Europe. Perspectives.. : . file:///Users/biljanamacura/Dropbox/MapReview all files/Grey Literature/25.10 Eldis_Mendeley/Galvin_Haller_NCCR_People_Protected_Areas_2008.pdf	No relevant outcomes
5	757	Grandia Liza (2007) Between Bolivar and Bureaucracy: The Mesoamerican Biological Corridor YR - 2007/10/1. Conservation and Society. 5(4): 478-503.	No relevant outcomes
5	758	Hoang V A; (2003) Link between spirit forest and biodiversity conservation Case study at Son la province. : . file:///Users/biljanamacura/Dropbox/MapReview all files/Grey Literature/25.10 Eldis_Mendeley/hva_spirit_forest.pdf	No appropriate or relevant comparator
5	759	Igoe Jim, Croucher Beth (2007) Conservation, Commerce, and Communities: The Story of Community-Based Wildlife Management Areas in Tanzania's Northern Tourist Circuit. Conservation and Society. 5(4): 534-561.	No relevant outcomes
5	760	Johannesen Anne Borge; (2004) WILDLIFE CONSERVATION POLICIES AND INCENTIVES TO HUNT: AN EMPIRICAL ANALYSIS OF ILLEGAL HUNTING IN WESTERN Serengeti, Tanzania. Working Paper Series No 3/2004. NUST, Norway. : . file:///Users/biljanamacura/Dropbox/MapReview all files/Grey Literature/25.10 Eldis_Mendeley/JOHANSEN SERENGETI.pdf	No sufficient information on governance
5	761	Johannesen Anne Borge; (2005) Protected areas, wildlife conservation and local welfare. Working Paper Series no, 13/2005. NUST, Norway.. : . file:///Users/biljanamacura/Dropbox/MapReview all files/Grey Literature/25.10 Eldis_Mendeley/13Johannesen.pdf	No sufficient information on governance
5	762	Lahiff E (1997) LAND, WATER AND LOCAL GOVERNANCE IN SOUTH AFRICA: A Case Study of the Mutale River Valley. RURAL RESOURCES RURAL LIVELIHOODS WORKING PAPER SERIES.GECP. file:///Users/biljanamacura/Dropbox/MapReview all files/Grey Literature/25.10 Eldis_Mendeley/LAHIFF 97 africa.pdf	No relevant intervention
5	763	Levine Arielle ( ) Staying Afloat: State Agencies, Local Communities, and International Involvement in Marine Protected Area Management in Zanzibar, Tanzania YR - 2007/10/1. Conservation and Society. (4 UL - <a href="http://www.conservationandsociety.org/text.asp?2007/5/4/562/49254">http://www.conservationandsociety.org/text.asp?2007/5/4/562/49254</a> ): 562 OP-587 VO - 5.	Not forest protected area
5	764	Massyn Peter John; Swan Nick ( ) Case Study of Lekgophung Tourism Lodge, South Africa. Draft. : .	No relevant intervention
5	765	Nelson Fred (2007) Emergent or illusory? Community wildlife management in Tanzania.Issue Paper no 146. IIED. : . file:///Users/biljanamacura/Dropbox/MapReview all files/Grey	No relevant outcomes

		Literature/25.10 Eldis_Mendeley/nelson 2007.pdf	
5	766	Nhantumbo Isilda, Norfolk S, Pereira J (2003) Community Based Natural Resources Management in Mozambique: A Theoretical or Practical Strategy for Local Sustainable Development? The Case Study of Derre Forest Reserve. Sustainable Livelihoods in Southern Africa Research Paper 10, Institute of Developme. : . file:///Users/biljanamacura/Dropbox/MapReview all files/Grey Literature/25.10 Eldis_Mendeley/NHANTUMBO 2004.pdf	No relevant outcomes
5	767	Sifuna N (2006) Using Eminent Domain Powers to Acquire Private Lands for Protected Area Wildlife Conservation: A Survey under Kenyan Law. Law Env't & Dev. J.. 2(1): 84-84.	No relevant intervention
5	768	Whande W (2007) Trans-boundary natural resources management in southern Africa: Local historical and livelihood realities within the Great Limpopo Trans-frontier Conservation Area. Research Report 25.UWC. : .	No relevant outcomes
5	769	IFPRI (2006) Empowering the rural poor under volatile policy environments in the Near East and North Africa Region Case study Sudan. Final Report. : . file:///Users/biljanamacura/Dropbox/MapReview all files/Grey Literature/25.10 IFAD_MENDELEY/IFPRI 2006 sudan.pdf	No relevant outcomes
5	770	Blomley Tom (2000) Woodlots, woodfuel and Wildlife: Lessons from Queen Elizabeth National Park , Uganda. Gatekeeper Series no.90. IIED, London.. : . file:///Users/biljanamacura/Dropbox/MapReview all files/Grey Literature/25.10 IIED_Mendeley/Blomley 2000 UGANDA X179IIED.pdf	No relevant outcomes
5	771	Blomley Tom, Namara Agrippinah, Mcneilage Alastair, Franks Phil, Rainer Helga, Donaldson Andrew, Malpas Rob, Olupot William, Baker Julia, Sandbrook Chris, Bitariho Robert, Infield Mark (2010) Development and gorillas? Assessing fifteen years of Integrated Conservation and Development in south-western Uganda.. London: . file:///Users/biljanamacura/Dropbox/MapReview all files/Grey Literature/25.10 IIED_Mendeley/Blomley icdp gorilla 14592IIED.pdf	No appropriate or relevant comparator
5	772	Boggs Lesley P; (2000) COMMUNITY POWER, PARTICIPATION, CONFLICT AND DEVELOPMENT CHOICE: COMMUNITY WILDLIFE CONSERVATION IN THE OKAVANGO REGION OF NORTHERN BOTSWANA.Evaluating Eden Series Discussion Paper No.17. IIED. London. : . file:///Users/biljanamacura/Dropbox/MapReview all files/Grey Literature/25.10 IIED_Mendeley/Boggs Okavangi 7815IIED.pdf	No relevant outcomes
5	773	Emerton L (1999) BALANCING THE OPPORTUNITY COSTS OF WILDLIFE CONSERVATION FOR COMMUNITIES AROUND LAKE MBURO National Park, Uganda. : . file:///Users/biljanamacura/Dropbox/MapReview all files/Grey Literature/25.10 IIED_Mendeley/Emerton 99 7798IIED costs lmp PA.pdf	No relevant outcomes
5	774	Goodwin HJ, Kent I, Parker K, Walpole Matt (1998) Tourism, conservation and sustainable development. Case studies from Asia and Africa. : . file:///Users/biljanamacura/Dropbox/MapReview all files/Grey Literature/25.10 IIED_Mendeley/Goodwin 98.pdf	No relevant intervention
5	775	Steinmetz Robert (2000) ECOLOGICAL SURVEYS ,	No relevant



		MONITORING , AND THE INVOLVEMENT OF LOCAL PEOPLE IN PROTECTED AREAS OF LAO P.D.R. Evaluating Eden Series Discussion paper No 13. IIED, London. : . file:///Users/biljanamacura/Dropbox/MapReview all files/Grey Literature/25.10 IIED_Mendeley/Steinmetz LAO 7812IIED.pdf	intervention
5	776	Walpole Matt, Karanja Geoffrey, Sitati Noah, Leader-williams Nigel (2003) Wildlife and People: Conflict and Conservation in Masai Mara, Kenya. Wildlife and Development Series no 14. International Institute for Environment and Development, London.. : . file:///Users/biljanamacura/Dropbox/MapReview all files/Grey Literature/25.10 IIED_Mendeley/Walpole Masai 9225IIED.pdf	No sufficient information on governance
5	777	Barrow Edmund, Gichohi Helen, Infield Mark (2000) Summary and Key Lessons from a Comparative Review and Analysis of Community Conservation in East Africa. : . file:///Users/biljanamacura/Dropbox/MapReview all files/Grey Literature/29.10 iucn_MEND/barrow 2000-019-02 summary!!.pdf	No sufficient information on governance
5	778	Campese Jessica, Sunderland Terry, Greiber Thomas, Oviedo Gonzalo (2009) Rights-based approaches: Exploring issues and opportunities for conservation. CIFOR and IUCN. Bogor, Indonesia.. : .	No sufficient information on governance
5	779	Chhetri Purna B; Barrow Edmund G C; Muhweezi Alex (2004) Securing Protected Area Integrity and Rural People ' s Livelihoods: Lessons from Twelve Years of the Kibale and Semliki Conservation and Development Project. : . file:///Users/biljanamacura/Dropbox/MapReview all files/Grey Literature/29.10 iucn_MEND/chhetri 2000-019-12.pdf	No appropriate or relevant comparator
5	780	Dara An, Kimsreng Kong, Piseth Hout, Mather Robert (2009) An Integrated Assessment for Preliminary Zoning of Peam Krasop Wildlife Sanctuary , Southwestern Cambodia. Gland, Switzerland:IUCN. : .	No sufficient information on governance
5	781	Figgis Penelope (2004) Conservation on Private Lands: the Australian Experience. IUCN, Gland, Switzerland and Cambridge, UK.. : .	Comment paper or relevant review
5	782	Hammen Maria Clara van der; (2003) The Indigenous Resguardos of Colombia: their contribution to conservation and sustainable forest use.IUCN and GSI. Amsterdam: .	No relevant intervention
5	783	Hinchley David, Turyomurugendo Levand, Stonewall Kato (2000) Review of Collaborative Management Arrangements for Mt.Elgon National Park. : . file:///Users/biljanamacura/Dropbox/MapReview all files/Grey Literature/29.10 iucn_MEND/hinchley 2000-019-04.pdf	No appropriate or relevant comparator
5	784	Karanja F, Tessema Y, Barrow Edmund (2002) Equity in the Loita/Purko Naimina Enkiyio Forest in Kenya: Securing Maasai Rights to and Responsibilities for the Forest. Forest and Social Perspectives in Conservation no 11. IUCN: Gland, Switzerland.. : . file:///Users/biljanamacura/Dropbox/MapReview all files/Grey Literature/29.10 iucn_MEND/karanja 2000-019-11 equity.pdf	No relevant outcomes
5	785	Kyöstilä Maarit, Leivo Anneli, Loikkanen Teppo (2001) Challenge for Visitor Centres Linking Local People , Visitors and Protected	No relevant intervention

		Area. Nature Protection Publications of the Finnish Forest and Park Service. Series A, No 129. : . file:///Users/biljanamacura/Dropbox/MapReview all files/Grey Literature/29.10 iucn_MEND/kyostila 2001-012.pdf	
5	786	Marghescu Tamas (2001) Nature conservation in private forests of selected CEE countries. Opportunities and constraints. Programme paper. IUCN, Tilburg, The Netherlands. : . file:///Users/biljanamacura/Dropbox/MapReview all files/Grey Literature/29.10 iucn_MEND/marghescu EEP-026.pdf	No relevant outcomes
5	787	Moore Patricia, Pastakia F (2007) Environmental Justice and Rural Communities. Studies from India and Nepal. IUCN, Bangkok, Thailand and Gland, Switzerland.. : . file:///Users/biljanamacura/Dropbox/MapReview all files/Grey Literature/29.10 iucn_MEND/moore iucn_environmental_justice.pdf	No relevant intervention
5	788	Nurse M, Kabamba J (1999) DEFINING INSTITUTIONS FOR COLLABORATIVE MANGROVE MANAGEMENT: A case study from Tanga, Tanzania. : . file:///Users/biljanamacura/Dropbox/MapReview all files/Grey Literature/29.10 iucn_MEND/nurse 2000-019-01.pdf	No relevant outcomes
5	789	Shadie P, Epps Minna (2008) Securing Protected Areas in the Face of Global Change. Key Lessons Learned from Case Studies and Field Learning Sites in Protected Areas. IUCN Asia Regional Office, Bangkok, Thailand.. : . file:///Users/biljanamacura/Dropbox/MapReview all files/Grey Literature/29.10 iucn_MEND/shadle 2008-004.pdf	No sufficient information on governance
5	790	Synge Hugh (2004) European Models of Good Practice in Protected Areas. IUCN, Gland, Switzerland, and Cambridge, UK and the Austrian Federal Ministry of Agriculture, Forestry, Environment and Water Management. : .	No relevant outcomes
5	791	DGIS-WWF (2001) Finding Defenders for a tropical fortress: People and Conservation in Ecuador's Sangay National Park. : . file:///Users/biljanamacura/Dropbox/MapReview all files/Grey Literature/31.10 panda_MENDELEY/dgis finding defenders equador.pdf	Comment paper or relevant review
5	792	DGIS-WWF (2003) Sangay's Challenging Changes People and Conservation in Ecuador's Sangay National Park. Living Documents. : . file:///Users/biljanamacura/Dropbox/MapReview all files/Grey Literature/31.10 panda_MENDELEY/dgis wwf Sangay's challenging equador2.pdf	Comment paper or relevant review
5	793	Dudley Nigel, Higgins-Zogib Liza, Mansourian Stephanie (2005) Beyond Belief: Linking faiths and protected areas to support biodiversity conservation. WWF. : .	Comment paper or relevant review
5	794	MFCS , WWF Nepal Office; ( ) Sacred Himalayan Landscape in Nepal. Thematic Research Working Brief No 2.. : . file:///Users/biljanamacura/Dropbox/MapReview all files/Grey Literature/31.10 panda_MENDELEY/mfsc wwf bgov_25_may.pdf	Comment paper or relevant review
5	795	Parr John W K; Jitvijak Supol, Saranet Saowanee, Buathong Songsak (2008) Exploratory co-management interventions in Kuiburi National Park, Central Thailand, including human-elephant conflict mitigation. Int. J. Environment and Sustainable	No relevant outcomes

