

1. INTRODUCTION

The number of protected areas (PAs) has grown continuously, doubling from 1993 to 2004. By 2005: 100000 PAs covered more than ten million km² or 12% of the Earth's land surface (Chape *et al.* 2005). In 1992 at the 4th World Congress on National Parks and Protected Areas (WPC) a target was declared: to have 10% of each biome in PAs by the year 2000. The successful realization of this goal was announced at the 5th World Parks Congress in 2003, despite the fact that some of this growth in PAs can be attributed to an increase in reporting. This rapid growth in protected areas has prompted new methods to categorise protected areas by international standards of management and governance (e.g. IUCN management categories and governance matrix) and initiated an ongoing global movement to further expand the PA network (West *et al.* 2006).

Effectiveness of protected areas has long been examined in terms of their capacity to safeguard biodiversity and reduce deforestation and only relatively recently have any social impacts of conservation initiatives come under examination. Although PAs provide important ecosystem services at the global, national and local scale, concern has been voiced that the costs are mostly incurred by the local people who most often heavily rely on natural resources for their livelihoods (Balmford and Whitten 2003).

The number of people who may be affected by protected areas remains widely unknown. In a review by Brockington *et al.* (2006) numbers from South American and Indian studies suggest between 50 to 100% of strict PAs are either occupied or used by people. Much of this occupancy is illegal, and in India alone there is evidence to suggest that around 4 million people face becoming evicted following amendments to PA policy (Kothari 2004). The number of displaced people (i.e. the physical removal of people from PAs) living as 'environmental refugees' in Africa alone has been estimated to lie between 14 and 24 Million (Geislaer and de Sousa 2001). However many of these figures have been contested in the literature, with critics suggesting that the estimates are extrapolated exaggerations based on unreliable information.

A global debate, with little reliable evidence on either side, has ensued as to whether overall PAs are 'good' or 'bad' for local communities. Sunderland *et al.* (2008) appropriately describes the situation as 'highly dichotomous' with repeated cycles of 'irresistible' dialogue putting strict conservation against human wellbeing. Calculating the net costs and benefits of PAs or their

impacts over large spatial scales is a particularly time consuming and complex task, and few studies provide reliable scientific data (Brockington *et al.* 2006). The vast majority of literature consists of polarized and one-sided arguments between social scientists and conservationists, with both parties selectively using information to support their viewpoint (Sunderland *et al.* 2008). Most attempts of documenting net PA impacts are anecdotal, and carried out independently organizations that rarely quantitatively score their results, undertake a baseline study or use a control group; thus it is extremely difficult to evaluate the impacts of PA's over time or space. Furthermore there is a greater need to encompass local perceptions of poverty and use relevant participatory indicators that can reflect differential impacts within communities with respect to differences in gender, social hierarchy, and wealth status.

This need to link protected areas to the benefit for local people and appropriately assess their contribution to livelihoods has been widely recognised by the international community, notably at the 5th World Parks Congress (Durban 2003); World Conservation Congress (Bangkok 2004) and the Convention on Biological Diversity Programme of Work on Protected Areas. However few data have been collected systematically to test whether protected areas are making a positive or negative contribution to the livelihoods of people living adjacent to PAs. What's more, several of the documented impacts, may be limited in scope, scale or distribution.

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The lack of a universal, systematic approach for measuring the effects of protected areas on local livelihoods has led a few organisations and research institutions to adapt or develop their own methodologies to test the livelihoods impacts of protected areas, but the extent to which these methodologies have been applied is currently unknown. Producing a preliminary review and understanding these methodologies and their current application was the aim of the UNEP-WCMC (United Nations Environment Programme - World Conservation Monitoring Centre) workshop to *Review Approaches, Methodologies and Tools for Social Assessment of Protected Areas* (15th – 16th May 2008) and this study has been commissioned by UNEP-WCMC and builds on the outputs from the workshop.

The aim of this study is to produce a formal assessment of the existing approaches, tools, and methodologies used to measure livelihood impacts of PAs. The objectives are to:

1. Review the current methods for assessing the costs and benefits of protected areas for local livelihoods, and examine and compare their strengths and weaknesses.
2. Examine the characteristics of protected areas which have carried out livelihoods assessments, using a global survey of protected area managers and scientists.
3. Determine to extent to which livelihood assessments are institutionalised within conservation organisations and protected area management schemes, and study how the likelihood of livelihood assessments being carried out on the ground is affected by the institutionalisation of livelihood assessments.
4. Investigate the types of assessments and methodologies that have been applied globally, using a global survey of protected area managers and scientists.
5. Investigate the types of assessments and methodologies that have been published in the scientific and grey literature and compare the methodologies reported in the global survey to those which have been published.

2. BACKGROUND

2.1 The potential costs and benefits of protected areas

Traditionally the benefits of protected areas have been calculated as the benefits of conserving biodiversity, at a global or national scale; Benefits can include the ecosystem services listed in the Millennium Ecosystem Assessment (2005). such as provisioning services (such as food, firewood, water) supporting (nutrient cycling, primary production), regulating services (climate or water purification) and cultural services (spiritual, recreational). Many of these benefits are often only fully appreciated on coarse national or global scales, including substantial financial value at their point of consumption, this typically doesn't occur at the level of protected area -adjacent communities. Balmford and Whitten (2003) argue that the immediate opportunity costs of conservation most often exceed the management-related costs of maintaining PA's and that these costs are borne largely by local communities. Further discussion on the spatial and temporal scales of costs and benefits and the implications for conducting livelihood assessments will be discussed in section 2.4 below.

Costs and benefits of protected areas may be also describes as being direct or indirect. Direct benefits include the use of natural resources for construction, food, medicine or fuel, whilst indirect benefits may be watershed protection and improved agricultural productivity (Kaimowitz 2003).

On local scales benefits include those derived from protected area management and infrastructure, such as financial gains from ecotourism and employment and through payments for environmental services (Ferraro and Kiss 2002, Grieg-Gran *et al.* 2005). Other benefits comprise greater community participation in sustainable resource management and development schemes (or Integrated Conservation and Development Projects ICDP's), strengthened land tenure and protection form external threats (Coad *et al.* 2008), enhanced conservation of essential resources, and improved recognition of community conserved areas.

Negative impacts associated with PAs (on local scales) can include changes in land tenure and community structures, restricted employment opportunities, the commercialization of forest products and services, and human-wildlife conflicts (Coad *et al.* 2008). In a review of multiple case studies, West and Brockington (2006) found costs to local communities that range from ill health, guerrilla movements, drug trafficking, to the erosion of local cultures and norms. West *et al.* (2006)

find many accounts of changes in social practice, gender relationships to 'generification' and 'decomplexification' of local beliefs, efforts that are suggested to fix local communities in time and space, solidifying certain identities and ethnicities.

Other costs may include displacement either physical or from resources: of shelter or access to assets, without community involvement (World Bank 2004). Displacement can have lead to many socio-economic implications including landlessness; joblessness; homelessness; marginalisation; food insecurity; increased morbidity and mortality; loss of access to common property and social disarticulation (Cernea 1997).

2.2 Debating the importance and complexity of the tradeoffs between conservation and poverty

Whilst conserving biodiversity at the same time as also promoting human development and reducing poverty are idealised goals on most conservation agendas today, faith in this relationship has perhaps never been so widely disputed. The different perspectives are intertwined with pragmatic and moral dimensions; Adams *et al.* (2004) review the links between poverty alleviation and biodiversity conservation and present a conceptual typology of these relationships. The authors find four different standpoints: those who believe that i) poverty and conservation are separate policy realms and that both should be pursued independently ii) poverty is a critical pragmatic constraint on conservation success and that it must be addressed in order to best conserve biodiversity, often responsible for traditional Integrated Conservation Development Projects (ICDP's) or park outreach programmes, iii) conservation should not compromise poverty reduction and must not further contribute to poverty reflecting on moral and political obligations of conservationists and lastly iv) poverty reduction depends on living resource conservation; conservation is a tool for the poor depending the most on natural resources.

An increasing number of authors are disillusioned with the current poverty alleviation focus in conservation, claiming that it resuscitates economic development strategies of the 1950's and once again biodiversity will have to pay for economic development (Sanderson and Redford 2003). These authors argue later in their paper 'conservation is not an attack on the poor' and that as conservationists we have neither the legitimacy nor the power to redress the distributive inequalities nor the damages that development has caused (Sanderson and Redford 2004). This prompted yet another heated discussion with authors such as Kepe *et al.* (2004) disagreeing that poverty alleviation strategies is not a major challenge faced by conservationists and using a South

African example conclude that if any blame should be assigned it should be on the massive inequalities and poverty that have resulted in many former colonies.

In line with this almost 'North South' divide some authors have even began to point the finger at the large international conservation organizations like Conservation International (CI) which have become extremely powerful largely due to their access to capital. Romero and Andrade (2004) highlight the obvious asymmetric relationship that characterises the majority of partnerships between large international organisations and local institutions in developing nations. They argue that often they use societal assets in such countries as private assets, more specifically tropical forests, and that their often 'preservationist agendas' undermine local social process that could otherwise contribute substantially to conservation efforts by addressing the core issues. Buying tropical forests is a cheap solution that fails to recognise that lands are often inhabited, further exacerbating local conflicts.

The polemic debate is well equipped with case-study arguments from both sides. Brockington (2004) uses a descriptive account of the Mkomazi Game Reserve in Kenya to remind the reader that conservation can and does flourish despite local opposition, challenging viewpoint ii (above). In 2006, West and Brockington provided a study that sheds light on 'an anthropological perspective on some unexpected consequences of protected areas'. They argue that PAs are a form of 'virtualism' as an attempt to make the world look and conform to an abstract model of what it really is. They review multiple case studies and present a comprehensive account of deep negative social effects of PAs on local communities (for example West *et al.* 2006).

Folke (2006) tries to remind the reader that the new moral of the intrinsic right of biodiversity and those who like to argue for biodiversity as economic capital both separate nature from humans and take for granted the interdependencies and feedbacks between societal developments on the one hand and conservation on the other. He argues that the world is not always static and that conservation must move away from steady state solutions towards acknowledging that human society has and always will have a fundamental role in shaping the natural environment through economic, social and cultural factors: changing the frequency, intensity and spatial patterns of disturbance on biodiversity. This imposed separation is largely a western value and in this sense conservation can be seen as a form of colonialism (West *et al.* 2006).

Despite the division, there seems at least to be a consensus amongst authors that more evidence is needed. Brockington *et al.* (2006) label the above exchanges as unproductive and reveal that in a

review of the literature regarding displacements, fewer than 250 papers covering 150 PAs were to be found and that 50% are simply not informative (Brockington *et al.* unpublished data). Redford *et al.* (2006) in 'Parks as Shibboleths' brand the exchanges as a 'dialogue of the deaf' owing to the fact that the very term park has become a 'shibboleth' – a Hebrew concept indicating a widely held saying or belief that impedes one's ability to speak or think about things without preconception. The term 'park' is used amongst social scientists and conservationists alike as a 'coarsely textured term devoid of meaning' (Redford *et al.* 2006) because in reality they are extremely complex systems that may have a variety of governance regimes with very different aims and resource restrictions. Thus stereotyping them as a 'shibboleth' in disputes essentially means the complex reality of their socio-political situations is lost (Redford *et al.* 2006).