		Development. 7(3): 293-31.	
5	796	WWF Nepal Office; (2011) Putting the issues together: A Case Study Analysis on Conservation-Livelihoods Linkages in Khata Corridor, Bardia, Nepal. : .	No relevant intervention
5	797	Alcorn Janis B; Zarzycki Alejo, de la Cruz , Luis Maria (2010) Poverty, governance and conservation in the Gran Chaco of South America. Biodiversity. 11(1-2): 39-44.	No relevant outcomes
5	798	Johnson Craig, Forsyth Timothy (2002) In the Eyes of the State: Negotiating a “Rights-Based Approach” to Forest Conservation in Thailand. World Development. 30(9): 1591-1605.	Country-level/policy analysis
5	799	Persha Lauren, Agrawal Arun, Chhatre Ashwini (2011) Social and Ecological Synergy: Local Rulemaking, Forest Livelihoods, and Biodiversity Conservation. Science. 331(6024): 1606-1608.	No relevant intervention
5	800	Redford KH, Fearn Eva (2007) Protected areas and human livelihoods. Working paper no 32. Wildlife Conservation Society.. : . file:///Users/biljanamacura/Dropbox/MapReview all files/Grey Literature/31.10 POv and conservation_MEND/Redford WCS_WorkingPaper_32.pdf	No relevant outcomes
5	801	Sandker Marieke, Campbell Bruce M; Nzoo Zacharie, Sunderland Terry, Amougou Victor, Defo Louis, Sayer Jeffrey (2009) Exploring the effectiveness of integrated conservation and development interventions in a Central African forest landscape. Biodiversity and Conservation. 18(11): 2875-2892.	No relevant outcomes
5	802	Schmidt Sabine M; (2006) Pastoral Community Organization , Livelihoods and Biodiversity Conservation in Mongolia ’ s Southern Gobi Region. USDA Forest Service Proceedings RMRS-P-39., .	No relevant outcomes
5	803	Swiderska K, Roe D, Siegele L, Grieg-Gran Maryanne (2008) The Governance of Nature and the Nature of Governance: Policy that works for biodiversity and livelihoods. IIED, London. : . file:///Users/biljanamacura/Dropbox/MapReview all files/Grey Literature/31.10 POv and conservation_MEND/Swiderska The Governance of Nature.pdf	Country-level/policy analysis
5	804	Waithaka John (2004) Maasai Mara — an ecosystem under siege: an African case study on the societal dimension of rangeland conservation. African Journal of Range & Forage Science. 21(2): 79-88.	No sufficient information on governance
5	805	Wilder Lizzie, Anthem Helen, Mackenzie Catherine, Walpole Matt, Aveling Ros, Ingle Roger ( ) A Compendium of Case Studies, Lessons & Recommendations sharing FFI's experience of Linking Biodiversity Conservation & Human Needs. FFI. : . file:///Users/biljanamacura/Dropbox/MapReview all files/Grey Literature/31.10 POv and conservation_MEND/Wilder Compendium-of-case-studies-lessons-recommendations.pdf	Comment paper or relevant review
5	806	Morris Jason, Thi-Phi Le, Ingles Andrew, Raintree John, Van Duong , Nguyen (2003) Linking Poverty Reduction with Forest Conservation. Case Studies from Vietnam. IUCN, Bangkok, Thailand.. : IUCN.	No relevant outcomes
5	807	Brennan Jean, Johnson Christy, Aggarwal Safia (2003) Biodiversity and Tropical Forest Conservation, Protection and Management in Guyana. : . file:///Users/biljanamacura/Dropbox/MapReview all files/Grey Literature/24.10 USAID MENDELEY/Brennan	Country-level/policy analysis

		PNADF212.pdf	
5	808	USAID (2008) Ethiopia Biodiversity and Tropical Forests. 118/119 Assessment. Biodiversity Analysis and Technical Support. USAID. : . file:///Users/biljanamacura/Dropbox/MapReview all files/Grey Literature/24.10 USAID_MENDELEY/USAID PNADM939.pdf	Country-level/policy analysis
5	809	Kayser Dominique, Sobrevila Claudia, Ledec George (2011) Addo Elephant National Park. From Planning to the Implementation of a Successful Conservation and Socio-Economic Model. WB. : . file:///Users/biljanamacura/Dropbox/MapReview all files/Grey Literature/31.10 WB_MEND/Kayser nado elephant NP.pdf	Comment paper or relevant review
5	810	Craigie Ian D; Baillie Jonathan E.M; Balmford Andrew, Carbone Chris, Collen Ben, Green Rhys E; Hutton Jon M; (2010) Large mammal population declines in Africa's protected areas. Biological Conservation. 143(9): 2221-2228.	No sufficient information on governance
5	811	Fjeldså Jon, Burgess Neil D; Blyth Simon, de Klerk , Helen M (2004) Where are the major gaps in the reserve network for Africa's mammals?. Oryx. 38: 17-25.	No sufficient information on governance
5	812	Watkins CW, Barrett AM, Smith R, Paine JR (1996) Private Protected Areas: A Preliminary Study of Initiatives to conserve biodiversity in selected african countries. WCMC, Cambridge, UK. : . file:///Users/biljanamacura/Dropbox/MapReview all files/Grey Literature/31.10 WCMC_MEND/watkins privateprotected96watk.pdf	No appropriate or relevant comparator
5	813	Kretser Heidi E; Curtis Paul D; Knuth Barbara A; (2009) Landscape, Social, and Spatial Influences on Perceptions of Human–Black Bear Interactions in the Adirondack Park, NY. Human Dimensions of Wildlife. 14(6): 393-406.	No relevant intervention
5	814	Lastarria-Cornhiel S, Barahona Z, Orti L (2008) Promoting transformations by linking nature, wealth and power. Case study: The Women of Isoso: Livelihoods, Governance and Natural Resources in the Gran Chaco, Bolivia. WCS TRANSLINK Program, USAID. : . file:///Users/biljanamacura/Dropbox/MapReview all files/Grey Literature/30.10 WCS_MED/Lastarria-Cornhiel USAID file_20110518_073910_CaseStudy_WomenOfIsoso-Bolivia_VDhH.pdf	No relevant intervention
5	815	Nampindo Simon, Plumptre Andrew (2005) A SOCIO-ECONOMIC ASSESSMENT OF COMMUNITY LIVELIHOODS IN AREAS ADJACENT TO CORRIDORS LINKING QUEEN ELIZABETH NATIONAL PARK TO other protected areas in western Uganda. WCS. : . file:///Users/biljanamacura/Dropbox/MapReview all files/Grey Literature/30.10 WCS_MED/NAMPINDO file_20120127_172931_Conserving+corridors+around+QENP_rUI.pdf	No relevant intervention
5	816	Redford KH, Grippio Catherine (2008) PROTECTED AREAS, GOVERNANCE, and scale. Working Paper no 36. NY: WCS. : . file:///Users/biljanamacura/Dropbox/MapReview all files/Grey Literature/30.10 WCS_MED/REDFORD file_20120123_015951_WCSwp36-- PAs,+governance,+and+scale_TMVwp.pdf	No relevant outcomes

3	817	Bossart, J.L., Opuni-Frimpong, E., Kuudaar, S., Nkrumah, E., 2006. Richness, abundance, and complementarity of fruit-feeding butterfly species in relict sacred forests and forest reserves of Ghana. <i>Biodiversity and Conservation</i> 15, 333–359.	No appropriate or relevant comparator
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**ANNEX 8: CODING TOOL WITH CODE DEFINITIONS AND RATIONALE FOR CODING, INCLUDING CRITICAL APPRAISAL CODES, SCORING SYSTEM AND ABBREVIATIONS USED IN THE MAP**

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<b>Code Name and categories</b>	<b>Definitions</b>	<b>Rationale for the coding</b>
Article ID	Unique ID of the publication	Identification and tracing the evidence
Study ID	Unique ID of the study	Identification and tracing the evidence
Linked study	Article ID of a publication from a same study, 0 if no link	Identification and tracing the evidence
Background publication (yes=1, the main source of information/additional publication that fully fits the inclusion criteria=0)	Publication provides only a background information to the study, but is not by itself includable as a separate study	Identify the main study
Source: 1st search (=1), update search on WOK (=2), bibliography (=3)	Publication search source.	Identification and tracing the evidence
Publ. year	Year when the publication was published	Basic bibliographic characteristics
Full reference	Complete reference	Basic bibliographic characteristics
Short reference	First Author and publication year	Basic bibliographic characteristics
Abstract	If any, copied from the publication	Gives fast and brief study overview
Author's keywords	Keywords stated by the author	Facilitates database browsing
Publication: peer reviewed/published (=1); grey lit. (=2)	Publication is peer-reviewed and published or otherwise?	Classification of evidence type
Publication Type: Journal article (=1); Book chapter (in an edited book) (=2); Book (=3); Thesis or dissertation (=4) Technical report (=5) Conference paper (=6) Other (=7) Cannot tell (=99)		Classification of evidence type

Authorship: academic authors (1), NGO (2), park authority (3), government department (4), other (describe), affiliation unclear (99)		A potential for bias in reporting/conflict of interests
General methodology: Qualitative (=1); Quantitative (=2); Mixed (=3)	1= qualitative data collection and analysis of un-structured or informal interviews, focus groups, participant observation, etc; 2=quantitative data collection and analysis of semi-or structured, interviews, various types of social and ecological surveys, satellite data analysis, etc; 3=the mixed qualitative and quantitative methods	Classification of evidence type
Observational study (=1), Experimental study=0		Classification of evidence type
PA Name	Name(s) of protected area(s) studied	Categorisation of studies by geographical location
IUCN Category (NR=not reported, NA=not applicable)	Reported in the publication or if missing, obtained from the protectedplanet.net, NR= not reported neither in the protected planet nor in the publication. If multiple PAs, use abbreviations of PA names to indicate specific IUCN category	Level of strictness and resource access
Research location: Region	Region of the study location: East Asia, South-East Asia, South Asia, Latin America-central, Latin America-North, Latin America-South, Europe, Africa	Categorisation of studies by geographical location
Research location: Country 1	Country where the research is conducted	Categorisation of studies by geographical location
Research location: Country 2	Second research location	Categorisation of studies by geographical location
Research location: Country 3	Third research location	Categorisation of studies by geographical location
Aim of study (or alternatively research questions)	Copied from the publication	To assess if stated aims correspond to study results
Sample size	Number of PA(s) studied	Methodological details
Multi-site (1=yes)	Studied in more than one country	Methodological details

Broad Outcome: ecological (=1); attitudes (=2); behaviour(=3); spill-over (=4); none relevant (0)	Broad outcome category	Outcome categorisation
Detailed Outcome (NA-not applicable)	Details of the outcomes measured (with the units -e.g.: %)	Outcome detail description
No. of outcomes (NA-not applicable)	Sum of the total number of outcomes reported (1 to 4)	Outcome categorisation
Governance type (general, stated): State (=1), Private (=2), NGO (=3), Community (=4), Co-management (=5), Hybrid/other (describe)	Definitions in the protocol - Macura et al 2013	Intervention description
Comparator(s): Governance change over time in the same PA (=1); Governance compared to other governance regime in different PAs or to an other governance type within the same PA during same time period (=2), or in different forest governance regimes during same time period (3), Other (describe)		Comparator type
Study design: Case study (=1); Case series or Time series (=2); Cross-sectional study (=3); Controlled before-and-after study (=4); Controlled after-only study (=5); Sequential mixed method (=6); Concurrent mixed method design (=7), other (describe)	<b>See the next table</b>	Study quality appraisal -internal validity
Data Collection Tool: Structured survey (=1), Semi-structured survey (=2), Scales (=3), Interview (=4), Focus group (=5), Satellite/areal images (=6), Other (describe)		Methodological details
Local community location: core zone (=1), buffer zone (=2), transition zone(=3), outside PA(=4), inside PA (=5), other (describe); not specified (=99),		Potential reasons for heterogeneity and effect modifiers
Type of the study interviewees/actors: residents (=1), ex-residents (=2), tourists(=3), community leaders(=4), community representatives(=5), park authorities(=6), volunteers(=7), experts(=8), government staff(=9), NGO staff(=10), other(describe), not specified (=99), not applicable (NA)		Methodological details
Additional reported cause of changes (apart from	E.g.: agriculture expansion, population increase,	Potential reasons for



governance) in case of the land use change studies (describe), (NR=not reported, not relevant)	migration, change of the policies,	heterogeneity and effect modifiers
PA establishment year (NR=not reported)	Year when PA was established	Potential reasons for heterogeneity and effect modifiers - for assessing quality of baseline
Status year from protectedplanet.net (NA =not applicable)	From protectedplanet.net	Potential reasons for heterogeneity and effect modifiers - if information from the publication missing
Survey year (NR=not reported)	Year(s) when the research/survey was conducted; or years of analysed satellite images	Potential reasons for heterogeneity and effect modifiers - for assessing quality of baseline
PA size (in km sq., NR=not reported, NA=not applicable)	Size of studied protected areas	Potential reasons for heterogeneity and effect modifiers
Comparator appropriate for governance assessment? Comment (NA=not applicable)	Is comparator relevant for the stated aims and conclusions of the study? Other methodological details?	Study quality appraisal -internal validity
Level of methodological detail: Low=1; Medium=2; High =3;	1=no sufficient details on data collection and/or data analysis procedures, method selection not justified, 2= no important methodological details missing, selection of methods justified and fits the research question; 3=very detailed explanation of the data collection and analysis procedures, info on ethical approval included, study limitation, confounding and biases commented on	Study quality appraisal -internal validity
Measurements of ecological outcomes: subjective/perception based or self-reported (=0); objective (=1).	E.g.: changes in the forest cover assessed through analysis of satellite images versus perception of the changes in forest cover reported by the local people); doesn't apply (=NA)	Study quality appraisal -internal validity

Further comments		Reviewer additional notes and observations for study description
Link in protectedplanet.net		Link to additional information source

<p><b>Study designs definitions</b>  Adapted from: Harris et al. 2006 (<a href="http://www.ncbi.nlm.nih.gov/pmc/articles/PMC1380192/">http://www.ncbi.nlm.nih.gov/pmc/articles/PMC1380192/</a>) and Langerich 2015 (<a href="https://onlinecourses.science.psu.edu/stat507/06/intro">https://onlinecourses.science.psu.edu/stat507/06/intro</a>)</p>
Case study (=1): in-depth non-experimental qualitative study of a single location/protected area/local community within, usually studied over time in a real life context, using documents, interviews, observations. Frequently reports on unusual, extreme or rare cases
Case series or Time series (=2): quantitative non-experimental study in multiple time periods, outcomes measured during the intervention. <b>Before-After (BA) design (=2A):</b> If measurements done before and after intervention
Cross-sectional study (CI) (=3): quantitative non-experimental study conducted in one point of time (e.g. survey), provides a snapshot. Not clearly established if intervention preceded the measured outcomes. Has non-randomly selected control groups.
Controlled before-and-after study (BACI) (=4): quasi-experiment with controls, measure of outcomes before and after the intervention
Controlled after only study (=5): quasi-experiment with controls, measure of outcomes after the intervention ONLY
Sequential mixed method (=6): qual>quant OR quan>qual (CODES FOR EACH PART of the design to be added)
Concurrent mixed method design (=7): qual and quant at the same time (CODES FOR EACH PART of the design to be added)

<b>Abbreviations used in map</b>	
BR	Biosphere Reserve
WHS	World Heritage Site
PA	Protected Area
NOTE: other abbreviations visible in the database are abbreviated PA names	

## ANNEX 9: SYSTEMATIC MAP DATABASE

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Complete database (excel file format) is available from:

<https://www.dropbox.com/s/fj39870rizlid59/Additional%20file%209.xlsx?dl=0>

## ANNEX 10: PROJECT INFORMATION SHEET

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### INFORMATION SHEET FOR PARTICIPANTS - QUESTIONNAIRE

YOU WILL BE GIVEN A COPY OF THIS INFORMATION SHEET

**Research Project Name:** Testing the effectiveness of forest governance mechanisms in conservation policy and practices within protected area: The case of Central Indian Tiger Reserves.

We would like to invite you to take part in this postgraduate research project. Participation is entirely optional, and choosing NOT to take part will not disadvantage you in any way. Before you decide whether you want to take part however, it is important for you to understand why the research is being done and what your participation will involve. Please take time to read the following information carefully and discuss it with others if you wish. Ask us if there is anything that is not clear or if you would like more information.

#### **1. What is the purpose of the study?**

The aims of the research are 1) to analyse tiger conservation practices and policy, 2) compare and evaluate conservation performances of different Reserves in Central India, 3) to improve methodology for evaluation of conservation governance and 4) to design policy recommendations for effective Tiger Reserves.

#### **2. Why have you been invited?**

You have been invited to participate in this research as we think you might provide some key information for the understanding of the governance processes and quality, threats, problems and overall performance of this Reserve in regards to biodiversity conservation.

#### **3. What will you have to do?**

Participants who agree to take part will fill out the questionnaire. This will take approximately 30 minutes.

#### **4. Anonymity and Confidentiality**

Questionnaires will be anonymous and only aggregated data will be used and published. The names of respondents and their organisations will NOT be revealed in the final report. Data will be stored securely and handled according to Code for the Protection of Personal Data (Legislative Decree no. 196/2003, Republic of Italy). Only the researcher and principal supervisor will have access to these data.

#### **4. Do you have to take part?**

It is up to you to decide whether to take part or not. If you do decide to take part you will be given this information sheet to keep and be asked to sign a consent form. If you decide to take part you are still free to withdraw at any time and without giving a reason. In addition to withdrawing yourself from the study, you may also withdraw any data/information you have provided, as long as you request its withdrawal before it is transcribed for use in the final report, by approximately January 2014.

#### **5. Benefits**

Unfortunately there is no payment for taking part in this research.

Researchers hope that the study outcomes will improve conservation practices and policies, while taking into account local population needs.

#### **6. Feedback**

All participants will be provided with a copy of the final report. If you have any questions or concerns, you can contact the researcher and supervisors at University of Padova (Italy) and Bangor University (United Kingdom) using the details below for further advice and information. Also, if you feel you have been harmed in any way as a result of taking part in this research, please contact the supervisor (NOT the researcher) directly.

Researcher: **Biljana Macura** ([biljana.macura@studenti.unipd.it](mailto:biljana.macura@studenti.unipd.it)), PhD student

Principal Supervisor: dr. **Laura Secco** ([laura.secco@unipd.it](mailto:laura.secco@unipd.it))

Department of Land, Environment, Agriculture and Forestry

University of Padova

Viale dell'Università 16, 35020 Agripolis - Legnaro (PD), Italy

Co-Supervisor: prof. **Andrew Pullin** ([a.s.pullin@bangor.ac.uk](mailto:a.s.pullin@bangor.ac.uk))

Centre for Evidence-Based Conservation

School of the Environment, Natural Resources and Geography

Bangor University

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## **INFORMATION SHEET FOR PARTICIPANTS - INTERVIEWS**

YOU WILL BE GIVEN A COPY OF THIS INFORMATION SHEET

**Research Project Name:** Testing the effectiveness of forest governance mechanisms in conservation policy and practices within protected area: The case of Central Indian Tiger Reserves.

We would like to invite you to take part in this postgraduate research project. Participation is entirely optional, and choosing NOT to take part will not disadvantage you in any way. Before you decide whether you want to take part however, it is important for you to understand why the research is being done and what your participation will involve. Please take time to read the following information carefully and discuss it with others if you wish. Ask us if there is anything that is not clear or if you would like more information.

### **1. What is the purpose of the study?**

The aims of the research are 1) to analyse tiger conservation practices and policy, 2) compare and evaluate conservation performances of different Reserves in Central India, 3) to improve methodology for evaluation of conservation governance and 4) to design policy recommendations for effective Tiger Reserves.

### **2. Why have you been invited?**

You have been invited to participate in this research as we think you might provide key information for the understanding of the tiger conservation in India, historical, legal, institutional or social context of it.

### **3. How will you be interviewed and what will happen to the information you provide?**

Participants who agree to take part will be interviewed either in person or by Skype/telephone. Interviews are expected to last up to 1 hour. Interviews will be recorded, subject to your permission. These recordings of interviews will be deleted upon transcription. If you do not wish your interview to be recorded, your responses will be directly transcribed into text.

### **4. Anonymity and Confidentiality**

The names of interviewees and their organisations will NOT be revealed in the final report. Participants will be identified by pseudonym. Lists of these pseudonyms and participant names/addresses will be stored securely and handled according to Code for the Protection of Personal Data (Legislative Decree no. 196/2003, Republic of Italy) during the processing and thereafter, these personal data will be destroyed. Only the researcher and principal supervisor will have access to these data.

#### **4. Do you have to take part?**

It is up to you to decide whether to take part or not. If you do decide to take part you will be given this information sheet to keep and be asked to sign a consent form. If you decide to take part you are still free to withdraw at any time and without giving a reason. In addition to withdrawing yourself from the study, you may also withdraw any data/information you have provided, as long as you request its withdrawal before it is transcribed for use in the final report, by approximately January 2014.

#### **5. Benefits**

Unfortunately there is no payment for taking part in this research.

Researchers hope that the study outcomes will improve conservation practices and policies, while taking into account local population needs.

#### **6. Feedback**

All participants will be provided with a copy of the final report. If you have any questions or concerns, you can contact the researcher and supervisors at University of Padova (Italy) and Bangor University (United Kingdom) using the details below for further advice and information. Also, if you feel you have been harmed in any way as a result of taking part in this research, please contact the supervisor (NOT the researcher) directly.

Researcher: **Biljana Macura** ([biljana.macura@studenti.unipd.it](mailto:biljana.macura@studenti.unipd.it)), PhD student

Principal Supervisor: dr. **Laura Secco** ([laura.secco@unipd.it](mailto:laura.secco@unipd.it))

Department of Land, Environment, Agriculture and Forestry

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Co-Supervisor: prof. **Andrew Pullin** ([a.s.pullin@bangor.ac.uk](mailto:a.s.pullin@bangor.ac.uk))

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## ANNEX 11: PARTICIPANT CONSENT FORM

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Please complete this form after you have read the Information Sheet and/or listened to an explanation about the research.

**Research Project Name:** Testing the effectiveness of forest governance mechanisms in conservation policy and practices within protected area: The case of Central Indian Tiger Reserves.

### *Participant Consent Form*

**Researcher's name** Biljana Macura

The researcher named above has briefed me to my satisfaction on the research for which I have volunteered. I understand that I have the right to withdraw from the research at any point. I also understand that my rights to anonymity and confidentiality will be respected.

I agree to having the interview/discussion recorded. YES ( ) NO ( )

I have read both the notes written above and the Information Sheet about the project, and understand what the research study involves.

Signature of participant .....

Date .....

This form will be produced in duplicate. One copy should be retained by the participant and the other by the researcher.

Bangor University's 'Code of Practice for the Assurance of Academic Quality and Standards of Research Programmes' (Code 03)

<https://www.bangor.ac.uk/ar/main/regulations/home.htm>



## ANNEX 12: INTERVIEW GUIDE FOR FEDERAL AND NATIONAL ACTORS

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- 1) History and changes in management practices within Central Indian Tiger Reserves (CITRs);
- 2) Current establishment, implementation and management process: main actors, strengths and weaknesses of the management authority;
- 3) Governance quality;
- 5) TRs funding and cost-effectiveness;
- 6) Main threats to tiger conservation and to CITRs;
- 7) Local people and tiger conservation in CITRs;
- 8) Perception of CITRs success;
- 9) Future of tiger and CITRs.