New insights from a large-scale analysis exploring the relationship between national wealth and the number and type of PA designated have confirmed that the relationships between conservation actions are dynamic and locally specific. Upton *et al.* (2008) included 136 countries and found that although wealthy countries have a larger number of PAs of smaller size than poorer countries, few significant relationships between the extent of PAs at a national scale and indicators of poverty.

Increasingly researchers are looking forward by suggesting new ways of collecting data and interpreting results (see for instance Sunderland *et al.* 2008). Others call for greater collaboration and dialogue with other fields of research including for instance political ecology (Adams and Hutton 2007; Agrawal and Ostrom 2006; Berkes 2004).

2.3 The international community: current legislation and initiatives

The need to link protected areas (PAs) to the benefit of local people has been widely recognised by the international community. At the 5th World Parks Congress (Durban 2003) participants affirmed that "*PAs should contribute to poverty reduction at the local level and at the very minimum not contribute to or exacerbate poverty*" (rec. #29) and further; "*a greater improvement on the current state of knowledge regarding PAs and their livelihood impacts*" was recommended. This was echoed in the following year at the World Conservation Congress (WCC Bangkok 2004) where it was recognised that "*an assessment of the economic and socio-cultural impacts occurring from the establishment and maintenance of PAs is necessary*" and suggested that conservation organisations like the IUCN (The World Conservation Union) ought to supply the funds for such assessments.

Moreover recently the Convention on Biological Diversity has provided an encouraging political environment through the Programme of Work on Protected Areas (CBD PoW on PA) particularly through activity 2.1.1: *“Assess the economic and socio-cultural costs, benefits and impacts arising from the establishment and maintenance of protected areas, particularly for indigenous and local communities, and adjust policies to avoid and mitigate negative impacts, and where appropriate compensate costs and equitably share benefits in accordance with the national legislation”*.

As a result there have been some recent attempts by both conservation and humanitarian organisations and institutions to promote initiatives that endeavour to address these issues. In 2006 the Theme on Indigenous and Local Communities, Equity and Protected Area (PCLG UNEP-WCMC 2007) which is a joint cross-cutting initiative between two technical IUCN commissions: the Commission on Environmental, Economic and Social Policy (CEESP) and the World Commission on Protected Areas (WCPA) established the Protected Areas, Equity and Livelihoods (PAEL) Task Force. Its overall goal is to address the recommendations endorsed by the WPC 2003 through a global project centralised around three major themes directed at this issue: by *enhancing understanding, guidance and tools and advocacy*.

The World Database on Protected Areas (WDPA), the most comprehensive global dataset on marine and terrestrial protected areas available, is assembled from multiple sources through a joint venture between UNEP (UNEP-WCMC) and the IUCN-WCPA. In February 2007 UNEP-WCMC Protected Areas Programme launched a workshop around a proposed initiative entitled ‘Vision 2020’ which would seek to expand the WDPA to cover socio-economic issues as well as develop indicators related to PAs and social impacts. To embark on the issue UNEP-WCMC in partnership with the Poverty and Conservation Learning Group (PCLG) from the International Institute for Environment and Development (IIED) held collaborative discussions with a number of international institutions and NGO’s ([for further detail see report](#)) however due to lack of funding as of yet little there has been progress in updating the WDPA.

The UNEP-WCMC workshop to Review approaches, methodologies and tools for social assessment of protected areas held on May 15th and 16th 2008 was an effort to continue these initiatives. It was facilitated and supported by the PAEL Task Force, the UNEP-WCMC Vision 2020 project and the IIED PCLG with contributions from CARE International and The Nature Conservancy (TNC). The (provisional) overall goal of the process is to:

Identify /develop and evaluate a range of methodologies and tools for assessing the social impacts of protected areas that enable conservation policy and practice to better adhere to the globally accepted principle that protected areas should strive to contribute to poverty reduction at the local level, and at the very minimum must not contribute to or exacerbate poverty.

This study was commissioned to help address the following activities or ‘essential components’ (as outlined in the workshop’s work plan):

- a. A formal assessment of the existing approaches, tools and methodologies (including application of these as informed by a global survey), against a set of questions that aim to elucidate the relevant elements of social costs and benefits.
- b. A formal assessment of representative case studies against a set of questions and criteria developed by the PAEL Task Force that scores each study in terms of what elements of social impacts and benefits it has addressed.

This study’s objectives 1 to 4 are parallel to the UNEP-WCMC workshop activity (a) and objective 5 addresses activity (b) (see above). For a review of the workshop objectives and research questions please see Appendix A.

2.4 The major challenges with assessing livelihood impacts

The costs and benefits of PAs are not evenly spread over spatial and temporal scales. So-called ‘winners’ and ‘losers’ may span multiple groups of people over localised spatial scales to regional, national or global (Chan *et al.* 2007). To further complicate the issue costs and benefits can be direct or indirect for instance beneficial harvesting spill over effects from marine protected areas (Roberts *et al.* 2001) or costs: by displacing deforestation and logging initiatives to other areas (Chan *et al.* 2007). Some of the major challenges associated with assessing livelihood impacts are listed below

Scale:

- An accurate and comprehensive assessment of the livelihood impacts of PAs should include wide spatial and temporal scales, i.e. short term and long term impacts in addition to local, national, regional and global scales (PCLG UNEP-WCMC 2007).

Scope:

- With so many different standpoints and incentives for carrying out livelihood assessments there are many potential angles to approach the issue.
- The commonly used term local 'communities' are most often not small spatial units, with homogeneous social structure and shared norms (see Agrawal and Gibson 1999 for a review of the term community in conservation and resource management).
- A positive impact of a PA is not equally dispersed amongst different groups; it is often the case that the poorest members lose out, even if richer members of the community are benefiting, i.e. 'elite capture' (Platteau and Gaspart 2003). For an example of elite capture in forests of Nepal see Iversen *et al.* (2006). Thus the distribution of benefits and costs within communities disaggregated by different social grouping. Besides wealth, costs and benefits may vary according to gender (see for instance Sundberg, 2003) or age (Ferraro, 2002). Education can offer improved employment opportunities, thus offering alternative livelihood strategies (Kideghesho, 2007).
- Political disputes over land tenure such as historical and ancestral rights have rarely been taken into consideration (see for instance Madhusudan 2003 or Coad 2007). Local people, especially indigenous groups may not always be consulted or involved during the establishment of the protected area, thus losing their traditional land and resource rights, see for example Brockington (2004). Moreover not all local people are indigenous and there may be many different ethnic groups of people having arrived at different times to the PA and with different resource use and land tenures (Nepal, 2002; Ngome, 2007).

Commensurability:

- PAs can have a multitude of impacts on local people and, independently of the assessment method adopted, some of these impacts will always be difficult to compare especially across large scales, nationally or globally.
- There are often no baselines or controls (i.e. before the PA was established, without PA, different possible PA management regimes) against which to measure the livelihood impacts of the protected area, even with regard to levels of occupation and use (Wilkie *et al.* 2006). Coad *et al.* (2008) review the literature on costs and benefits of PA's and find that out of over 100 case studies, few used control sites and none directly measured economic social and cultural impacts of PA establishment on local livelihoods. The authors found 6 studies that used cost-benefit analysis (that estimated economic values), the majority of the studies consisted of attitudinal surveys aimed at measuring peoples perceptions if PAs.

- It is also hard to value the importance to livelihoods of for instance cultural values, existence values empowerment, human rights or social cohesion, and as of yet there is no reliable methods exist for valuing these impacts and they are usually excluded from cost benefit analyses (see for instance Kremen *et al.* 2000; Ferraro 2002; Carrett and Loyer 2003).

Cultural differences:

- There are many definitions and dimensions of poverty and what is measured on the ground is defined to a large degree by the definitions being used, particularly the dimensions of poverty measured (including income, nutritional status, child mortality; political empowerment) and the perceptions of the individual or organization carrying out the assessment as to what is important (e.g. financial impacts over resource access and control).
- Cultural differences mean poverty, environment, and poverty-environment linkages are all very complex and broad concepts, which are often perceived very differently by different people (where by 'people' refers to not only indigenous people, but also researchers decision makers, etc.).

Feasibility:

- There are numerous potential costs and benefits that could be considered and there is no conformity on what is a reasonable list to evaluate to avoid the task becoming impractical to embark on (PCLG UNEP-WCMC 2007).
- There is no consensus as to whether the impacts can be scored qualitatively, quantitatively or as monetary values or if perhaps a combination of both is best. Whilst some methodologies are regarded as more "scientific", collecting numerical data using trained scientists, others might work with local expertise, focusing on case study qualitative detailed oral accounts of local perceptions of change, and be undertaken by local people.
- Some would argue that consistent data can only be collected from communities after an extensive period of working with them, and hence that rapid assessment tools are not useful however this has yet to be tested in a comparative study (PCLG UNEP-WCMC 2007).
- Many of the existing methodologies today are often wedded to individual organisations and modest standardization or concurrence between these agencies has occurred.
- Moreover various organisations and institutions have engaged in activities aimed at assessing livelihood impact of some their conservation projects, some of which are carried out in PAs. However, the results of these assessments initiatives are often contained in unpublished reports that are difficult to identify and access (PCLG UNEP-WCMC 2007). In

other cases, these initiatives have never been formally reviewed, and there is no written record of the evaluation performed.

- Most of the work carried out with the aim of developing methodologies and indicators to assess the livelihood impacts of PAs is very recent, if not ongoing. As a consequence, the organisations and teams of researchers involved in it have not had the time yet to document their work (PCLG UNEP-WCMC 2007).

2.5 Tools and frameworks used to define livelihoods and human wellbeing

There are a number of components that are frequently used in the task of measuring social impacts. Impacts relate to the positive or negative change in poverty status or livelihood outcomes resulting from a particular action(s) caused by the implementation of a project or initiative. Tools and methods can be defined as specific instruments used to measure a range of items and can include for example semi-structured interviews, questionnaires, or participatory wealth ranking. A methodology is a description of an assessment that includes the various methods/tools used, how they are combined and how the output data is analysed (UNEP-WCMC workshop report 2008). The overall 'approach' is the highest level of conceptual design describing a project. Several methodologies could adopt the same approach (UNEP-WCMC workshop report 2008). These will be further discussed below: 2.51 Livelihood frameworks, 2.52 Social impact frameworks and 2.53 Indicators and indices.

2.51 Livelihood frameworks

Frameworks can be described as a structure of how ideas or concepts are linked. Examples of livelihood frameworks include the DFID SLF the state-Pressure-Response framework, OECD DAC 5 poverty dimensions, and the Rural Livelihood system. This list is not comprehensive but highlights some commonly used frameworks (see Appendix B for a review). Essentially: livelihood frameworks help clarify what needs to be measured and the kind of information that could be collected (UNEP-WCMC workshop report 2008). This section has focused on DFID's (UK Department for International Development) Sustainable Livelihood Framework (SLF) as its livelihood dimensions have been used throughout this study.

It is important to note that from this point forward '**livelihoods**' will be used to denote more than one's sources of income. According to Chambers and Conway (1991) "*livelihood comprises the*

capabilities, assets (including both material and social resources) and activities required for a means of living. A livelihood is sustainable when it can cope with and recover from stresses and shocks and maintain or enhance its capabilities and assets both now and in the future, while not undermining the natural resource base”.