**ANNEX 13: QUESTIONNAIRES FOR THE LOCAL COMMUNITY: ECO-DEVELOPMENT**

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**BEFORE YOU START: PLEASE READ THE TEXT BELOW TO EVERY RESPONDENT**

Questionnaire Code: \_\_\_\_\_ Check 1 \_\_\_ Check 2 \_\_\_ Entered \_\_\_

*My name is [full name of enumerator]. I am here on behalf of **Biljana Macura** who is collecting information for her studies. She is a PhD Student and researcher at University of Padova in Italy. Her research is about Tiger reserves governance and welfare of local communities.*

*Participation in this research is entirely voluntary. If you choose to take part in the survey your name will not be recorded and your answers will not be shared under any circumstances with other villagers or the authorities. The findings of this research will appear in aggregated form only. This survey will take approximately 1 hour. You shall not directly benefit from this survey, but it is hoped that thanks to it, a better management of the reserve is achieved. Would you like to continue with the questions?*

**PLEASE FILL IN THE INFORMATION BELOW PRIOR TO THE INTERVIEW. DO NOT ASK.**

<b>Date</b> / ___ / ___ / 14	<b>Interview started at</b> ___:___
<b>Enumerator's Initials:</b>	Unique respondent's ID _____
<b>Village:</b>	Panchayat
<b>Hamlet:</b>	
Distance of the household to the village center (approx.): _____ m _____ min	Distance of the household to the nearest forested area (approx.): _____ m _____ min
<b>ED</b> implemented in the village? YES NO	<b>JFM</b> implemented in the village? YES NO

**PLEASE FILL IN THE INFORMATION BELOW PRIOR TO THE INTERVIEW. DO NOT ASK.**

**House Walls:** 1 = Mud; (putai \_\_\_ w/o putai \_\_\_) 2 = Burnt bricks (cement plaster \_\_ w/o plaster \_\_);

3 = Other material (**describe**) \_\_\_\_\_

**Roof:** 1 = Thatch / grass/bamboo; 2 = Iron / metal/asbestos sheets;

3 = Tiles; 4 = Other material (**describe**) \_\_\_\_\_

**Floor:** 1 = Mud; 2 = Floor tiles; 3 = Cement; 4 = Other material (**describe**) \_\_\_\_\_

**ASK FOLLOWING QUESTIONS:**

1. What is your first name (or nickname)? **Surname is not needed!** \_\_\_\_\_

2. Gender **CIRCLE:** Male = 1, Female = 0

3. What is your age? \_\_\_\_\_ (**IF UNSURE, ADD 900 TO THE AGE. E.G. APPROX. 30 = 930**)

4. How long have you lived in this village? \_\_\_\_\_ Years

**IF ALL HIS/HER LIFE, WRITE DOWN RESPONDENT AGE. IF IN MONTHS ADD "M" IN FRONT OF THE NUMBER - >> GO TO Q7 if person is not an immigrant**

5. Where have you lived before? Indicate the Tehsil: \_\_\_\_\_

6. Why immigrated here? **CIRCLE:** 1 = marriage; 2 = job opportunity;

3 = other (**DESCRIBE**)

\_\_\_\_\_

7. What is the highest level of formal education you have? **CIRCLE ONE NUMBER BELOW**

0 = none; 1 = 1st – 4th; 2 = 5th – 7th; 3 = 8th – 10th; 4 = 11th – 12th; 5 = University

8. What is your caste/tribe? \_\_\_\_\_

**HOUSEHOLD CHARACTERISTICS**

9. Are you head of the household? **CIRCLE: Yes = 1 No = 0, I'm his/hers:**

\_\_\_\_\_

10. Are you living in a 1 = single or in a 2 = a joint family? **CIRCLE NUMBER: 1 2**

11. How many people live in this household in total (**INCLUDING YOU**)? \_\_\_\_\_  
(number)

12. Please list the household members **excluding you**. Only first names /nicknames/initials are needed. Gender CODES Male = 1, Female = 0; Education level CODES: 0 = none; 1 = 1st – 4th;

2 = 5th – 7th; 3 = 8th – 10th; 4 = 11th – 12th; 5 = University.

Name/Nickname	Age	Gender	Formal Education Level					
		1 0	0	1	2	3	4	5
		1 0	0	1	2	3	4	5
		1 0	0	1	2	3	4	5
		1 0	0	1	2	3	4	5
		1 0	0	1	2	3	4	5
		1 0	0	1	2	3	4	5
		1 0	0	1	2	3	4	5

		1 0	0	1	2	3	4	5
		1 0	0	1	2	3	4	5
		1 0	0	1	2	3	4	5

### HOUSEHOLD INCOME and OCCUPATION

13. Which work is **household head's principal and long-term** occupation? **Do not ask, but select options while subject is answering:** 1 = agriculture; 2 = wage **labour**; 3 = livestock rearing; 4 = selling forest produce; 5 = **Forest Department labour**; 6 = other (describe)\_\_\_\_\_

14. How many persons in your household are currently employed/receiving regular salary/pension/ (**INCLUDING YOU**)? \_\_\_\_\_(number needed)

15. Including all the people in your household, how many rupees was your total household cash income last month? (**Consider** all the household members who are working)

\_\_\_\_\_ **RS. If The answer is "No income last month" ask how much person earned in last 6 months and put "6M" in front of the answer. If person reluctant to answer, write "NA"**

16. Has your total household cash income changed since 8 years ago/2006? (**CIRCLE NUMBER**)

1 = decreased, 2 = increased, 3 = no change

**If changed, WHAT IS THE MAIN REASON:**

\_\_\_\_\_

### HOUSEHOLD ASSETS

17. Please Indicate **how many items** your household own (number needed)

Car/Jeep/Van /\_\_\_/ Tractor /\_\_\_/ Animal-cart /\_\_\_/ Scooter/ Motorcycle /\_\_\_/  
 Bicycle /\_\_\_/ Radio/Transistor /\_\_\_/ Television /\_\_\_/ Mobile phone /\_\_\_/  
 Satellite dish /\_\_\_/ Gas stove /\_\_\_/ Kerosene stove /\_\_\_/

18. Do you have electricity in your household? **CIRCLE OPTION:** Yes = 1, No = 0

19. Do you have drinking water facilities in your household?

(E.g. well or pump belonging to your household only) **CIRCLE:** Yes = 1 No = 0

20. Do you have a toilet in your household? **CIRCLE:** Yes = 1 No = 0

21. Do you have a Ration Card? **CIRCLE:** Yes = 1 No = 0

**LIVESTOCK OWNERSHIP**

22. Do you or people from your household own any livestock? **CIRCLE:** Yes = 1 No = 0

**If the answer is NO, GO to Q25**

23. In your household, how many do you own (number needed):

**Pigs** /\_\_\_/ **Chicken** /\_\_\_/ **Goats** /\_\_\_/ (normal) **Cows** /\_\_\_/ **Milch Cows** /\_\_\_/ **Bulls** /\_\_\_/  
**Buffaloes** /\_\_\_/

24. Where do you graze your livestock? **DO NOT ASK, JUST CIRCLE WHILE PERSON IS ANSWERING:** 1 = **Pench TR**, 2 = closest (territorial) forest, 3 = agricultural land, 5 = other area (**describe**) \_\_\_\_\_

25. When compared to 8 years ago, has livestock number changed (including chicken, pigs, cows, goats or bulls and buffaloes)? (**CIRCLE NUMBER**) **Number** 1 = decreased; 2 = increased; 3 = no change;

**LAND OWNERSHIP and PROPERTY RIGHTS**

26. Does your household own any land? **CIRCLE:** Yes = 1 No = 0; **IF “NO”, GO TO Q:28**

27. How many acres of land does your household own? \_\_\_\_\_ **Acres**

28. Does your household lease in any land? **CIRCLE:** Yes = 1 No = 0

Adhai		Bathai	
-------	--	--------	--

29. How many acres did your household lease in this year? \_\_\_\_\_ **Acres**

30. **SKIP IF NO LAND:** Does your household **lease out** any land? **CIRCLE:** Yes = 1 No = 0

Adhai		Bathai	
-------	--	--------	--

31. **SKIP IF NO LAND:** How many acres did you household lease out this year?  
\_\_\_\_\_ **Acres**

32. Does your household use any land for agriculture? **CIRCLE:** Yes = 1 No = 0

33. How many acres of land does your household use for agriculture? \_\_\_\_\_ **Acres**

34. Who is the **legal owner** of the land you cultivate? 1 = you, 2 = member of the household,  
3 = it is a forest land; 4 = it is a revenue land; 5 = private lease; 6 = other (describe)  
\_\_\_\_\_

**OTHER LIVELIHOOD ACTIVITY**

35. Does your household have adequate food the whole year? **CIRCLE:** 1 = Yes, during whole year; 2 = Not sufficient for the whole year, 3= other (describe) \_\_\_\_\_

36. Did your household have problems of satisfying the food needs 8 years ago?

We faced this problem: 1= Frequently; 2 = Occasionally; 3 = Rarely; 4 = Never

37. Do you or someone from your household gather forest produce? **MULTIPLE ANSWERS POSSIBLE:** 0 = none, 1 = fuel-wood; 2 = timber; 3 = tendu; 4 = mahua 5 = medicinal plants 6 = fodder, 7 = bamboo; 8 = any other NTFP (e.g. honey, char, harra, lac) (**describe**) \_\_\_\_\_

38. These forest produce you 1 = sell, 2 = use for household needs, 3 = both?

39. From which forest areas are you collecting fuel-wood, fodder or any other forest produce?

FUELWOOD: \_\_\_\_\_ How long does it take to reach there? \_\_\_ hrs \_\_\_ km

FODDER: \_\_\_\_\_ -/- \_\_\_ hrs \_\_\_ km

OTHER (SPECIFY) \_\_\_\_\_ (*location*): \_\_\_\_\_

How long does it take to reach there: **hrs** \_\_\_ **km** \_\_\_

**PUT CODE below AS PERSON IS SPEAKING:** 1 = PENCH TR, 2 = closest (territorial) forest, 3 = agricultural land, 4 = other

40. Which fuel does your household use for cooking?

**CIRCLE:** 1 = fuel-wood; 2 = LPG, 3 = Kerosene; 4 = Dung; 5 = OTHER (**describe**)

\_\_\_\_\_

41. How much does your household use fuel-wood per day? \_\_\_\_\_ kg

42. When you compare to 8 years ago/2006, fuel-wood usage for your household needs

1 = decreased; 2 = increased; 3 = remained the same?

43. Taking everything into account, can you tell me all the SOURCES of your livelihood

- both cash and non-cash - during the past year?

(e.g.: agriculture, livestock rearing, fuel-wood and NTFP gathering, wage labour/MNREGA etc.)

**If answer is in days: PUT "D" IN FRONT OF THE ANSWER**

**Source of livelihood:**

**Months/year of work:**

1) \_\_\_\_\_ a) how many months per year (approx.) \_\_\_\_\_

2) \_\_\_\_\_ b) -/- \_\_\_\_\_

3) \_\_\_\_\_ c) -/- \_\_\_\_\_

4) \_\_\_\_\_ d) -/- \_\_\_\_\_

5) \_\_\_\_\_ e) -/- \_\_\_\_\_



**ECO - DEVELOPMENT**

44. Do you know what eco-development project is? **CIRCLE:** Yes = 1 No = 0

*If answer is "NO", read the following: "Eco-development is an initiative from the Tiger Reserve authorities for the villages in the buffer zone/in surrounding zone of the Reserve"*

**If the answer is still "NO", GO TO Q:72**

45. Are you (or someone from your family) an ED committee member? **CIRCLE:** Yes = 1 No = 0

46. Is your **HOUSEHOLD** an ED beneficiary? **CIRCLE:** Yes = 1 No = 0

**If answer is "NO" GO to Q51**

47. Please list which benefits your household received from ED (including micro-loans if any):

1= \_\_\_\_\_ Which Year? \_\_\_\_\_ 2= \_\_\_\_\_ Which year? \_\_\_\_\_

3= \_\_\_\_\_ Which Year? \_\_\_\_\_ 4= \_\_\_\_\_ Which Year? \_\_\_\_\_

5= \_\_\_\_\_ Which Year? \_\_\_\_\_ 6= \_\_\_\_\_ Which Year? \_\_\_\_\_

48. Have your household got the assets or items you requested from EDC?

**CIRCLE:** Yes = 1 No = 0

49. Does your household utilize these provisions? **DON'T READ OPTIONS,**

**CIRCLE WHILE PERSON IS ANSWERING:** 1 = Yes 2 = No, I've sold them; 3 = No, I've gifted them; 4 = OTHER \_\_\_\_\_

50. How useful/needed are those items for your household?

Not useful at all	Not useful	Useful	Very useful	Don't know
1	2	3	4	6

51. Have you or someone from your household got **EMPLOYED** under the ED project?  
**READ TO THE RESPONDENT. YOU MAY CIRCLE MORE THAN 1 OPTION:** 0 = NO EMPLOYEMENT; 1 = tourist guide; 2 = driver for tourists; 3 = patrolling with the FD; 4 = OTHER (**describe**):

---

**If the person hasn't got employment through ED, GO TO Q54**

52. Which year you or someone from your household got the employment?

1= \_\_\_\_\_ Which Year? \_\_\_\_\_ 2= \_\_\_\_\_ Which Year? \_\_\_\_\_

3= \_\_\_\_\_ Which Year? \_\_\_\_\_ 4= \_\_\_\_\_ Which Year? \_\_\_\_\_

53. Is the occupation you/some from your family received under Eco-development, sufficient to support you and your family? **CIRCLE:** Yes = 1, No = 0

54. Has your **VILLAGE** received any help through Eco-Development project?

**CIRCLE:** Yes = 1 No = 0 Don't know = 2

**If the answer is NO or Don't know, GO TO Q58**

55. What provisions your **VILLAGE** got?

1= \_\_\_\_\_ Year? \_\_\_\_\_ 2= \_\_\_\_\_ Year? \_\_\_\_\_

3= \_\_\_\_\_ Year? \_\_\_\_\_ 4= \_\_\_\_\_ Year? \_\_\_\_\_

—

5= \_\_\_\_\_ Year? \_\_\_\_\_ 6= \_\_\_\_\_ Year? \_\_\_\_\_

—

56. How useful/needed are those provisions for your village?

Not useful at all	Not useful	Useful	Very useful	Don't know
1	2	3	4	6

57. In your opinion, how does the village use and maintain those provisions?

Very badly	Badly	Neither well not bad	Well	Very well	Don't know
1	2	3	4	5	6

58. In your opinion, who does MOSTLY benefit from Eco-Development project?

**You may choose only one option from below.**

0 = Don't Know; 1 = Forest and Wildlife; 2 = Your household; 3 = Your village; 4 = Important people in the village; 5 = Forest Department; 6 = No one; 7 = OTHER (describe)\_\_\_\_\_