The sustainable livelihoods framework (SLF) is a tool designed by DFID in 1998 in order to improve the understanding of livelihoods, particularly those of the poor. The SLF presents the main factors that affect people’s livelihoods, and typical relationships between these. In particular, the framework highlights important issues by drawing attention to core influences and processes and emphasises the multiple interactions and links between the various factors which affect livelihoods (DFID 1999). The livelihood framework identifies five core asset categories or types of capital upon which livelihoods are built. These consist of human assets (e.g. health, skills, education); social (e.g. reciprocity, kinship, rules, norms, politics, culture); physical (built infrastructure, roads, sanitation, secure shelter, energy); financial (available stocks, sources of income, productivity, liquidity) and natural (access to land, food, firewood, and water). Figure 1 depicts this conceptual framework.

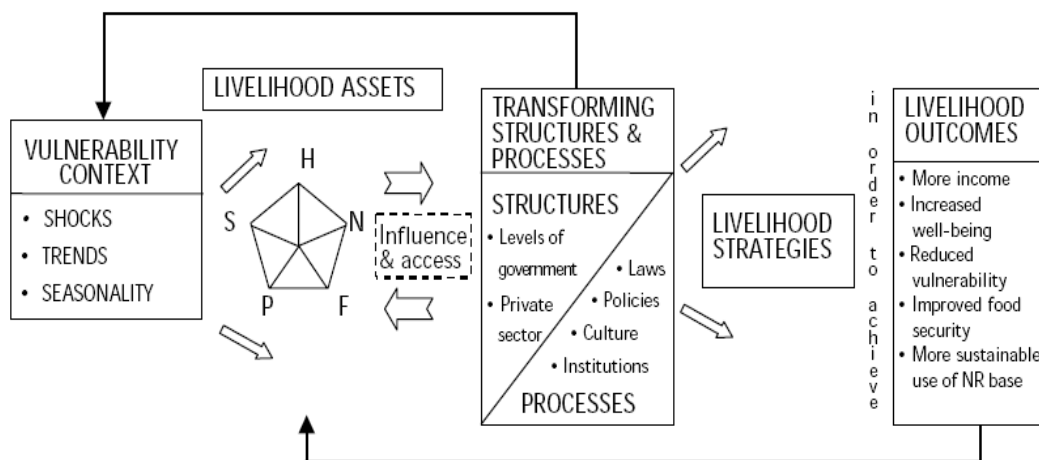


Figure 1. DFID Sustainable Livelihood Framework

(Source: DFID 1999) In accordance with DFID’s intended interpretation: the arrows within the framework are used as shorthand to denote a variety of different types of relationships, all of which are highly dynamic. None of the arrows imply direct causality, though all imply a certain level of influence. Key: H Human; N Natural; F Financial; P Physical S social livelihood assets.

The *Vulnerability Context* encompasses the external environment in which people live. People’s livelihoods and the wider availability of assets are fundamentally affected by critical trends as well as by shocks and seasonality, over which they have limited, or no control (DFID 1999). Shocks can destroy people assets either directly or indirectly and include those related to; human or

crop/livestock health; natural elements (natural disasters for instance) or the economy. Trends can belong to populations (such as conflict); their resources; national or international economies; governance (including politics) or technology. Seasonality causes shifts in livelihood processes such as commodity prices; food production; health statuses or employment opportunities.

2.52 Social impact frameworks

Social Impact Assessment includes the process of analysing, monitoring and managing the intended and unintended social consequences, both positive and negative, of planned interventions (policies, programmes, plans, projects) and any social change processes invoked by those interventions (Vanclay 2003). On the other hand Social Impact Evaluations (SIE) assesses changes in the wellbeing of individuals, households, communities or firms that may be attributed to a specific intervention such as a program, project or policy. The fundamental SIE question is 'what would have happened to those in receipt of a given intervention if they hadn't received it in the first place'. For further details on social impact frameworks and SIE please refer to Appendix C. There are frameworks and general guidance for undertaking Social Impact Assessment (SIA) within the large body of work on Environmental Impact Assessment (EIA). Some major organisations and institutions may include SIA as a part of EIA - but are not necessarily specific to protected areas or even to conservation.

2.53 Indicators and indices

Indicators are pieces of information that summarize characteristics of systems, an indicator can be defined as something that helps us to understand the present, the direction of a system and the distance from a particular goal. A definition provided by the International Institute for Sustainable Development (IISD) states that: 'an indicator quantifies and simplifies phenomena and helps us understand complex realities. Indicators are aggregates of raw and processed data but they can be further aggregated to form complex indices.' Poverty or spatial mapping has become a useful tool in large scale approaches, it is the 'spatial representation and analysis of indicators of human well being and poverty' (Henninger and Snel 2002). For summary of poverty mapping data sources and application examples please consult Appendix C.

Indices may be defined as 'aggregated measures that combine indicators most important to describe the performance of an institution, region or economic sector' (PCLG UNEP-WCMC 2007). An index may be used as an indicator that simplifies the index's constituent parts.

The main advantage of indicators is that they provide simple yet effective synthetic ways of expressing the state of a system and to track progress towards particular targets. They can be tailored to addressing the livelihood components described above or adapted for measuring specific impacts for use in SIA and SIE. However, the selection of relevant indicators determines how useful and meaningful any resulting interpretations may be. Some livelihood assessments have focused on generic socioeconomic indicators, whilst others have opted for a combination of indicators in the form of socio-economic indices. These vary in scope and spatial scale. There have been recent advances in combining poverty and environment indicators that aim to elucidate the links and relationships between them. For a summary of existing socioeconomic indicators, indices and poverty-environment indicators, please see Appendix D.

3. RESEARCH METHODS

3.1 The current methodologies for assessing the costs and benefits of protected areas

This section reviews how methodologies were identified for this review, and how they were compared and contrasted using a defined set of criteria.

3.11 Identifying the methodologies

In November 2007 background papers had been produced for the Vision 2020 initiative by the PCLG and UNEP-WCMC in the form of an internal literature review of some existing relevant scientific and grey literature on approaches, methodologies and tools for assessing social impacts of PAs. This was used as the first base for the search of methodologies, for 3 continuous weeks, peer reviewed and non peer-reviewed literature academic sources and web publications were searched for methodologies that specifically aim to provide a framework to assess the impact of PAs on local communities.

Given the range of different potential users with different objectives (see section 3.12), it is important to note that this study refers to ‘assessment’ of the social/livelihood impacts of PAs in the broadest sense. This includes the simplest forms of assessments as well as more rigorous forms. Although there is wide spread use of social assessments and participatory techniques in many different research disciplines, this study has focused solely on those methodologies designed for assessing the livelihood impacts of PAs. The methodologies used for assessing the livelihood impacts of individual conservation projects and initiatives, although these potentially provide valuable insight, are beyond the scope of this study and have not been addressed.

A total of seven methodologies were found that were explicitly designed to assess the livelihood impacts of established (or yet to be established) protected areas. A qualitative literature review regarding these methodologies was conducted. Data included a descriptive table listing main attributes of the methodologies and a subsequent characterising ‘checklist’ of elements present or absence in the methodologies.

3.12 Characterising the methodologies and their users

The characteristics of social impact methodologies and their users was developed using the expertise of participants of the UNEP-WCMC workshop to Review Approaches, Methodologies and Tools for Social Assessment of Protected Areas.

A table of potential users of social impact methodologies, their objectives and requirements was created by dividing workshop participants into 4 methodology user groups (these were also selected by participants in a group discussion); civil society and NGOs, government organisations, private organisations and academics, international organisations and donors. Each group then provided specific examples of 'users of methodologies and information generated', their respective overall purpose, focus of investigation or common 'research questions', key considerations and some details how the information is commonly used. Some of the main user groups identified are discussed in section 4.1.

To enable a comparison to be made between the different methodologies a list of qualities or criteria was needed. This criteria list was initially developed independently for this study and then further extended and approved by workshop participants at UNEP-WCMC. As a result, this investigation is in line with Pullin and Stewart's (2006) 'guidelines for systematic review'. The study is both practice and policy relevant as the question was generated and developed in collaboration with relevant decision makers (and organizations) for whom the question is real (Pullin and Stewart 2006).

Participants were divided into four groups, one group for each of the broad categories with an additional 'other' category. Each group produced criteria for characterizing methodologies within their category and then reconvened to consolidate criteria.

3.13 The checklist

The table of characteristics (above) was adapted into a checklist for comparing methodologies. Methodologies were assessed in theory as opposed to their practical application: not all methodologies reviewed have been applied to the same extent. The table comprises various sectioned headings with a range of characteristics related to scientific rigour, scope, local sensitivity, feasibility, data collection and presentation. This enabled the PA livelihood methodologies to be evaluated according to how comprehensive and efficient they can be in measuring livelihood impacts of PAs on local communities. Each methodology's capacity to be

repeated at different temporal and spatial scales is evaluated. Some subjective terms are defined in section 3.5.

3.2 A Global Survey

Data from a global survey directed at PA contacts (through the WDPA and others) is used to investigate objectives 2, 3 and 4. An initial rapid email questionnaire was aimed mainly at investigating the extent to which livelihood assessments are being carried out on the ground in PAs (objective 2) and the level of institutionalisation of these assessments (objective 3). This survey was conducted in both Portuguese and English. Where respondents confirmed that an assessment was being carried out in their PA, a follow-up online survey was distributed, which aimed to identify the types of assessments and methodologies have been used around the world and how they have been applied (objective 4).

3.21 Contacts and logistics

The results of this survey contribute important data to the ongoing process of updating the WDPA and the UNEP-WCMC Vision 2020 initiative (see section 2.3). Consequently this collaboration has meant that both the e-mail introductory content and the content of the questions were developed in close association with UNEP-WCMC. The surveys were sent from a UNEP-WCMC email account set up specifically for this occasion (livelihood_methods@unep-wcmc.org). This cooperation and involvement with key stakeholders early in the review process was necessary to avoid post review problems, as advocated by Pullin and Stewart (2006).

A contact database was built in Microsoft Access and obtained from a variety of sources. The great majority of contacts were from the WCPA/UNEP-WCMC WDPA contact database (912). A volunteer based at UNEP-WCMC for another study had been collecting contacts for a number of PAs (mainly in Africa) and these were also used 436. Additionally, a further 877 of marine PA contacts (MPA) collected by Venetia Hargreaves-Allen as part of her PhD research were added. Moreover many contacts were found from personal research and from respondents that had passed on the survey. In total 2834 were sent comprising 42 countries. Emails were replied to as soon as possible and each response e-mail was personalised, using the specific protected area name.

3.22 Designing the email questionnaire (English version)

The email questionnaire was designed to be brief. Basic information on the protected area was requested, followed by four simple questions about the management of the protected area and the use of livelihoods assessments:

Protected area name:

Designation:

Country:

[IUCN Protected Area Management Category \(Ia-VI\)](#) :

1. Has there been any assessment conducted on this Protected Area (PA) and its effect on local people, communities, livelihoods⁴ and/or wellbeing⁵? **Yes/No**
2. Does your PA management plan include conducting an assessment? **Yes/No**
3. Are you aware of anyone else who is or has been conducting livelihood or social impact assessment⁶ in and around the PA? (i.e. local/international NGO's government sectors, research institutions) **Yes/No**
If yes, please could you specify their name and organisation?
4. How is the PA [managed and governed](#)? (Please select one of the four IUCN governance types and delete those answers that are not relevant)

Government Managed (e.g. Federal, National, Local Ministries or Agencies or government-delegated management to an NGO etc)

Co-managed (e.g. Trans-boundary management, collaborative management, joint management)

Private Protected Areas (e.g. declared and run by individual land-owner, by a non profit organisation like University/NGO, by for profit organisations like individual or corporate land-owners)

Community Conserved Areas (e.g. declared and run by indigenous peoples or local communities)

A pilot was sent to a random subset of around 100 contacts from the database on the 25th of June. Any feedback regarding wording or concerns observed in responses were addressed and a final version was sent to all contacts on the 2nd of July.

3.23 Email questionnaire (Portuguese version)

In an attempt to eliminate country specific bias and to increase the response sample size, the final version of the English email questionnaire was translated. As a native speaker of Portuguese, the translation was done personally. The Portuguese version did not have a pilot period and was sent on the 4th of July sent to all Portuguese and Spanish speaking countries. For a copy of the email sent in both English and Portuguese please see Appendix E.

3.24 Designing the online survey (English version)

The online survey was designed to collect information on the type of methodologies being used, in protected areas where livelihood assessments were being carried out. The online survey was placed on the website www.surveymonkey.com for ease of use but it was also sent as a word document to those respondents where this was requested.

The aim was to keep the survey as brief and simple as possible yet detailed enough to provide the necessary data. It was carefully designed and then reviewed in consultations with many conservation practitioners experienced in questionnaire surveys. The number of questions was kept to 10 to encourage respondents to answer the entire survey. A multiple choice format was chosen for the questions with additional optional commentary boxes (where relevant). An outline of the questions that were asked are listed below. For a full copy of the survey questions (in English) and multiple-choice responses available please refer to Appendix F.

1. When was the most recent livelihood assessment carried out?

(Within past 12 months, over 1 year, 3 years, 5 years, 10 years ago, I don't know)

2. Why was the livelihood assessment carried out?

(Its is part of our National government policy, organisation policy, protected area policy, management scheme, required by our donors, I don't know, other)

3. Which impacts of the protected area on the local community were measured?

(Positive, Negative, Both positive and negative impacts)

4. Which of the following categories of people's livelihoods components were assessed?

(Human, Social, Natural, Physical, Financial, I don't know, other)

5. Did you look at impacts of the protected area in relation to any of the following?

(Gender, Age, Ethnic group, Education, I don't know, other)

6. Was the livelihood assessment based on an existing framework?

(No specifically this occasion, Yes (please specify), I don't know)

7. Which (if any) tools did you use?

(Economic valuation, Participatory techniques, Structured/Semi-structured/unstructured interviews, I don't know, other)

8. Who collected the data? (tick as many as you like)

(Staff from: PA management, National organisations/institutions working in PA, International organisations/ institutions working in PA, Researchers: National, International, Local community members, I don't know)

9. Have any of the results been analysed or published?

(No, Yes but not published, Yes and been published, I don't know)

10. Have the results been used to influence Protected Area (PA) management?

(No and I don't think they will be, Not yet maybe in the future, Yes they will definitely be used, Yes they have been used, I don't know)

3.25 Designing the online survey (Portuguese version)

The Portuguese online survey was translated from the English design (above) and also placed on www.surveymonkey.com. Both surveys were formatted in exactly the same way and sent with to contacts with the same (translated preamble) email. This version was sent initially to those that had replied from the Portuguese email questionnaire. However, because a high response rate was noted from the email questionnaire, it was also sent to any Portuguese-speaking respondents that acknowledged carrying out a livelihood assessment.

3.3 Reviewing the published literature with case studies

Objective 5 is concerned with the published literature; both peer reviewed and non peer-reviewed. Methodologies described in the published literature were examined using a set of questions developed both from the criteria developed for assessing the methodologies checklist (section 3.13) and the global survey (section 3.2). The responses were used to assess the type of methodologies currently represented in the reporting on costs/benefits.

3.31 Choosing the case studies

For a UNEP-WCMC report Coad *et al.* (2008) produced a literature review of over 100 articles and reports that evaluated the costs and benefits of forest PAs to local peoples. These case studies had been pre-selected by the authors through a general literature research of primary (journal articles) and secondary literature such as NGO reports, academic PhD theses etc and were used as the primary source of case studies for this study's sub sample. In total 46 case studies were investigated. Case studies selected for this study if they explicitly mentioned some costs and or benefits in local livelihoods as a result of a PA. Case studies that did not mention any negative or positive impacts of conservation activities (either through PA management plans or external agencies and their projects within the PA) were not included.

3.32 Gathering data

Case studies were evaluated using multiple choice questions and open answer questions. These questions attempt to characterise the methodologies used and how they were applied on the ground. Because the case studies had been applied on the ground, more detail was investigated;

An overview of the questions is provided below;

1. Who published the case-study?

(National government, National NGO / ORG, International NGO / ORG, PA management, National Academics, International Academics, I don't know, other)

2. Who collected the data?

(Protected area management staff, Staff from National organisations/institutions, Staff from International, organisations/institutions, National Researcher(s), International Researcher(s), Local community members, I don't know)

3. Data output forms

(Academic thesis or document/report, Peer - reviewed article, Web-publication, NGO/ORG report, National Database, Government/PA agency, Multi-media (GIS, video, mapping), Policy reports)

4. Data type

(Qualitative, Semi-quantitative, Quantitative)

5. Was it based on an existing framework?

(No tool: just description, Unkown, Yes)

6. Which impacts of the PA were measured?

(Negative impacts, Positive impacts, Both positive and negative impacts, I don't know)

7. Scope of the assessment:

(Intra-households, Intra-community, Inter-communities/Regional, National, Global, Not Mentioned)

8. Which livelihoods components were assessed?

(Human, Social, Natural, Physical / Built, Financial, Unkown, Other)

9. Impacts were looked at in relation to:

(Gender, Age, Ethnic group, Education, Religion, Unkown, other)

10. Where any controls used?

(Baseline, Reconstructed Baseline, Counterfactual, Before/After, Snapshot, Time Series)

11. Interviews?

(No tool: just description, Structured and Semi-structured interviews and questionnaire surveys, Unstructured interviews and questionnaire surveys, Not mentioned in detail)

12. Economic valuation tools:

(Yes but not available in detail, Cost-Benefit analysis, Household consumption, Econometrics (markets), Environmental economics, Not mentioned at all)

13. Participatory techniques:

(Generalised PRA only, Group Discussions, Beneficiary Assessment, Timelines of events, Seasonal calendars, Mapping, Wealth ranking, Not mentioned)

14. Were both results and methods published?

(No, Yes but with no methodology mentioned, Yes but with the methodology elsewhere, Yes and the methodology used has been published in this paper)

14. Have any results been used to influence PA management:

(No and I don't think they will be, Not yet maybe in the future, Yes they will definitely be used, Yes they have been used, Unkown)

3.4 Combining survey data with WDPA protected area information

The WDPA contains important information on protected area designation, date of establishment, and IUCN management category and area, among other information. For each response that contained a PA name, the WDPA site codes were searched for in the WCPA WDPA at UNEP-WCMC (accessed version on the 4th August). This then provided further information for each PA, and allowed any gaps in the response database to be filled in.

Discrepancies with IUCN categories were resolved by adopting the category listed in the email questionnaire response and not the WDPA. This was decided because the WDPA is not always up to date and moreover as of yet they have no privately or community managed PA's registered. PA IUCN categories from the WDPA were only used when no information had been provided by the respondent or when there was considerable disagreement or doubt between respondents (within and between the email questionnaire and online survey responses). Data were graphically presented as counts or number of PAs. Sample sizes were too small for graphs to be drawn as percentages of each variable, or for statistical analysis, particularly given the lack of randomization.

3.5 Some methodology criteria definitions

Throughout the methodology and case study evaluations, some of the criteria used may be rather subjective and require further definition. When a methodology was reviewed and assessed to if they produced 'results', the term refers to more than a narrated text, i.e. outcomes of some form of primary data collection or synthesis and analyses of secondary sources. 'Methodologies' refers to any description or indication in the case study text that outlines how such primary data was collected (e.g. whether interviews or group discussions were conducted). 'Quantitative data' is described here as using relatively more statistical and quantification methods beyond vote counting of qualitative responses.

'No tool: just description' referred to circumstances where local individual or community opinions were described without accounting for how those opinions were collected. 'Time-series' refers to data was collected in the same way, to the same or similar population (i.e. could be same community) at multiple time periods (more than twice). 'Before/after' refers to those methodologies that assessed impacts before or after a particular new or recent conservation intervention (a new project, PA establishment or restrictions on resource use). 'Reconstructed

baselines' were considered as such if the methodology attempted to describe the PA impacts on local livelihoods either before or at the point of its establishment, through primary data from oral accounts or secondary data. If there was a specific section dedicated to 'next steps' or policy (even a paragraph of text) this was considered to be policy/report/relevant.

3.6 Statistical analyses

Results from section 4 (characterising the methodologies), was presented as the check-list of methodologies, and did not require further statistical analyses. Data from the email questionnaires, online survey (section 5) and case studies (section 6) are essentially qualitative, and have provided count data. This was then statistically analysed to look at how the characteristics of protected areas were correlated with the likelihood of them conducting livelihood assessments or having livelihood assessments as components of their management plans. The variables present in the data were grouped to enhance statistical significance and further explore the correlation (if any). Some variables were added at this stage and include: countries by region (as defined by the United Nations); and the World Bank's economies list.

Data extracted were tabulated to form a summary of data sets providing a yes, no, or neutral answer to each question, using vote counting (Pullin and Stewart 2006). The correlations between different variables (such as the presence of absence of a livelihood assessment with a protected areas characteristic) were investigated using Chi-square tests. It was concluded that the data was insufficient to conduct more complex multivariate analyses.

When chi-square tests revealed significant correlations, standardised residuals (the difference between the actual frequency and expected frequency) were calculated as a 'z-score' for each cell in order to determine which cell or cells produced the statistically significant difference. The values were then compared to the critical value that correspond to an alpha (α) levels of either $\alpha=0.05$, i.e. ± 1.96 or $\alpha=0.01$ i.e. ± 2.58 .

4. RESULTS: REVIEWING THE METHODOLOGIES

This section attempts to address objective 1:

1. Review the current methods for assessing the costs and benefits of protected areas for local livelihoods, and examine and compare their strengths and weaknesses.

4.1 Potential users

As outlined in section 3.12, table 1 shows some potential users that may be interested in methodologies that assess PA impacts on local communities. Potential users vary in terms of how they use the data. Whilst some may be responsible for developing the methodologies; or their application on the ground, others may only be interested in the resulting data that was collected. Consequently, the table highlights some of the vast variation in user groups and their reasons for carrying out livelihood assessments.