59. Do you know **WHY** are provisions being given through Eco-Development project?

***DON'T READ, CHOOSE ONLY 1 OPTION WHILE PERSON IS SPEAKING***

0 = Don't know; 1 = to reduce pressure on forest; 2 = OTHER (DESCRIBE)\_\_\_\_\_;

60. Are there ED committee meetings in this village?

0 = No meetings at all; 1 = I'm not aware if there are meetings; 2 = Yes, but meeting schedule is not fixed, 3 = Yes and meeting schedule is fixed to \_\_\_\_\_ a year/month; 4 = Yes, but I don't know the meeting schedule; 5 = Other:

\_\_\_\_\_

**IF "NO MEETINGS AT ALL", GO TO Q:68**

61. If there are meetings, are you (or someone from your family) attending them?

**CIRCLE:** Yes = 1, No = 0

**>>> IF "NO": GO TO Q:62, IF "YES": GO TO Q:63 <<<**

62. If NO, why are you (or someone from your family) not attending the meetings?

**DO NOT READ, CIRCLE WHILE RESPONDENT IS ANSWERING:**

1 = my voice cannot be heard, so why should I come; 2 = no provisions, so why should I come;

3 = I don't trust committee members; 4 = I am not invited; 5 = OTHER  
(describe)\_\_\_\_\_

>>> **SKIP Q: 63 to 67 and GO TO Q:68** <<<

63. If YES, how many meetings have you (or someone from your family) attended in the last 12 months? \_\_\_\_\_ (number)

64. Do you (or someone from your family) have opportunity to speak during these meetings?

Always	Very frequently	Occasionally	Sometimes But Infrequently	Never
5	4	3	2	1

65. Do you feel that opinion of yours or of someone from your family that attend meeting can be heard during the meetings? **CIRCLE**: Yes = 1 No = 0

66. Do you think the way in which decisions are made during the ED meetings and within committee members is **fair/just**? I'm referring to decisions regarding demand or distribution of ED provisions **CIRCLE**: Yes = 1 No = 0 Don't know = 2

67. Are you and your family **sufficiently informed** about the decisions during the ED meetings regarding demand or distribution of ED provisions? **CIRCLE**: Yes = 1 No = 0 Don't know = 2

68. Has **Eco-development project** in last 8 years caused any of the following (see below). **Circle the number**: 1 = worsened/decreased; 2 = improved/increased; 3 = no change; 4 = don't know

1. Development of your village?	1 3	2 4
2. Economic status of you and/or your family?	1 3	2 4
3. Dependency of your household on the forest produce?	1 3	2 4
4. Level of village cooperation with the Forest Department on fire control?	1 3	2 4
5. Frequency of reporting of illegal activities by village to FD?	1 3	2 4
6. Level of your satisfaction with the Forest Department?	1 3	2 4
7. Level of your trust in Forest Department to work in the interest of you and your village?	1 3	2 4

69. Please list all the GOOD SIDES OF ECO-DEVELOPMENT according to your opinion?

**DON'T READ the OPTIONS:** 0 = don't know; 1 = no good sides; 2 = other (describe):

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70. Please list all the BAD SIDES OF ECO-DEVELOPMENT according to your opinion?

**DON'T READ the OPTIONS:** 0 = don't know; 1 = no bad sides; 2 = other (describe):

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71. What is your overall perception about ED?

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Very negative	Negative	Neither negative nor positive	Positive	Very positive	Don't know
1	2	3	4	5	6

134. Is there anything you would like to change in how eco-development committee operates? **(describe)**

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**TIGER RESERVE**

72. Do you know about the [NAME] Tiger Reserve (incl. Park and Sanctuary)?

**CIRCLE:** Yes = 1 No = 0 >>>> IF NO, ASK ABOUT *PARK or SANCTUARY*

73. What are the advantages of living next to Tiger Reserve (incl. Park and Sanctuary)? **Please describe. DON'T READ, CIRCLE WHILE RESPONDENT IS ANSWERING**

0 = no advantages, 1 = don't know, 2 = too far to get advantages; 3 = OTHER (list below):

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74. What are the disadvantages of living next to tiger reserve? **Please describe**

**DON'T READ, CIRCLE WHILE RESPONDENT IS ANSWERING**

0 = no disadvantages; 1= don't know; 2 = crop loss due to wild animals; 3 =OTHER (List below):

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75. Have you ever being disturbed by the wild animals? **MULTIPLE ASNWERS POSSIBLE:**  
0 = NO,

1 = Wild animals destroyed your crops, 2 = Attacked and/or killed your livestock; 3 = Injured you or a member of your family; 4 = OTHER (**describe**)

---

76. If **YES**, how frequently are you being disturbed by the wild animals?

*A* = during specific season (e.g. crop, scarcity of water in forest) ----- *B* = all year long

1 = every day; 2 = twice a week; 3 = once a week; 4 = twice a month; 5 = once a month;  
6 = twice a year 7 = other (describe) \_\_\_\_\_

77. Has the number of experiences of disturbance due to wild animals changed since past 8 years?

**CIRCLE:** 1 = decreased; 2 = increased; 3 = Haven't changed

78. Have you received compensation for disturbances caused by the wild animals? 1 = Yes, whenever I applied I got; 2 = yes, I applied but I only get compensation sometimes, 3 = no, I applied but never got; 4 = no, I never applied for compensation

**LEGAL AWARENESS**

79. Do you know clearly where are the boundaries of the core zone of the Tiger Reserve (incl. Park and Sanctuary)? **CIRCLE:** Yes = 1 No = 0

80. Can you please describe what is your understanding of the “buffer zone” concept?  
\_\_\_\_\_  
\_\_\_\_\_

81. Do you know clearly where are the boundaries of the buffer zone of the Tiger reserve?

**CIRCLE:** Yes = 1 No = 0

82. Which activities are **banned** in the Tiger Reserve? Please briefly describe

1) Core (incl. Park and Sanctuary): \_\_\_\_\_

2) Buffer/surrounding forests:  
\_\_\_\_\_

83. In case you are forced to do these (banned) activities to get forest resources for you and your household, what would you do? **DO NOT READ OPTIONS BELOW, JUST SELECT ONE WHILE THE RESPONDENT IS SPEAKING** 0 = nothing; 1 = ask FD permission; 2 = go illegal; 3=bribe; 4=other (**describe**)

---

84. Why do you think these activities are restricted in the Tiger reserve? Please describe

1) Core (incl. Park and Sanctuary): \_\_\_\_\_

2) Buffer/surrounding forests: \_\_\_\_\_

85. Which activities are **allowed** in the Tiger Reserve? Please describe

1) Core (incl. Park and Sanctuary) \_\_\_\_\_

2) Buffer/surrounding forests: \_\_\_\_\_

86. Do you know which rights are provided through **Forest (Tribal) Right Act**?

0 = I don't know about the ACT; 1 = I know about the following rights of this Act:

**(DON'T READ THE OPTIONS, JUST Circle WHILE PERSON IS ANSWERING:**

1) Individual property rights; 2) community rights/nistar; 3) access to forest produce; 4) right to protect common forest land; 5) ANY OTHER: \_

---

87. Have you applied for the provisions of this Act? **CIRCLE:** Yes = 1 No = 0

**BIODIVERSITY CONDITION IN THE TIGER RESERVE: core and buffer**

88. Please rate the **current overall condition of the forest** in the Tiger Reserve (incl. Park and Sanctuary) on the scale from 1 to 5: 1 means forest is in very bad condition, and 5 means forest is in very good condition.

/ \_\_\_ / **Tick this box if the respondent doesn't know about the Tiger reserve/core zone but refers to the forest of the buffer/forest surrounding core zone.**

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	Very bad	Bad	Neither bad nor good	Good	Very good	Don't know
NTFP	1	2	3	4	5	6
Fuel-wood	1	2	3	4	5	6
Forest density	1	2	3	4	5	6
Fodder	1	2	3	4	5	6

89. What factors do you think have led to the current state of the forest?

---

90. In your opinion, overall condition of the forest in the Tiger Reserve since 8 years ago has:

**NTFP**                    1 = Decreased, 2= Increased, 3 = Haven't changed

**Fuelwood**            1 = Decreased, 2= Increased, 3 = Haven't changed

**Forest density**    1 = Decreased, 2= Increased, 3 = Haven't changed

**Fodder**                1 = Decreased, 2= Increased, 3 = Haven't changed

**/ \_\_\_ / Tick this box if the respondent doesn't know about the Tiger reserve/core zone but refers to the forest of the buffer/forest surrounding core zone**

91. If the condition of the forest in the Tiger Reserve **has changed** in comparison to 8 years ago, whether this change affected your household? CIRCLE: YES = 1 NO = 0 Don't know = 2

IF NO or DON'T KNOW, GO TO Q:93

92. Which positive or negative effects has your household experienced from these changes?

---

93. Please rate the **current abundance of wildlife (animals)** in the forest in the Tiger Reserve.

**/ \_\_\_ / Tick this box if the respondent doesn't know about the Tiger reserve/core zone but refers to the forest of the buffer/forest surrounding core zone**

---

Very scarce	Scarce	Neither scarce nor abundant	Abundant	Very abundant	Don't know
1	2	3	4	5	6

94. In your opinion, the abundance of wildlife in the forest of the Tiger Reserve since 8 years ago has:

**1 = Decreased, 2= Increased, 3 = Haven't changed**

**/ \_\_\_ / Tick this box if the respondent doesn't know about the Tiger reserve/core zone but refers to the forest of the buffer/forest surrounding core zone**

95. How much do you like or dislike:

	Strongly dislike	Dislike	Neither like nor dislike	Like	Like very much	Don't know
Forest	1	2	3	4	5	6
Tiger	1	2	3	4	5	6
Other wild animals	1	2	3	4	5	6

96. In the past 12 months, can you tell how many people have you seen collecting resources from this Tiger Reserve (including collection of fuel wood, fodder, medicinal plants, livestock grazing, hunting and fishing)?

Very few	Few	Some	Many	A great deal;	Don't know
1	2	3	4	5	6

97. Compared to 8 years ago, do you observe more or less people collecting resources from this Tiger reserve? **Number of people:**

**1 = Decreased, 2= Increased, 3 = Haven't changed**

98. In the past 12 months, how frequently had a forest officer stopped people from your village from entering the Reserve to collect forest produce, to graze livestock, to hunt or fish? /\_\_\_/ **Tick this box if the respondent doesn't know about the Tiger reserve/core zone but refers to the forest of the buffer/forest surrounding core zone**

Very Rarely	Rarely	Occasionally	Frequently	Very Frequently	Don't know
1	2	3	4	5	6

99. Compared to 8 years ago, do you think the forest officers are stopping people more or less frequently from entering Tiger Reserve to collect forest produce, to graze livestock, to hunt or fish? /\_\_\_/ **Tick this box if the respondent doesn't know about the Tiger reserve/core zone but refers to the forest of the buffer/forest surrounding core zone**

**Frequency: 1 = Decreased, 2= Increased, 3 = Haven't changed**

100. What do you think about the current type of conservation measures in this Tiger Reserve?

Circle number in front of **only one answer**.

1 = Too restrictive, more access to forest should be allowed

2 = About the right level of the law enforcement and conservation

3 = Too lax, too many people are entering the Reserve and jeopardizing its future

101. What would be the most effective way to preserve forest and wildlife of this Tiger Reserve?

1 = Strong law enforcement by Forest Department only through constant patrolling in the Reserve

2 = Collaboration between local people and Forest Department with a combination of law enforcement and local people participation

3 = Community-based participatory management with ONLY local people as stewards of the Reserve

4 = Other

(describe) \_\_\_\_\_

102. Taking everything into account, how much are you satisfied with the Tiger Reserve Management Authority?

Very unsatisfied	Unsatisfied	Neither satisfied nor unsatisfied	Satisfied	Very satisfied	Don't know
1	2	3	4	5	6

103. Has your level of satisfaction with the Tiger Reserve Management Authority since 2006/8 years ago **1 = decreased; 2 = increased, 3 = haven't changed, 4 = don't know?**

104. How much do you trust the Tiger Reserve Management Authority to work in your interest?

Not at all	Not very much	Neither trust nor distrust	A fair amount	A lot	Don't know
1	2	3	4	5	6

105. In the past 8 years, has the level of trust towards Tiger Reserve Management Authority to work in your **interest 1 = worsened, 2 = improved or 3 = remained the same?**

106. Has the accountability of Tiger Reserve Management Authority changed since 8 years ago/2006? By “**accountability**”/”**responsibility**” I mean justifications of actions or decisions to you. **CIRCLE: 1 = Decreased, 2= Increased, 3 = Haven't changed, 4 = Don't know**

### INSTITUTIONS and SOCIAL CAPITAL

107. Are you or someone from your family a member of any groups/associations in the village?

0 = NONE; 1 = **SHG**; 2 = MP Forest Department groups, 3 = **LAMPS**; 4 = other groups related to forest use/conservation (describe)\_\_\_\_\_; 5 = Panchyat; 6 = Other (describe):\_\_\_\_\_