Table 1. Potential users of methodologies that assess livelihood impacts of protected areas

Civil society and NGOs	Government organisations	Private organisations and academics	International organisations and donors
<ul style="list-style-type: none"> - National NGO's - International NGO's - Village women's groups - Local village councils - Community enterprise group - Community leaders - Indigenous groups - Umbrella Indigenous organisations - Product certification organisations e.g. FSC - Consumer groups of certified products - Trade Union groups, e.g. federation of trawler crew - Social activists 	<ul style="list-style-type: none"> - Protected area authority - Protected area manager (local at the site) - Parent Ministry at national level - Local government levels - Ministry of Finance - Ministry of Planning - Ministry of Development - Ministry of poverty alleviation 	<ul style="list-style-type: none"> - Social scientists - Quantitative social science - Career academics - Qualitative social science career academics - Natural scientists - Policy orientated scientists - Theoreticians - Research students - Inter-disciplinarians - Environmental - Consultant firms - Oil industry - Tourism - Land developers 	<ul style="list-style-type: none"> - Project implementing agencies (e.g. WB, UN agencies) - Bilateral donor Programmers - The IUCN; commissions and Members - Donor policy makers (e.g. G8, OECD) - Environmental conventions (e.g. CBD, UNFCCC) - Contributors to GEF (e.g. DFID) - UNEP-WCMC

In table 1 users have been grouped into four broad categories: civil society and NGOs, government organisations, private organisations and academics, and International organisations and donors. However, even within these categories, different users require livelihood assessments on diverse spatial and temporal scales.

For example, within 'government organisations': local PA managers (on site) may require a livelihood assessment to improve management effectiveness, ultimately seeking to implement initiatives that minimise local conflict and improve local support for conservation. Their target community will most likely depend on the sources of conflict, and the threats they pose to biodiversity. Thus, assessments would be locally specific and perhaps used to understand local perceptions or resource uses. On the other hand the 'Ministry of Poverty Alleviation' may be seeking to understand the extent of poverty around PAs and how the PA contributes to local livelihoods (particularly financially). In this case, data would be required data on large National scales, focus on the economic contribution of PAs to the national economic development and reduction of poverty. Although some demographic data might be collected on site, the Ministry of Poverty Alleviation would be more interested in the final information gathered than the assessment methodology itself. Contrary to the former PA management team, the Ministry's focus would not be conserving biodiversity but would most likely involve potential opportunity costs posed by PA systems, and National and International politics (like PRSPs or the Millennium Development Goals).

Likewise within 'International organisations and donors' there is clear distinction between those agencies that would be interested in implementing or applying livelihood assessments on the ground and those only interested in the resulting information gathered. Appliers of methodologies may include project implementing agencies (like the World Bank or UN agencies) or bilateral donor programmes and users of the information gathered may include donor policy makers (like G8, OECD, PEP), environmental conventions (CBD, UNCCD, UNFCCC), or contributors to GEF like DFID. The former 'appliers' would most likely use SIA methods to ensure their programmes are properly targeted and meeting corporate goals, government policy international goals like MDG. The users of information would focus more on informing, refining and developing policy on the environment and future CoP (conference of the Parties) decisions. Their scope would thus also be different: the former concerned with projects on small local scales for the duration of their commitments and the latter in large global scales and over longer time frames.

4.2 Forms and Sources of data

Data used to assess the impacts of PAs on local communities may be qualitative, semi-quantitative or quantitative. Some data may be aggregated for analyses at larger spatial scales, whilst others are focused and only locally relevant. For many of the tools and frameworks described in section 2.5, data may also be directly or indirectly obtained, this will be referred to as 'primary' or 'secondary' data respectively. Primary data sources here refers to data collected specifically for assessing the impacts of a PA on the livelihood of local people, be it at the level of individuals, households, or communities.

Data may be collected through many techniques and tools. For instance through environmental economics like cost-benefit analyses (net value of benefits gained and costs incurred) household consumption (usually of natural resources as food or firewood), econometrics (analysing local markets) and environmental valuation (assigning and exploring monetary values of environmental goods and services). Participatory techniques include the widely used 'PRA' approaches (Participatory Rural Appraisal) that may include a combination of group discussions, community events timelines, seasonal calendars, spatial mapping, and wealth ranking. When interviews are employed these may be structured, semi-structured or unstructured and consist of open answers, closed answers or a mixture of both.

Secondary sources might include national statistics and census data. Governments often collect data on poverty levels in a variety of forms. For instance these may include population health and demographic information, education surveys, household budget surveys, or livestock surveys. In developing countries much of this data is often linked to the requirements of Poverty Strategy Reduction Papers or for reporting against Millennium Development Goals. This data is often compiled into the form of indicators and indices as described above. Other forms of secondary data sources include: peer reviewed articles or non-peer reviewed literature such as reports by institutions and organisations.

Data may be presented in various forms: from policy and NGO reports, to peer reviewed articles, online publications, and have multimedia elements like GIS maps and video. Data could contribute to National databases, or be compiled into governmental and PA agency reports. Some data may not even have been published.

4.3 Methodologies that assess livelihood impacts of protected areas

Table 2. Summary of the strengths and weaknesses of seven frameworks that assess livelihood impacts of protected areas.

This table qualitatively summarises methodologies strengths and weaknesses; their main objectives, how it is used, main merits and demerits and their application on the ground. References in grey were not found.

Name of framework	Reference	Objectives	How is it used?	Main merits	Main demerits	Who has used it?	Has it been applied? Where?
I (2002) WCS / IGCP (AWF, FFI, WWF) / CARE socio-economic status of people living near PA methodology	Plumptre <i>et al.</i> (2004) The Socio-economic Status of People Living Near Protected Areas in the Central Albertine Rift, Albertine Rift Technical Reports N°4	To provide a baseline assessment of the socio-economic conditions of the people living within 10km of 6 PA's in the central Albertine Rift region of Africa in order to follow/assess conservation activities in the region. To identify threats from local populations living around the PAs and assess their impacts in various regions.	Questionnaire surveys conducted using a PRA approach. Data collected is put into the context of other literature and extensively discussed.	<ul style="list-style-type: none"> - They have extensive data on historic population trends (growth rates and densities) within each PA and use of national stats. Thus producing a comprehensive literature review summarising history of conservation attempts their effects and the diversity of communities and their relationships to natural resources over time. - They included both conservation and development practitioners in the design of the surveys so that Data useful to both groups would be collected. 	Feasibility issues: it would be hard to repeat: time consuming and expensive. Required 6 months just to design the survey, and had to train data collectors for 4 days in each location.	Between various institutions. A collaborative effort between WCS, IGCP, and CARE International.	Once in 4 Countries (6 PA's: in total: Uganda; Democratic Republic of Congo; Rwanda; and Burundi) comprising the Central Albertine Rift.
II (2002) CARE/IUCN/AWF 'Assessment of PA costs and benefits'	Promoting Equity in the management of Protected Areas: New evidence of the need for action. Distributed at UNEP-WCMC workshop by Phil Franks, CARE International. CARE International,	To evaluate 1) How PA costs and benefits are distributed between and within households, communities, local, national and global levels and what factors influence these. 2) What is the significance of any net negative costs to local	This approach has two main elements: 1) A rapid social impact assessment (RSIA) tool based on SLF aimed to identify which PA-related costs and benefits are most significant to local communities, and to which socioeconomic groups within the community; 2) An economic analysis (EA) which aims to put a	<ul style="list-style-type: none"> - Each country's target PA's had one government managed, one co-managed, and one community managed PA. - The extensive scales of scope allow comparison of a PA's cost benefits on a range of spatial scales and governance schemes. - Extensive PRA approach used including focus groups discussions 	<ul style="list-style-type: none"> - No specific indicators. - Net impacts are measured in USD\$ but putting economic value on PA costs and benefits can be tricky because not all can be accurately valued in monetary terms. - No explicit counterfactual. 	CARE, IUCN, AWF Have not been widely applied except in very few project sites.	It was applied in 12 terrestrial PA's, in 4 countries, i.e. 3 PAs in each country: Kenya, Uganda, Thailand and

	IUCN, AWF (2006) Assessment of Protected Area Costs and Benefits. Methodology Guidelines, Unpublished Draft.	communities versus costs to PA management authorities 3) How local people perceive equity of PA's benefits/costs 4) In what ways and what circumstances can PA's contribute to reducing poverty.	value (USD) on the most significant costs and benefits looking at three discrete levels: (i) local, (ii) national and (iii) global. The governance type of the reserve is also taken into consideration.	and wealth ranking to make collection locally sensitive and validated. - Explores both financial and non-financial costs/benefits including social and cultural and attempts to incorporate this into a net impact factor. - Relatively fast 5 months to complete.			the Philippines.
III (2006) IUCN/WWF 'Landscape Tracking Tool'	Sayer <i>et al.</i> (2006) 'Assessing Environment and Development Outcomes in Conservation Landscapes', Biodiversity Conservation Sayer <i>et al.</i> (2006) How to Assess the Outcomes of Conservation and Development Interventions in Landscape Mosaic (working draft), IUCN, WWF, CIFOR	To assess livelihoods and biodiversity outcomes of conservation activities at the landscape level.	1) Participatory techniques are used to isolate five indicators of each of the five capital assets identified from the DFID Sustainable Livelihoods framework: human, social, build, financial, and local natural assets. Plus an additional 6 th asset: global natural (environmental). 2) The identified indicators are then refined until sets of 25-30 indicators are obtained. Then a numeric value is assigned to every indicator using a Linkert scale (1-5). This is designed to capture the data on Excel tables, which can then be represented using radar diagrams.	- Locally defined indicators as opposed to generalised ones, improves local sensitivity. - Combining indicators into radar diagrams has the advantage of showing 'overall' changes in situations without necessarily implying a judgement on whether the changes are good or bad. - Relatively rapid. Manageable yet representative number of Indicators. - The additional 6 th global asset provides an easy way to identify any imbalances in benefit distribution on local/global scales (e.g. rare species/carbon stocks...).	- Only small number of local people chosen by them to represent stakeholders (workshop participants did go into local communities in small field visits). - Suggest primary data should be minimised, encourages the use of national statistics. These could be biased, e.g. due to coarse scale or even outdated. - Cannot address intra communities or household level variation (gender age etc...)	IUCN, WWF	Trials on 3 landscape sites in Africa including Chaouen mountain region in Northern Morocco, mosaic of PA's around Bayanga-Central African Republic and the Usambara Mountains in Tanzania.
IV (2006) WCS's 'Parks and People Approach'	Wildlife Conservation Society (2006) 'Household Surveys – A Tool for Conservation Design, Action and Monitoring', Living Landscapes Technical Manual N°4 Wilkie <i>et al.</i> (2006)	To assess the human welfare effects of establishing PAs for biodiversity conservation.	A detailed quantitative survey of households affected by a PA and an equivalent number of control households. It is built on the World Bank Living Standards Measurement Study (LSMS) and can be used to assess demographic attributes of the household, short-term health of household members, household	- Provides excellent data on the poverty impacts of PA's at household level, quantitatively highlighting extensive intra-community and inter-community disparities. It uniquely measures measuring household demographics and education. - Simple, informative report which draws on experience to provide reader with flexible guidelines.	- The effort is too intensive and is likely to be both expensive and cumbersome. May not be suitable for use across a large sample of PA's with less resources (Funding by USAID) - Time consuming - Extensive training needed	WCS	Gabon 5 yr study in 4 new PAs (from 13) Gabon's new NP's

	'Parks and People: Assessing the Human Welfare Effects of Establishing Protected Areas for Biodiversity Conservation', Conservation Biology 20(1): 247-249		wealth, income, consumption of natural resources, agricultural products; manufactured goods, and social capital and cohesion. Village level factors using participatory mapping/surveys to evaluate access to markets/natural resources/social services.	- Ranks household wealth participatory way and via local assets possessions that are transformed into PPP. - It assesses new PA's.	of local people.		
V (2008) WWF's 'Benefit Assessment Tool'	Dudly N. and Stolton S. WWF (2008) The Protected Areas Benefits Assessment Tool, A methodology.	This is PA tracking tool that aims to collate information on the full range of current and potential benefits of individual PA's. It is a contributory methodology for the overall 'Arguments for Protection' series.	It consists of two worksheets: First is the background datasheet that contains the name, IUCN category, location, etc, plus an opportunity to identify key management objectives and to make a value judgement about how much the PA contributes to people's wellbeing. The second section consists of a set of datasheets that collects data on the types of benefits who they are important to and qualitative information about their level of importance and spatial occurrences in the PA.	-It is simple and quick to do. - Being aimed primarily at PA managers potentially yields valuable information about PA's including IUCN categories, governance schemes and WDPA site codes. - Clear structure of the datasheets allows the level of benefits to be clearly linked and labelled according to identifiable stakeholder groups including indigenous or not, living in the PA, near the PA, national population, government, industry and the global community.	- This tool records only the level of benefits and not costs. - Benefits are measured by 'use of a resource' which are generalised and not applicable everywhere. - It's aimed at PA staff and there is no mention of PRA techniques it could introduce bias and an over representation or at least mis-representation of benefits to local people. - It does not distinguish how the levels of benefits are distributed within communities, or households, neither by gender/age/wealth/ethnicity/education levels.	WWF, and potentially many PA management staff.	No detail was provided in the document as to where it has been applied or where this information can be obtained.
VI (2007) TNC: How marine protected areas contribute to poverty reduction	Leisher <i>et al.</i> TNC (2007) Natures investment bank: how marine protected areas contribute to poverty reduction.	TNC's aim was to attempt to empirically analyse the link between biodiversity conservation initiatives and poverty reduction by focusing their assessment on 4 study sites deliberately chosen because local experts	Data was collected and triangulated using (a) semi-structured focus group discussions with various different stakeholder groups (from MPA management committees to government to women and youth groups, elders, fishers) and key informant interviews (b) structured	- Data is validated 3 times via triangulation, which includes an attempt to use counterfactuals. - By focusing on case studies that 'work' in a win-win situation they were able to pinpoint common characteristics that the MPA's have that help them contribute to poverty reduction and empirically assess	- However by focusing on only 'win-win' examples the study fails to understand the intricate complexities that hinder other PA's in reducing poverty. - Moreover the positive outcome was expected by	TNC	Used in 4 MPA's in 4 countries; Fiji, Solomon Islands, Indonesia and The Philippines.

		believe they have contributed to poverty reduction. Can these “investment banks” help reduce poverty?	household interviews targeted at MPA-related communities to control communities (c) part of the household survey that looked at perceived changes over the last 5-10 years and if people believed any changes were caused by the PA. Poverty dimensions looked at were taken from The World Bank and modified which includes: opportunities; empowerment; and security, which were subdivided into specific focus areas.	what this contribution has been. - It thus allows a general outline of approaches local governments/NGO’s may take to improve local livelihoods. - Although only 4 PA’s were assessed they were also chosen to incorporate different size and numbers of communities; MPA area km ² ; MPA ages and different governance schemes.	the assessors thus the study was structured to capture these benefits, perhaps at the cost of losing other important data from the people.		
VII (2008) Kwaw Senyi Andam PhD thesis	Essay’s on the evaluation of land use policy: The effects of regulatory protection on land use and social welfare: Chapter 3 Evaluating the effects of protected areas on socioeconomic outcomes –Kwaw Senyi Andam	As part of his PhD and an ongoing study with International Food Policy Research Institute and Paul Ferraro (amongst others): The study aims to apply an impact evaluation approach to measure the social impacts of Costa Rica’s entire PA system (1960-2000) by addressing 3 methodological issues: 1) selection on observables 2) spatial spill-overs and 3) hidden bias.	Using socioeconomic census data from Costa Rica INEC layered with GIS layers of major cities, forest cover (University of Alberta Canada) and land use capacity based on soil, climate and topography, in addition to transportation roads, railroads, and river-transportation network were digitised (national data bases). Socio-economic outcomes are measured by 4 variables; employment; access to electricity; access to telephones; access to computers. Matching methods are used to identify suitable counterfactuals for PA census segments.	- Uniquely attempts to address 3 main bias sources 1-2-3. - Extensive data covering the whole of Costa Rica’s PA system allows good comparisons on a national level. - Good GIS output for future analysis. - Collaboration with various national institutions. - Attempts to use a counterfactual.	- However he didn’t take into account all the different types of PA’s that exist in Costa Rica in relation to their governance schemes, IUCN categories; or other factors that may have been affecting socio-economic outcomes such as NGO/ORG livelihood initiative projects or payments for environmental services. - Study is limited to the Census segment data - Uses secondary sources of data that may vary in quality, reliability etc. between segments.	Academics.	Whole of Costa Rica’s PA network established between 1960-2000

Table 3. The checklist of characteristics and criteria that differentiate methodologies.

Each of the 7 methodologies has been 'scored' according to the presence or absence of criteria that may be used to characterise, compare and contrast them.

Methodologies that assess livelihood impacts of protected areas on local people								Total
Characteristics that differentiate the methodologies	I	II	III	IV	V	VI	VII	
SCOPE								
Impacts								
Positive impacts	✓	✓	✓	✓	✓	✓	✓	7
Negative impacts	✓	✓	✓	✓		✓		5
N.A.								
Livelihood component								
Financial	✓	✓	✓	✓	✓	✓	✓	7
Human	✓	✓	✓	✓	✓	✓		6
Social	✓	✓	✓	✓	✓	✓		6
Local Natural	✓	✓	✓	✓	✓	✓		6
Physical / Built	✓	✓	✓	✓	✓	✓	✓	7
N.A.								
Scale of Assessment								
Intra-household	✓	✓	✓	✓		✓		5
Intra-community	✓	✓	✓	✓		✓		5
Inter-communities / regional	✓	✓	✓	✓	✓	✓	✓	7
National	✓	✓			✓		✓	4
Global		✓			✓			2
N.A.								
SENSITIVITY								
Level of Differentiation								
By gender	✓	✓		✓		✓		4
By Age	✓			✓		✓		3
By ethnicity	✓	✓						2
By wealth	✓	✓		✓		✓		4
By power / social status	✓							1
By religion								0
By education	✓			✓		✓		3
N.A.			✓		✓		✓	3
FEASIBILITY								
Financial								
Expensive (>25K\$)								0
Moderate (10-25K\$)								0
Cheap (up to 10K\$)								0
N.A.	✓	✓	✓	✓	✓	✓	✓	7
Time								
> 12 months	✓			✓			✓	3
< 12 months		✓						1
< 1 month								0
N.A.			✓		✓	✓		3
OBJECTIVES								
By who?								
National institutions / NGOs						✓		1
National government / PA agency								0
International NGO	✓	✓	✓	✓	✓	✓		6
Academics							✓	1
Level of institutionalisation								
Integral to institution								0
Recommended by institution								0
Not integral to institution	✓	✓	✓	✓	✓	✓	✓	7
N.A.								0
Has it been applied?								
Yes only once / trial initiative(s)	✓	✓	✓	✓		✓	✓	6
More than one initiative								0
No								0
N.A.					✓			1
METHODS								
Design								
Experimental				✓				1
Quasi-experimental	✓	✓	✓			✓	✓	5
Case-study – narrative	✓				✓	✓		3
Participatory evaluation	✓	✓	✓	✓				4
Triangulation				✓		✓		2

Controls								
Baseline				✓				1
Reconstructed baseline	✓					✓	✓	3
Counterfactual	✓			✓		✓	✓	4
Before/after				✓				1
Snap shot					✓			1
Time series				✓				1
N.A.			✓					1
Data Collection – Primary (tools)								
Environmental economics;								
Cost-benefit analysis		✓						1
Household consumption	✓	✓		✓		✓		4
Econometrics/markets	✓	✓		✓		✓		4
Environmental valuation		✓		✓				2
N.A.			✓		✓		✓	3
Participatory techniques;								
Generalised 'PRA'	✓							1
Group discussions		✓	✓	✓		✓		4
Timelines of events			✓	✓				2
Seasonal calendars				✓				1
Spatial Mapping			✓	✓				2
Wealth ranking		✓		✓				2
N.A.					✓		✓	2
Interviews;								
Open answers	✓			✓	✓			3
Closed answers				✓				1
Structured	✓				✓			2
Semi-structured	✓			✓	✓			3
Unstructured					✓			1
N.A.		✓	✓			✓	✓	4
Data Collection - Secondary								
National statistics/ census data	✓		✓				✓	3
Reports and non-peer rev. lit.	✓		✓					2
Peer reviewed articles	✓							1
N.A.		✓		✓	✓	✓		4
Data type								
Qualitative	✓			✓	✓	✓		4
Semi-quantitative	✓	✓	✓	✓	✓	✓		6
Quantitative	✓					✓	✓	3
Large-scale aggregation possible?		✓		✓	✓	✓	✓	5
Forms of output								
Policy reports/recommendation	✓						✓	2
Peer reviewed articles			✓	✓				2
NGO/ORG internal report	✓			✓		✓		3
Academic paper (e.g. PhD theses)							✓	1
Web-publications	✓			✓	✓	✓		4
Educational								0
Multi-media; GIS, video	✓			✓			✓	3
National Database								0
Governmental/PA agency								0
Feedback option								0
Not published		✓						1
Not mentioned					✓			1

4.4 Characterising the methodologies

Scope:

Of the methodologies reviewed, most (5 of 7) looked at both positive and negative impacts of Pas on livelihoods. The majority of methodologies (with the exception of one (VII), assessed all five elements of DFID's livelihood framework: human, social, financial, natural and physical. All

methodologies assessed impacts to some degree or another on the inter-community or regional scale and many on intra-community and intra-households scales (5).

Sensitivity:

None of the methodologies assessed looked at all seven levels of community differentiation: gender, age, ethnicity, wealth, religion, education and power. Just over half took gender and wealth into consideration (4), and three took age and education as a factor (I, IV, VI). Only two methodologies looked at impacts by ethnicity (I, II), one by power/ social status (I) and none by religion.

Feasibility:

The financial costs of implementing these methodologies were not estimated in any of the papers reviewed. Moreover almost half (3) made no mention of time-scales involved with either data collection or methodology design. When time-scales were mentioned, the majority took over one year to design and or collect data in the field (I, IV and VII).