**If NONE, SKIP TO Q:109**

108. How frequently are you attending meetings of those groups (**Write 0 if no answer**):

<b>Group?</b>	
---------------	--

1= _____ How Frequently? _____ a month/a year ( <b>circle as appropriate</b> )
2= _____ How Frequently? _____ a month/a year ( <b>circle as appropriate</b> )
3= _____ How Frequently? _____ a month/a year ( <b>circle as appropriate</b> )

109. In the past 12 months, have you done the following (**circle number, multiple options possible**)

- 1 = Attended a village meeting
- 2 = Carried out voluntary/unpaid work
- 3 = Participated in any other community association
- 4 = Took positive action about a local issue (e.g. improving the local environment, campaigning on local issues, organizing a local event)?
- 5 = Have done a favour for a neighbour
- 6 = Voted in the last election

110. Would you say that most people in this village could be trusted to work in your interest?

Not at all	Not very much	I neither trust nor distrust	A fair amount	A lot	Don't know
1	2	3	4	5	6

111. Would you say that village leaders could be trusted to work in your interest?

Not at all	Not very much	I neither trust nor distrust	A fair amount	A lot	Don't know
1	2	3	4	5	6

112. Has the accountability of **village leaders/heads** changed since 8 years ago/2006?

By “**accountability/responsibility**” I mean justification of actions or decisions. **CIRCLE**: 1 = Decreased, 2 = Increased, 3 = Haven’s changed

**THANK YOU VERY MUCH FOR HAVING PARTICIPATED IN THIS SURVEY!**

**- Please make sure all the questions are answered. -**

<b>Do you have any comments?</b>
<b>Time interview ENDED:</b> ____:____
Who was else present during the interview?
<b>FOR ENUMERATOR: Please write down all the important notes and observations during the interview</b>

## ANNEX 14: QUESTIONNAIRES FOR THE LOCAL COMMUNITY: JOINT FOREST MANAGEMENT

### SURVEY FOR THE VILLAGES UNDER JOINT FOREST MANAGEMENT

Questionnaire Code: _____	Check 1 ___ Check 2 ___ Entered ___
---------------------------	-------------------------------------

**BEFORE YOU START: PLEASE READ THE TEXT BELOW TO EVERY RESPONDENT**

*My name is [full name of enumerator]. I am here on behalf of **Biljana Macura** who is collecting information for her studies. She is a PhD Student and researcher at University of Padova in Italy. Her research is about Tiger reserves governance and welfare of local communities.*

*Participation in this research is entirely voluntary. If you choose to take part in the survey your name will not be recorded and your answers will not be shared under any circumstances with other villagers or the authorities. The findings of this research will appear in aggregated form only. This survey will take approximately 1 hour. You shall not directly benefit from this survey, but it is hoped that thanks to it, a better management of the reserve is achieved. Would you like to continue with the questions?*

**PLEASE FILL IN THE INFORMATION BELOW PRIOR TO THE INTERVIEW. DO NOT ASK.**

<b>Date</b> / ___ / ___ / 14	<b>Interview started at</b> ___:___
<b>Enumerator's Initials:</b>	Unique respondent's ID _____
<b>Village:</b>	Panchayat
<b>Hamlet:</b>	
Distance of the household to the village center (approx.): _____ m _____ min	Distance of the household to the nearest forested area (approx.): _____ m _____ min

<b>ED</b> implemented in the village? YES NO	<b>JFM</b> implemented in the village? YES NO
--	---

**PLEASE FILL IN THE INFORMATION BELOW PRIOR TO THE INTERVIEW. DO NOT ASK.**

**House Walls:** 1 = Mud; (putai \_\_\_ w/o putai \_\_\_) 2 = Burnt bricks (cement plaster \_\_ w/o plaster \_\_); 3 = Other material  
**(describe)** \_\_\_\_\_

**Roof:** 1 = Thatch / grass/bamboo; 2 = Iron / metal/asbestos sheets;  
3 = Tiles; 4 = Other material **(describe)** \_\_\_\_\_

**Floor:** 1 = Mud; 2 = Floor tiles; 3 = Cement; 4 = Other material  
**(describe)** \_\_\_\_\_

**ASK FOLLOWING QUESTIONS:**

1. What is your first name (or nickname)? **Surname is not needed!** \_\_\_\_\_
  2. Gender **CIRCLE:** Male = 1, Female = 0
  3. What is your age? \_\_\_\_\_ **(IF UNSURE, ADD 900 TO THE AGE. E.G. APPROX. 30 = 930)**
  4. How long have you lived in this village? \_\_\_\_\_ Years
- IF ALL HIS/HER LIFE, WRITE DOWN RESPONDENT AGE. IF IN MONTHS ADD "M" IN FRONT OF THE NUMBER - >> GO TO Q7 if person is not an immigrant**
5. Where have you lived before? Indicate the Tehsil: \_\_\_\_\_
  6. Why immigrated here? **CIRCLE:** 1 = marriage; 2 = job opportunity;  
3 = other **(DESCRIBE)**  
\_\_\_\_\_



7. What is the highest level of formal education you have? **CIRCLE ONE NUMBER BELOW**

0 = none; 1 = 1st – 4th; 2 = 5th – 7th; 3 = 8th – 10th; 4 = 11th – 12th; 5 = University

8. What is your caste/tribe? \_\_\_\_\_

**HOUSEHOLD CHARACTERISTICS**

9. Are you head of the household? **CIRCLE: Yes = 1 No = 0, I'm his/hers:**

\_\_\_\_\_

10. Are you living in a 1 = single or in a 2 = a joint family? **CIRCLE NUMBER: 1 2**

11. How many people live in this household in total (**INCLUDING YOU**)? \_\_\_\_\_  
(number)

12. Please list the household members **excluding you**. Only first names /nicknames/initials are needed. Gender CODES Male = 1, Female = 0; Education level CODES: 0 = none; 1 = 1st – 4th;

2 = 5th – 7th; 3 = 8th – 10th; 4 = 11th – 12th; 5 = University.

Name/Nickname	Age	Gender	Formal Education Level					
		1 0	0	1	2	3	4	5
		1 0	0	1	2	3	4	5
		1 0	0	1	2	3	4	5
		1 0	0	1	2	3	4	5
		1 0	0	1	2	3	4	5
		1 0	0	1	2	3	4	5
		1 0	0	1	2	3	4	5

		1 0	0	1	2	3	4	5
		1 0	0	1	2	3	4	5
		1 0	0	1	2	3	4	5

**HOUSEHOLD INCOME and OCCUPATION**

13. Which work is **household head’s principal and long-term** occupation? **Do not ask, but select options while subject is answering:** 1 = agriculture; 2 = wage labour; 3 = livestock rearing; 4 = selling forest produce; 5 = **Forest Department labour**; 6 = other (describe) \_\_\_\_\_

14. How many persons in your household are currently employed/receiving regular salary/pension/ (**INCLUDING YOU**)? \_\_\_\_\_ (number needed)

15. Including all the people in your household, how many rupees was your total household cash income last month? (**Consider** all the household members who are working)

\_\_\_\_\_ **RS. If The answer is “No income last month” ask how much person earned in last 6 months and put “6M” in front of the answer. If person reluctant to answer, write “RA”**

16. Has your total household cash income changed since 8 years ago/2006? (**CIRCLE NUMBER**)

1 = decreased, 2 = increased, 3 = no change

**If changed, WHAT IS THE MAIN REASON:**

\_\_\_\_\_

**HOUSEHOLD ASSETS**

17. Please Indicate **how many items** your household own (number needed)

**Car/Jeep/Van /\_\_\_/ Tractor /\_\_\_/ Animal-cart /\_\_\_/ Scooter/ Motorcycle /\_\_\_/ Bicycle /\_\_\_/ Radio/Transistor /\_\_\_/ Television /\_\_\_/ Mobile phone /\_\_\_/ Satellite dish /\_\_\_/ Gas stove /\_\_\_/ Kerosene stove /\_\_\_/**

18. Do you have electricity in your household? **CIRCLE OPTION:** Yes = 1, No = 0

19. Do you have drinking water facilities in your household?

(E.g. well or pump belonging to your household only) **CIRCLE:** Yes = 1 No = 0

20. Do you have a toilet in your household? **CIRCLE:** Yes = 1 No = 0

21. Do you have a Ration Card? **CIRCLE:** Yes = 1 No = 0

### LIVESTOCK OWNERSHIP

22. Do you or people from your household own any livestock? **CIRCLE:** Yes = 1 No = 0

If the answer is NO, **GO to Q25**

23. In your household, how many do you own (number needed):

**Pigs** / \_\_\_ / **Chicken** / \_\_\_ / **Goats** / \_\_\_ / (normal) **Cows** / \_\_\_ / **Milch Cows** / \_\_\_ / **Bulls**  
/ \_\_\_ / **Buffaloes** / \_\_\_ /

24. Where do you graze your livestock? **DO NOT ASK, JUST CIRCLE WHILE PERSON IS ANSWERING:** 1 = **Pench TR**, 2 = closest (territorial) forest, 3 = agricultural land, 5 = other area (**describe**) \_\_\_\_\_

25. When compared to 8 years ago, has livestock number changed (including chicken, pigs, cows, goats or bulls and buffaloes)? (**CIRCLE NUMBER**) **Number** 1 = decreased; 2 = increased; 3 = no change;

### LAND OWNERSHIP and PROPERTY RIGHTS

26. Does your household own any land? **CIRCLE:** Yes = 1 No = 0; **IF "NO", GO TO Q:28**

27. How many acres of land does your household own? \_\_\_\_\_ **Acres**

28. Does your household lease in any land? **CIRCLE:** Yes = 1  
No = 0

Adhai		Bathai	
-------	--	--------	--

29. How many acres did your household lease in this year? \_\_\_\_\_ **Acres**

30. **SKIP IF NO LAND:** Does your household **lease out** any land? **CIRCLE:** Yes = 1 No = 0

Adhai		Bathai	
-------	--	--------	--

31. **SKIP IF NO LAND:** How many acres did you household lease out this year?  
\_\_\_\_\_ **Acres**

32. Does your household use any land for agriculture? **CIRCLE:** Yes = 1 No = 0

33. How many acres of land does your household use for agriculture? \_\_\_\_\_ **Acres**

34. Who is the **legal owner** of the land you cultivate? 1 = you, 2 = member of the household,  
3 = it is a forest land; 4 = it is a revenue land; 5 = private lease; 6 = other (describe)  
\_\_\_\_\_

#### **OTHER LIVELIHOOD ACTIVITY**

35. Does your household have adequate food the whole year? **CIRCLE:** 1 = Yes, during whole year; 2 = Not sufficient for the whole year, 3= other (describe) \_\_\_\_\_

36. Did your household have problems of satisfying the food needs 8 years ago?

We faced this problem: 1= Frequently; 2 = Occasionally; 3 = Rarely; 4 = Never

37. Do you or someone from your household gather forest produce? **MULTIPLE ANSWERS POSSIBLE:** 0 = none, 1 = fuel-wood; 2 = timber; 3 = tendu; 4 = mahua 5 = medicinal plants 6 = fodder, 7 = bamboo; 8 = any other NTFP (e.g. honey, char, harra, lac) (**describe**) \_\_\_\_\_

38. These forest produce you 1 = sell, 2 = use for household needs, 3 = both?

39. From which forest areas are you collecting fuel-wood, fodder or any other forest produce?

FUELWOOD: \_\_\_\_\_ How long does it take to reach there? \_\_\_ hrs \_\_\_ km

FODDER: \_\_\_\_\_ -/- \_\_\_ hrs \_\_\_ km

OTHER (SPECIFY) \_\_\_\_\_ (location): \_\_\_\_\_

How long does it take to reach there: **hrs** \_\_\_ **km** \_\_\_

**PUT CODE below AS PERSON IS SPEAKING:** 1 = PENCH TR, 2 = closest (territorial) forest, 3 = agricultural land, 4 = other

40. Which fuel does your household use for cooking?

**CIRCLE:** 1 = fuel-wood; 2 = LPG, 3 = Kerosene; 4 = Dung; 5 = OTHER (**describe**)

\_\_\_\_\_

41. How much does your household use fuel-wood per day? \_\_\_\_\_ kg

42. When you compare to 8 years ago/2006, fuel-wood usage for your household needs

1 = decreased; 2 = increased; 3 = remained the same?

43. Taking everything into account, can you tell me all the SOURCES of your livelihood

- both cash and non-cash - during the past year?

(e.g.: agriculture, livestock rearing, fuel-wood and NTFP gathering, wage labour/MNREGA etc.)