Objectives:

The majority of methodologies (6) were created by International NGO's. Only one of these (VI) explicitly mentioned collaboration with National NGO's on site as an integral part of their data collection method. Interestingly, none of the assessments were an integral part of the institution that created them, nor was their application on the ground recommended in the documents overviewed. Moreover all seem to have only been applied once as a trial initiative.

Most often this one initiative took place in more than country as in I, II, III and VI. Two looked at multiple PA's in the same country such as IV in Gabon and VII covered the entire PA network of Costa Rica (see table 2). Nonetheless these were all carried out at the time for the same ultimate purpose in the common initiative and thus have been considered here as 'one occasion'. The remaining methodology by WWF (V) the 'benefits assessments tool' was the only one to target individual PA's however, because it is presented for PA management staff to use (primarily) the methodology document provided no information on the extent of its application.

Methods:

Most methodologies had many different elements in their design. Only one methodology was labelled as 'experimental' (IV), it exclusively made use of both time series, counterfactuals and data triangulation whilst also providing extensive demographic information at the intra-household level using the World Bank LSMS. Five were labelled as 'quasi-experimental', two of these also had elements of case study

narrative (I and VI). Four methodologies were considered 'participatory' (defined as having more than one element of participatory techniques).

In terms of controls, few methodologies verified data collection through triangulation methods. Four methodologies however did make use of counterfactuals of some kind (I, IV, VI and VII); two of these also had reconstructed baselines (I, VI, VII). Methodology I, which although is stated as being a 'baseline assessment to follow conservation actions in the Albertine Rift' has not been considered as a baseline here. This is because many of the areas it assesses already had PAs when it was carried out and thus it is not evaluating the conditions on the ground before conservation actions really began. However methodology IV did evaluate some new protected areas in Gabon. Only one was considered before/after PA establishment assessment.

Data type:

Most methodologies had data that could be aggregated to larger scales for nation-wide or global comparisons. Most also used a mixture of qualitative and semi-quantitative data, three made use of 'quantitative data'.

Data collection:

Environmental economic elements were employed by 4 methodologies and more than one type was always used. In one case (II) all 4 types were ticked. All of these methodologies looked at household consumption to some degree and econometrics. Only 2 looked at environmental valuation (II, IV) and 1 cost benefit (II).

Participatory techniques were used in 5 methodologies. Methodology I only had general 'PRA' because no further details were provided in the document and VI only mentioned group discussions. Methodology IV however advocates using all the participatory elements considered. The most common participatory element was group discussions (4), two used timelines of events (III) IV) whilst only one methodology used spatial mapping techniques (III) and methodology one used wealth ranking (II).

Three methodologies specifically mentioned details on using interviews to collect data (I, IV and V); the remaining four provided no further information regarding interviews. When they were used, they were mixed open/closed or structured and unstructured.

A total of three methodologies made explicit use of secondary data collection as part of their methods (I, III and VII). The most predominant type used (3) was national statistics of some kind, then reports and non-peer reviewed literature and 1 made explicit use of peer-reviewed lit .

Forms of data output:

Over half of those reviewed were published on the web. Three made use of some form of multimedia, mainly GIS or mapping. Three were in the form of a NGO/ORG report, 2 were in the form of a peer reviewed literature and 1 was an academic paper (a PhD thesis). Only two methodologies were policy relevant.

Data accessibility

Obtaining the original documents needed to conduct this review was considerably time consuming. Although a total of 10 documents are listed in table 2 as the primary papers for these methodologies, only half (5) were readily available for download on the web (see table 3). Of these 5 documents, 2 had been published in peer-reviewed articles. Two documents: WCS (2006) in methodology IV and Kwaw (2008) PhD thesis for methodology VII were kindly provided by the authors. A substitute document for methodology II was provided by a participant at the May 15th-16th workshop at UNEP-WCMC, so in total 8 documents were utilised in this review.

5. RESULTS: THE GLOBAL SURVEY

As outlined in section 3.2, the global survey attempts to address objectives 2, 3 and 4 (below):

2. Examine the characteristics of protected areas which have carried out livelihood assessments, using a global survey of protected area managers and scientists.
3. Determine to extent to which livelihood assessments are institutionalised within conservation organisations and protected area management schemes, and study how the likelihood of livelihood assessments being carried out on the ground is affected by the institutionalisation of livelihood assessments.
4. Investigate the types of assessments and methodologies that have been applied globally, using a global survey of protected area managers and scientists.

5.1 The email questionnaire

The total number of responses for the email questionnaire (as of the 3rd of August) was 93 contacts, and these represented a total of 182 protected areas. Of the 182 PAs, 3 remained anonymous, i.e. no PA names were provided. When contacts had provided a name, 132 or 73% were also registered in the WDPA, whilst 49 PAs were not (27%). The majority of PA responses came from terrestrial PAs, only 4% or 8 PAs were marine protected areas (MPA).

The English version of the email questionnaire had a response rate of 67 contacts (72% of all responses) and the Portuguese version of 26 responses (28% of all responses). In terms of protected areas, the English responses represent 148 PAs (81% of all PAs) and 34 PAs (19% of all PAs) from the Portuguese-speaking contacts. These have been combined for the analyses in the sections that follow (sections 5.11 to 5.14). Further details and discrepancies observed between the two data sets are discussed in section 5.15.

5.11 To what extent have livelihood assessments been carried out in PAs?

Of the 182 PAs, 112 (i.e. approximately 62%) respondents stated that livelihood assessments had been carried out in their PA and the rest stated that no livelihood assessment had been conducted.

5.12 What sorts of PAs conduct livelihood assessments?

The relationships between different PA variables and the presence or of absence of a livelihood assessment are discussed below. These variables include IUCN category, IUCN governance regime, County, UN World Regions, World Bank economy groups, PA total area, and PA date of establishment. Appendix G provides the number of PAs against each variable according to whether they have or not conducted an assessment or whether it was part of their management plan. Table 4 summarises Chi-square tests that were carried out and these are discussed in more detail below.

Table 4. Summary of Chi-square tests related to the likelihood of conducting a livelihood assessment in PAs by different variables.

Variable	Chi-sq value	P value	Where there any significant contributing factors?
IUCN category	1.928	0.381	---
IUCN governance regime	0.472	0.790	---
UN World Regions	34.068	0.0001	Yes
World Bank Economies	34.257	0.0001	No
PA area	8.033	0.045	No
PA date of establishment	10.986	0.012	No
Livelihood component in management plan	61.417	0.0001	No
Portuguese and English responses	23.58	0.0001	Yes

IUCN category

Of the 182 responses, the great majority of PAs were classified as IUCN category II. Table 5 shows the number and percentage of PAs classified by IUCN category. Most responses were obtained from the more strict PAs (I and II).

Table 5. The proportion of PAs from the email questionnaire by IUCN category.

IUCN Category	Number of PAs	Percent of total PAs
I	20	11%
II	66	36%
III	5	3%
IV	31	17%
V	7	4%
VI	25	14%
Unset	5	3%
Unknown	23	13%

Of 112 PAs that conducted assessments, the majority were classified as category II (42%) and IV (23%; see Figure 2).

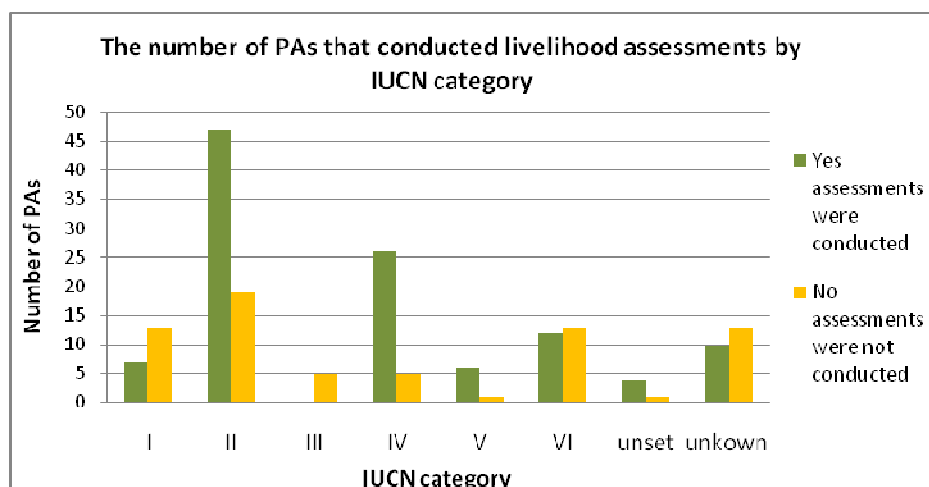


Figure 2. Graph of the number of PAs that conducted livelihood assessments and those that did not by IUCN category.

As figure 2 depicts, with the exception of IUCN categories II IV and V, there is little variation between the number of PAs that carried out assessments and those that did not by IUCN category. For category II PAs, 71% had had conducted assessments, for IV 84% and for V 86% had conducted assessments.

The sample sizes were too small to conduct a chi-square test by individual categories so these were grouped as follows: I-II, III-IV, and V-VI. From the chi-square test group I-II and V-VI had conducted fewer assessments than expected, whilst III-IV had conducted more than expected. However, none of these relationships were significant (Chi-sq= 1.928 df= 2).

IUCN Governance regime

The response rate for question 4 regarding governance was relatively high, of 182 responses only 5 PAs did not give any details on how it was managed or governed (3%). Most responses (62%) stated that their PAs were government managed (GOV). Figure 3 depicts the number of PAs that carried out a livelihood assessment or not according to their governance regimes.

As above for IUCN category, there does not seem to be a clear pattern linking any governance regime to the likelihood of carrying out livelihood assessments. Only GOV managed PAs had slightly higher ratio; 63% had conducted assessments compared to 47% that had not. PPA had a sample size of just 7 respondents and as such they were disregarded for the analysis. However as might be expected the chi-square test was not significant (Chi-sq=0.472 df=2).

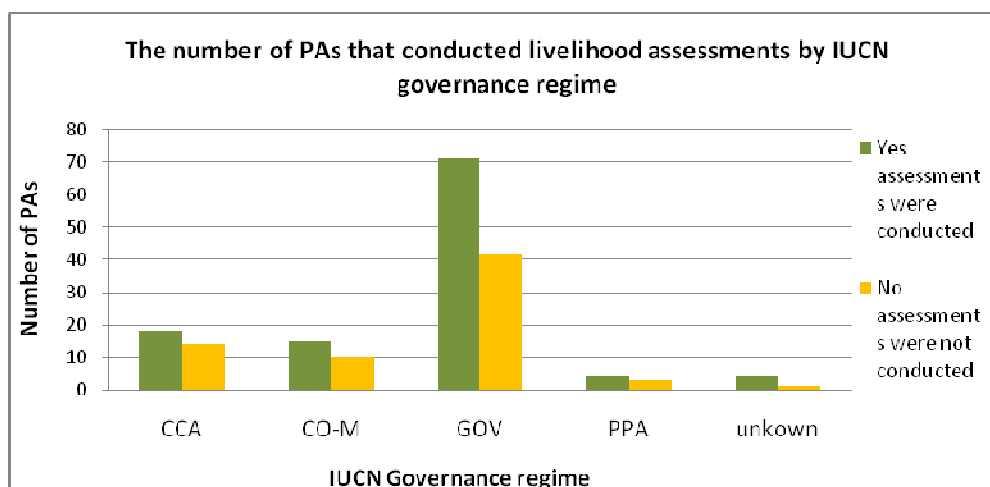


Figure 3. Graph of the number of PAs that conducted livelihood assessments and those that did not by IUCN governance regime

Where CCA: Community Conserved Areas, CO-M: Co-managed, GOV: Government managed, PPA: Private Protected Areas.