**If answer is in days: PUT "D" IN FRONT OF THE ANSWER**

**Source of livelihood:**

**Months/year of work:**

1) \_\_\_\_\_ a) how many months per year (approx.) \_\_\_\_\_

2) \_\_\_\_\_ b) -/- \_\_\_\_\_

3) \_\_\_\_\_ c) -/- \_\_\_\_\_

4) \_\_\_\_\_ d) -/- \_\_\_\_\_

5) \_\_\_\_\_ e) -/- \_\_\_\_\_

**JOINT FOREST MANAGEMENT AND FOREST PROTECTION COMMITTEES**

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113. Do you know what **JOINT FOREST MANAGEMENT (JFM)** is? **CIRCLE:** Yes = 1  
No = 0

114. Do you know what **Forest Protection Committees (FPC)** are? **CIRCLE:** Yes = 1 No  
= 0

115. Are you (or someone from your family) **Forest Protection Committee** member?  
**CIRCLE:** Yes = 1 No = 0

116. Through JFM/FPC have you or your household received any of the following:

**YOU MAY CIRCLE MORE THAN 1 OPTION:** 0=nothing, 1 = household utensils;  
2 = access to NTFP; 3 = any other (describe)\_\_\_\_\_

117. Have you or someone from your household got **EMPLOYED** under the  
JFM/FPC?:

**Don't READ TO THE RESPONDENT. YOU MAY CIRCLE MORE THAN 1  
OPTION:**

0 = NO EMPLOYEMENT; 1 = patrolling with the FD; 2 = OTHER (**describe**)

---

**If the person hasn't got employment through ED, GO TO Q119**

118. Is the occupation you received under JFM/FPC sufficient to support you and  
your family? **CIRCLE:** Yes = 1, No = 0

119. Has your village received through JFM/FPC following: **CIRCLE:** 0 = nothing; 1=  
share of revenue from the forest operations; 2 = common buildings, roads, etc 3 = pond,  
wells, field banding, irrigation facilities; 4= other \_\_\_\_\_; 5 = don't  
know;

120. In your opinion, who does MOSTLY benefit from JFM/FPC?

**You may choose only one option from below.**

0 = Don't Know; 1 = Forest and Wildlife; 2 = Your household; 3 = Your village; 4 =  
Important people in the village; 5 = Forest Department; 6 = No one; 7 = OTHER  
(describe)\_\_\_\_\_

121. Are there FPC meetings in this village?

0 = No meetings at all; 1 = I'm not aware if there are meetings; 2 = Yes, but meeting schedule is not fixed, 3 = Yes and meeting schedule is fixed to \_\_\_\_\_ a year/month; 4 = Yes, but I don't know the meeting schedule; 5 = Other:

\_\_\_\_\_

122. If there are meetings, are you or someone from your family attending them?

**CIRCLE:** Yes = 1, No = 0

>>> **IF "NO": GO TO Q:123, IF "YES": GO TO Q:124** <<<

123. If NO, why are you or someone from your family not attending the meetings?

**DO NOT READ, ONLY CIRCLE WHILE RESPONDENT IS ANSWERING. Multiple answers possible** 1 = my voice cannot be heard so why should I come; 2 = no provisions so why should I come; 3 = I don't trust committee members; 4 = I am not invited; 5 = OTHER (describe)\_\_\_\_\_

>>> **SKIP Q: 124 to 126 and GO TO Q:127** <<<

124. If YES, how many meetings have you or someone from your family attended in the last 12 months? \_\_\_\_\_ (number)

125. Do you or someone from your family have opportunity to speak during these meetings?

Always	Very frequently	Occasionally	Sometimes But Infrequently	Never
5	4	3	2	1

126. Do you feel that opinion of yours or of someone from your family can be heard during the meetings? **CIRCLE:** Yes = 1 No = 0

127. Do you think the way in which decisions are made during the FPC meetings and within committee members is **fair/just**? I'm referring to decisions regarding revenue sharing, access to NTFP, distribution of household assets, etc **CIRCLE:** Yes = 1 No = 0 Don't know = 2

128. Are you and your family **sufficiently informed** about the decisions during the FPC meetings? I'm referring to decisions regarding revenue sharing, access to NTFP, distribution of household assets, etc. **CIRCLE**: Yes = 1 No = 0 Don't know = 2

129. Have JFM/FDC in last 8 years caused any of the following:

CIRCLE THE NUMBER: 1 = worsened/decreased; 2 = improved/increased; 3 = no change; 4 = don't know	
1. Development of your village?	<b>1 2</b> <b>3 4</b>
2. Economic status of you and/or your family?	<b>1 2</b> <b>3 4</b>
4. Level of village cooperation with the Forest Department on fire control?	<b>1 2</b> <b>3 4</b>
5. Frequency of reporting of illegal activities by village to FD?	<b>1 2</b> <b>3 4</b>
6. Level of your satisfaction with the Forest Department?	<b>1 2</b> <b>3 4</b>
7. Level of your trust in Forest Department to work in the interest of you and your village?	<b>1 2</b> <b>3 4</b>

130. Please list all the GOOD SIDES OF JFM/FPC according to your opinion?

**DON'T READ the OPTIONS:** 0 = don't know; 1 = no good sides; 2 = other (describe):

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131. Please list all the BAD SIDES OF JFM/FPC according to your opinion?

**DON'T READ the OPTIONS:** 0 = don't know; 1 = no bad sides; 2 = other (describe):

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132. What is your overall perception about JFM/FPC??

Very negative	Negative	Neither negative nor positive	Positive	Very positive	Don't know
1	2	3	4	5	6

133. Is there anything you would like to change in how JFM/FPC operates? (**describe**)

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### TIGER RESERVE

72. Do you know about the [NAME] Tiger Reserve (incl. Park and Sanctuary)?

**CIRCLE:** Yes = 1 No = 0 >>>> IF **NO**, ASK ABOUT **PARK or SANCTUARY**

73. What are the advantages of living next to Tiger Reserve (incl. Park and Sanctuary)? **Please describe. DON'T READ, CIRCLE WHILE RESPONDENT IS ANSWERING**

0 = no advantages, 1 = don't know, 2 = too far to get advantages; 3 = OTHER (list below):

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74. What are the disadvantages of living next to tiger reserve? **Please describe**

**DON'T READ, CIRCLE WHILE RESPONDENT IS ANSWERING**

0 = no disadvantages; 1= don't know; 2 = crop loss due to wild animals; 3 =OTHER (List below):

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75. Have you ever being disturbed by the wild animals? **MULTIPLE ANSWERS POSSIBLE:**  
yes =1 0 = NO; **IF yes, how?**

1 = Wild animals destroyed your crops, 2 = Attacked and/or killed your livestock; 3 = Injured you or a member of your family; 4 = OTHER (**describe**)

---

76. **If YES**, how frequently are you being disturbed by the wild animals?

*A* = during specific season (e.g. crop, scarcity of water in forest) ----- *B* = all year long

1 = every day; 2 = twice a week; 3 = once a week; 4 = twice a month; 5 = once a month;

6 = twice a year 7 = other (describe) \_\_\_\_\_

77. Has the number of experiences of disturbance due to wild animals changed since past 8 years?

**CIRCLE:** 1 = decreased; 2 = increased; 3 = Haven't changed

78. Have you received compensation for disturbances caused by the wild animals? 1 = Yes, whenever I applied I got; 2 = yes, I applied but I only get compensation sometimes, 3 = no, I applied but never got; 4 = no, I never applied for compensation

**LEGAL AWARENESS**

79. Do you know clearly where are the boundaries of the core zone of the Tiger Reserve (incl. Park and Sanctuary)? **CIRCLE:** Yes = 1 No = 0

80. Can you please describe what is your understanding of the “buffer zone” concept?

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81. Do you know clearly where are the boundaries of the buffer zone of the Tiger reserve?

**CIRCLE:** Yes = 1 No = 0

82. Which activities are **banned** in the Tiger Reserve? Please briefly describe

1) Core (incl. Park and Sanctuary): \_\_\_\_\_

2) Buffer/surrounding forests: \_\_\_\_\_

83. In case you are forced to do these (banned) activities to get forest resources for you and your household, what would you do? **DO NOT READ OPTIONS BELOW, JUST SELECT ONE WHILE THE RESPONDENT IS SPEAKING** 0 = nothing; 1 = ask FD permission; 2 = go illegal; 3=bribe; 4=other (**describe**)

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84. Why do you think these activities are restricted in the Tiger reserve? Please describe

1) Core (incl. Park and Sanctuary): \_\_\_\_\_

2) Buffer/surrounding forests: \_\_\_\_\_

85. Which activities are **allowed** in the Tiger Reserve? Please describe

1) Core (incl. Park and Sanctuary) \_\_\_\_\_

2) Buffer/surrounding forests: \_\_\_\_\_

86. Do you know which rights are provided through **Forest (Tribal) Right Act?**

0 = I don't know about the ACT; 1 = I know about the following rights of this Act:

**(DON'T READ THE OPTIONS, JUST Circle WHILE PERSON IS ANSWERING:**

1) Individual property rights; 2) community rights/nistar; 3) access to forest produce; 4) right to protect common forest land; 5) ANY OTHER: \_

\_\_\_\_\_

87. Have you applied for the provisions of this Act? **CIRCLE:** Yes = 1 No = 0

**BIODIVERSITY CONDITION IN THE TIGER RESERVE: core and buffer**

88. Please rate the **current overall condition of the forest** in the Tiger Reserve (incl. Park and Sanctuary) on the scale from 1 to 5: 1 means forest is in very bad condition, and 5 means forest is in very good condition.

**/ \_\_\_ / Tick this box if the respondent doesn't know about the Tiger reserve/core zone but refers to the forest of the buffer/forest surrounding core zone.**

	Very bad	Bad	Neither bad nor good	Good	Very good	Don't know
NTFP	1	2	3	4	5	6
Fuel-wood	1	2	3	4	5	6
Forest density	1	2	3	4	5	6
Fodder	1	2	3	4	5	6

89. What factors do you think have led to the current state of the forest?

\_\_\_\_\_

90. In your opinion, overall condition of the forest in the Tiger Reserve since 8 years ago has:

**NTFP** 1 = Decreased, 2= Increased, 3 = Haven't changed

**Fuelwood** 1 = Decreased, 2= Increased, 3 = Haven't changed

**Forest density** 1 = Decreased, 2= Increased, 3 = Haven't changed

**Fodder** 1 = Decreased, 2= Increased, 3 = Haven't changed

/ \_\_\_ / **Tick this box if the respondent doesn't know about the Tiger reserve/core zone but refers to the forest of the buffer/forest surrounding core zone**

91. If the condition of the forest in the Tiger Reserve **has changed** in comparison to 8 years ago, whether this change affected your household? CIRCLE: YES = 1 NO = 0 Don't know = 2

IF **NO** or **DON'T KNOW**, GO TO **Q:93**

92. Which positive or negative effects has your household experienced from these changes?

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93. Please rate the **current abundance of wildlife (animals)** in the forest in the Tiger Reserve.

Very scarce	Scarce	Neither scarce nor abundant	Abundant	Very abundant	Don't know
1	2	3	4	5	6

94. In your opinion, the abundance of wildlife in the forest of the Tiger Reserve since 8 years ago has:

**1 = Decreased, 2= Increased, 3 = Haven't changed**

95. How much do you like or dislike:

	Strongly dislike	Dislike	Neither like nor dislike	Like	Like very much	Don't know
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Forest	1	2	3	4	5	6
Tiger	1	2	3	4	5	6
Other wild animals	1	2	3	4	5	6

96. In the past 12 months, can you tell how many people have you seen collecting resources from this Tiger Reserve (including collection of fuel wood, fodder, medicinal plants, livestock grazing, hunting and fishing)?

Very few	Few	Some	Many	A great deal;	Don't know
1	2	3	4	5	6

97. Compared to 8 years ago, do you observe more or less people collecting resources from this Tiger reserve? **Number of people:**

**1 = Decreased, 2= Increased, 3 = Haven't changed**

98. In the past 12 months, how frequently had a forest officer stopped people from your village from entering the Reserve to collect forest produce, to graze livestock, to hunt or fish? /\_\_\_/ **Tick this box if the respondent doesn't know about the Tiger reserve/core zone but refers to the forest of the buffer/forest surrounding core zone**

Very Rarely	Rarely	Occasionally	Frequently	Very Frequently	Don't know
1	2	3	4	5	6

99. Compared to 8 years ago, do you think the forest officers are stopping people more or less frequently from entering Tiger Reserve to collect forest produce, to graze livestock, to hunt or fish? /\_\_\_/ **Tick this box if the respondent doesn't know about the Tiger reserve/core zone but refers to the forest of the buffer/forest surrounding core zone**

**Frequency: 1 = Decreased, 2= Increased, 3 = Haven't changed**

100. What do you think about the current type of conservation measures in this Tiger Reserve?

Circle number in front of **only one answer**.

1 = Too restrictive, more access to forest should be allowed

2 = About the right level of the law enforcement and conservation

3 = Too lax, too many people are entering the Reserve and jeopardizing its future

101. What would be the most effective way to preserve forest and wildlife of this Tiger Reserve?

1 = Strong law enforcement by Forest Department only through constant patrolling in the Reserve

2 = Collaboration between local people and Forest Department with a combination of law enforcement and local people participation

3 = Community-based participatory management with ONLY local people as stewards of the Reserve

4 = Other

(describe)\_\_\_\_\_

102. Taking everything into account, how much are you satisfied with the Tiger Reserve Management Authority?

Very unsatisfied	Unsatisfied	Neither satisfied nor unsatisfied	Satisfied	Very satisfied	Don't know
1	2	3	4	5	6

103. Has your level of satisfaction with the Tiger Reserve Management Authority since 2006/8 years ago **1 = decreased; 2 = increased, 3 = haven't changed, 4 = don't know?**

104. How much do you trust the Tiger Reserve Management Authority to work in your interest?

Not at all	Not very much	Neither trust nor distrust	A fair amount	A lot	Don't know
1	2	3	4	5	6

105. In the past 8 years, has the level of trust towards Tiger Reserve Management Authority to work in your **interest** **1 = worsened, 2 = improved or 3 = remained the same?**

106. Has the accountability of Tiger Reserve Management Authority changed since 8 years ago/2006? By “**accountability**”/”**responsibility**” I mean justifications of actions or decisions to you. **CIRCLE: 1 = Decreased, 2= Increased, 3 = Haven’t changed, 4 = Don't know**

**INSTITUTIONS and SOCIAL CAPITAL**

107. Are you or someone from your family a member of any groups/associations in the village?

0 = NONE; 1 = **SHG**; 2 = MP Forest Department groups, 3 = **LAMPS**; 4 = other groups related to forest use/conservation (describe) \_\_\_\_\_; 5 = Panchyat; 6 = Other (describe): \_\_\_\_\_

**If NONE, SKIP TO Q:109**

108. How frequently are you attending meetings of those groups (**Write 0 if no answer**):

Group?	
1= _____	How Frequently? _____ a month/a year ( <b>circle as appropriate</b> )
2= _____	How Frequently? _____ a month/a year ( <b>circle as appropriate</b> )
3= _____	How Frequently? _____ a month/a year ( <b>circle as appropriate</b> )



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109. In the past 12 months, have you done the following (**circle number, multiple options possible**)

- 1 = Attended a village meeting
- 2 = Carried out voluntary/unpaid work
- 3 = Participated in any other community association
- 4 = Took positive action about a local issue (e.g. improving the local environment, campaigning on local issues, organizing a local event)?
- 5 = Have done a favour for a neighbour
- 6 = Voted in the last election

110. Would you say that most people in this village could be trusted to work in your interest?

Not at all	Not very much	I neither trust nor distrust	A fair amount	A lot	Don't know
1	2	3	4	5	6

111. Would you say that village leaders could be trusted to work in your interest?

Not at all	Not very much	I neither trust nor distrust	A fair amount	A lot	Don't know
1	2	3	4	5	6

112. Has the accountability of **village leaders/heads** changed since 8 years ago/2006?

By “**accountability/responsibility**” I mean justification of actions or decisions. **CIRCLE**: 1 = Decreased, 2 = Increased, 3 = Haven’s changed

**THANK YOU VERY MUCH FOR HAVING PARTICIPATED IN THIS SURVEY!**

**- Please make sure all the questions are answered. -**

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**Do you have any comments?**

**Time interview ENDED:** \_\_\_\_:\_\_\_\_

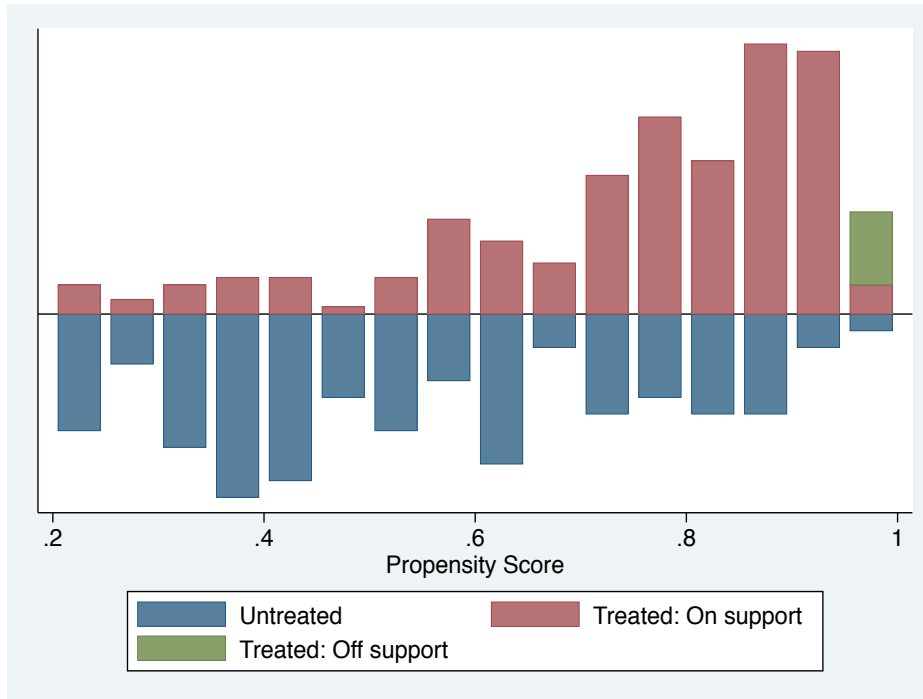
Who was else present during the interview?

**FOR ENUMERATOR: Please write down all the important notes and observations during the interview**

## ANNEX 15: BALANCING DIAGNOSTICS OF MATCHING FOR LOGIT MODEL AND TESTING H1

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Common support: **10 off support**



	Unmatched	Mean		%reduct		t-test	
	Matched	Treated	Control	%bias	bias	t	p>t
hhsizet	U	5.2952	5.5217	-12.5		-1.02	0.308
	M	5.35	5.02	18.2	-45.7	1.97	0.05
fordistM1000	U	1.3157	1.395	-11.9		-0.91	0.363
	M	1.3384	1.3928	-8.2	31.4	-0.82	0.412
hh_headEDUY	U	0.51905	0.6087	-18.1		-1.44	0.151
	M	0.52	0.58167	-12.4	31.2	-1.24	0.216
age40	U	0.68571	0.73913	-11.8		-0.93	0.352
	M	0.7	0.67	6.6	43.8	0.64	0.52
HH_headGN	U	0.17143	0.1087	18.1		1.4	0.164

	M	0.165	0.205	-11.5	36.2	-1.03	0.304
tr_compN	U	0.44286	0.18478	57.7		4.41	0
	M	0.415	0.385	6.7	88.4	0.61	0.541
pw1	U	5.3988	5.6461	-8.3		-0.64	0.525
	M	5.4573	4.8827	19.2	-132.3	2.09	0.038
satmobtvLand_st	U	0.0634	-0.08787	14.8		1.2	0.233
	M	0.06355	-0.01441	7.6	48.5	0.73	0.467
coredist2	U	2.0667	2.8696	-80.3		-6.28	0
	M	2.11	2.1567	-4.7	94.2	-0.44	0.662

<b>Summary of the distribution of the abs (bias)</b>
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**BEFORE MATCHING**

Percentiles	Smallest			
1%	8.267833	8.267833		
5%	8.267833	11.77646		
10%	8.267833	11.9044	Obs	9
25%	11.9044	12.50565	Sum of Wgt.	9
50%	14.77902		Mean	25.93337
		Largest	Std. Dev.	25.25521
75%	18.08436	18.08151		
90%	80.30893	18.08436	Variance	637.8259
95%	80.30893	57.69218	Skewness	1.456139
99%	80.30893	80.30893	Kurtosis	3.453658

**AFTER MATCHING**

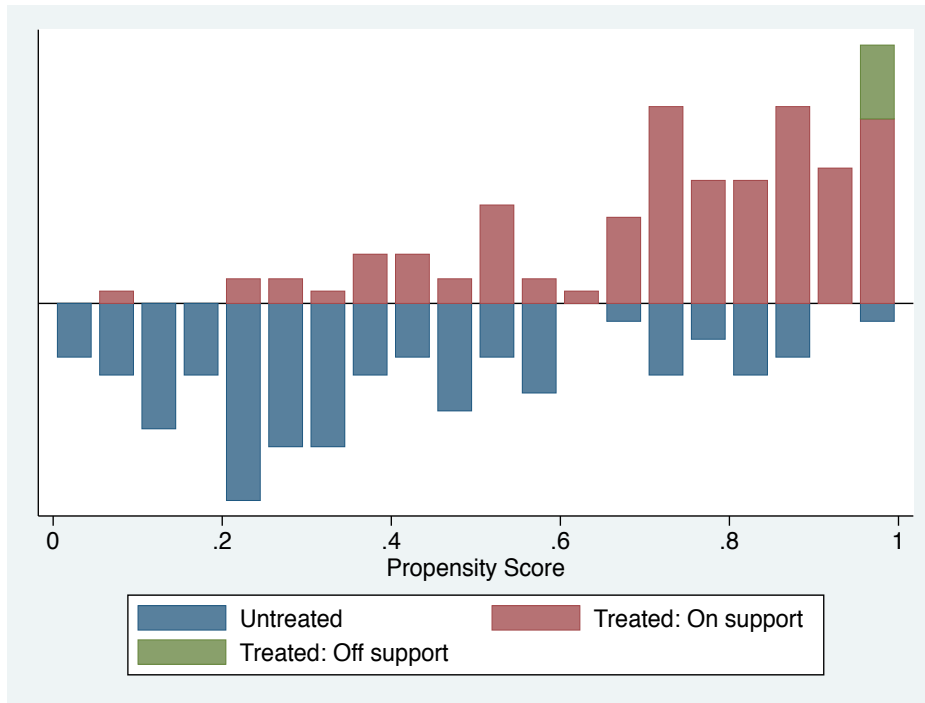
Percentiles	Smallest			
1%	4.667775	4.667775		
5%	4.667775	6.61399		
10%	4.667775	6.706455	Obs	9
25%	6.706455	7.615919	Sum of Wgt.	9

50%	8.168791		Mean	10.57464
		Largest	Std. Dev.	5.214037
75%	12.43782	11.53102		
90%	19.20992	12.43782	Variance	27.18618
95%	19.20992	18.22007	Skewness	0.6848672
99%	19.20992	19.20992	Kurtosis	2.05251

Sample	Pseudo R2	LR chi2	p>chi2	MeanBias	MedBias
Raw	0.183	68.03	0	25.9	14.8
Matched	0.025	13.74	0.132	10.6	8.2

## ANNEX 16: BALANCING DIAGNOSTICS OF MATCHING FOR PROBIT MODEL AND TESTING H2

**Common support: 6 off support**



	Unmatched	Mean		%reduct		t-test	
	Matched	Treated	Control	%bias	bias	t	p>t
nonfor_particip	U	0.10169	0.24691	-38.8		-2.78	0.006
	M	0.10714	0.08036	7.2	81.6	0.69	0.494
HH_headGN	U	0.11017	0.2716	-41.7		-2.99	0.003
	M	0.11607	0.0744	10.8	74.2	1.06	0.29
hh_headEDUY	U	0.4661	0.55556	-17.9		-1.24	0.217
	M	0.47321	0.48214	-1.8	90	-0.13	0.894
genderedu	U	0.01695	0.04938	-18.1		-1.31	0.191
	M	0.01786	0.00595	6.6	63.3	0.82	0.414
pl1000	U	1.2011	0.56898	48.6		3.14	0.002
	M	0.95835	0.78006	13.7	71.8	1.55	0.122

hh_electN	U	0.89831	0.96296	-25.5		-1.7	0.09
	M	0.92857	0.91369	5.9	77	0.41	0.681
livestockY	U	0.66102	0.87654	-52.6		-3.53	0.001
	M	0.66071	0.63393	6.5	87.6	0.42	0.676
tr_wakillN2	U	0.16102	0.5679	-92.8		-6.61	0
	M	0.16964	0.14286	6.1	93.4	0.55	0.583
fordistM1000	U	1.5048	1.0479	68.7		4.5	0
	M	1.484	1.3658	17.8	74.1	1.36	0.174
pw1	U	5.7335	4.9937	22.4		1.53	0.127
	M	5.7472	6.087	-10.3	54.1	-0.79	0.432

<b>Summary of the distribution of the abs (bias)</b>
--

**BEFORE MATCHING**

Percentiles	Smallest			
1%	17.8733	17.8733		
5%	17.8733	18.08363		
10%	17.97847	22.36292	Obs	10
25%	22.36292	25.53385	Sum of Wgt.	10
50%	40.26144		Mean	42.70631
		Largest	Std. Dev.	24.18353
75%	52.61775	48.589		
90%	80.73988	52.61775	Variance	584.8432
95%	92.77346	68.70631	Skewness	0.8319887
99%	92.77346	92.77346	Kurtosis	2.800109

**AFTER MATCHING**

Percentiles	Smallest			
1%	1.783971	1.783971		
5%	1.783971	5.876592		

10%	3.830281	6.107396	Obs	10
25%	6.107396	6.539361	Sum of Wgt.	10
50%	6.895606		Mean	8.661602
		Largest	Std. Dev.	4.568848
75%	10.77304	10.27178		
90%	15.73633	10.77304	Variance	20.87437
95%	17.76836	13.7043	Skewness	0.6290086
99%	17.76836	17.76836	Kurtosis	2.814441

Sample	Pseudo R2	LR chi2	p>chi2	MeanBias	MedBias
Raw	0.319	85.72	0	42.7	40.3
Matched	0.038	11.81	0.298	8.7	6.9