Country and Global Regions

Respondents came from a total of 42 countries worldwide. The country with the greatest number of PAs in the sample was Madagascar (35) and then Brazil (34). However it is important to note that all responses from Madagascar were from a single respondent whilst the Brazil PAs came from 26 different contacts. Other countries with notably high PAs in the sample were the Cook Islands with 21 (also all from a single contact), and 15 from Kenya (from 2 contacts). All other responses per country were below 10. These have been grouped into UN World Regions (Africa, Americas, Asia, Europe and Oceania). Figure 4 shows the number of PAs that carried out livelihood assessments by each region.

The great majority of livelihood assessments were conducted in Africa (62% of all assessments conducted in the sample size). The region with the highest proportion of livelihood assessments was Asia however, i.e. 88% (14 PAs) of PAs had conducted an assessment, in Africa this was 78% (69), in Oceania half 50% (12 respectively) and in the Americas only a third of PAs had conducted an assessment, 33% (16).

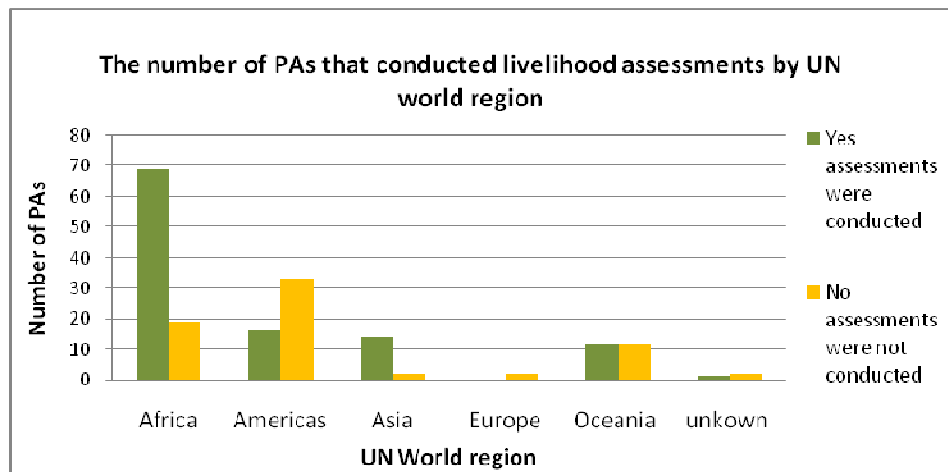


Figure 4. Graph of the number of PAs that conducted livelihood assessments and those that did not by UN World Region.

Once Europe was removed from the analysis, a significant relationship was found in the remaining data. Livelihood assessments were carried out more than expected for Africa, and Asia, whilst less than expected for the Americas and Oceania (Chi-sq=34.068 df=3 P=0.0001). However, when the standardised residual values were calculated, all of the cells fell below the 1.96 threshold.

World Bank Economies

The World Bank classifies countries by their economy into 6 categories, of 182 PA responses, 27 or 15% of these were not classified by the World Bank and thus are excluded from this analysis. Of the remaining 155 PAs: the majority (45%) were considered of low income and just over a quarter were from upper middle income countries (28%).

If PAs in high income countries are excluded from the data there seems to be a pattern in the likelihood of conducting livelihood assessments (see Figure 5). The poorest economies seem to favour livelihood assessments, for instance 83% (57 PAs) found in low income countries conducted assessments and likewise 77% (23) in lower middle income countries conducted assessments. On the other hand only 30% (13 PAs) in upper middle income countries had conducted assessments.

Once high income PAs were removed from the analysis (due to small sample size), a significant relationship was indeed found. Protected areas in low income countries and lower middle income countries were more likely to have carried out an assessments than otherwise expected whilst PAs in upper middle income countries were less likely to conduct assessments (Chi-sq=34.2579 df=2 P=0.0001).

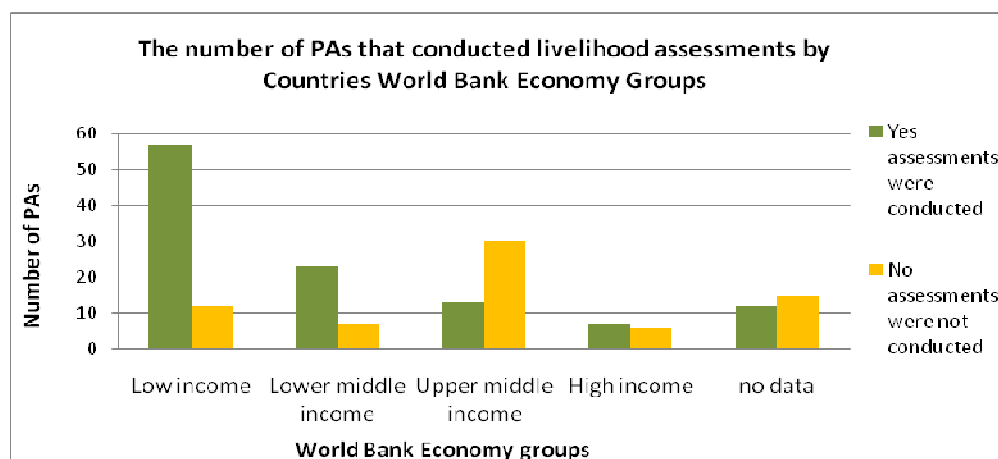


Figure 5. Graph of the number of PAs that conducted livelihood assessments and those that did not by PA country of origins World Bank economy groups.

By converting the data into standard residual values, some cells were found to be significant contributors to the relationship observed by the chi-square test above. These corresponded to those of low income that had not conducted an assessment ($\alpha=0.05$), those of upper middle income that had not conducted an assessment ($\alpha=0.01$), and those PAs of upper middle income but had conducted an assessment ($\alpha=0.01$).

Area

The WDPA provided the data for total area or size of the PAs. All of the PAs found in the WDPA had corresponding total areas (i.e 132 PAs). Of these, the majority of PAs were quite large, 51 (39%) being over 100 000 km² and 48 PAs (37%) were found between 10 000 and 100 000 km². Of these 51 PAs (over 100 000 km²) 12 PAs were over 1 000 000 km² (1 million). Figure 6 depicts the number PAs that carried out livelihood assessments according to their size (area in km²).

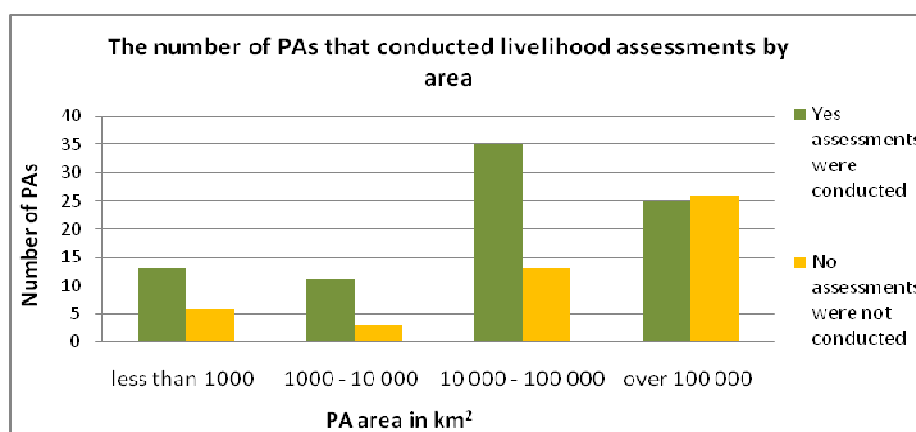


Figure 6. Graph of the number of PAs that conducted livelihood assessments and those that did not by PA are in km².

As figure 6 shows, smaller area groups had the highest proportion of PAs to conduct an assessment, i.e. 70% for those between 1000 and 10 000 km² in size, 73% for PAs between 10 000 and 100 000 km² and 68% for the smallest group (less than 1000 km²). Only 49% of the largest size group conducted livelihood assessments.

This relationship in size was found to be significant, the smaller the protected area, the more assessments had been done than otherwise expected. PAs in the first 3 size categories: below 1000 km², from 1000 to 10 000 km², and from 10 000 to 100 000 km² had chi-square expected counts higher than expected and those PAs over 100 000 km² had lower than expected (Chi-sq=8.033 df=3 P=0.045). Nevertheless, when the standardised residual values were calculated all of the cells fell below the 1.96 threshold.

Protected areas dates of establishment

The WDPA contains data on the date of establishment for the majority of PAs. Of the 132 PAs with WDPA codes, 120 had records for establishment dates (91%). Figure 7 shows the number of PAs that conducted assessments or not by their date of establishment. The following time periods were selected: before 1970, from 1970 to 1989, from 1990 to 1999 and from 2000 to present. The dates were divided to try and capture as many significant relationships as possible whilst also attempting to reflect the patterns of international conventions that have discussed livelihoods (namely the Rio convention in 1992 and then the World Park Congresses beyond 2000, for more information see section 2.3 in the background).

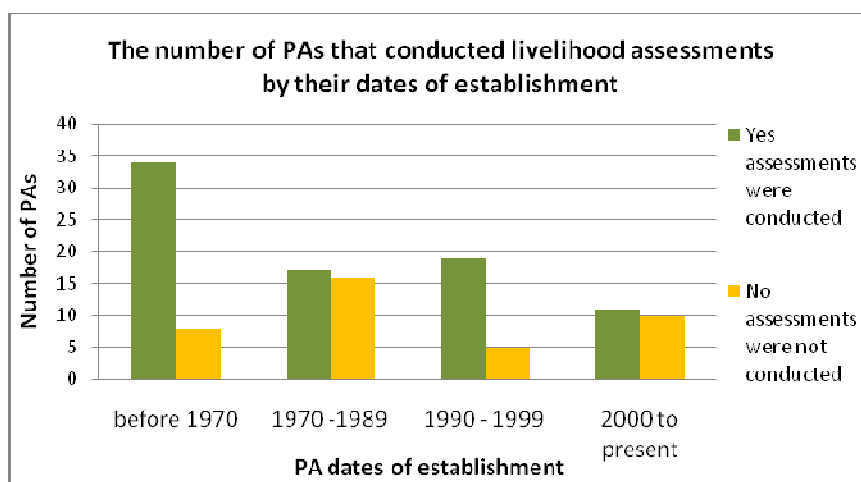


Figure 7. Graph of the number of PAs that conducted livelihood assessments and those that did not by PA data of establishment.

From Figure 7 it is immediately clear that two time periods have had the highest proportion of livelihood assessments carried out (81% before 1970 and 79% between 1990 and 1999) and the

other two have relatively equal proportions (between 1970 and 1989, and 2000 onwards). The latter group was less likely to have conducted an assessment (Chi-sq=10.986 P=0.012) was significant with. Yet, all of the cells fell below the 1.96 threshold when the standardised residual values were calculated.

5.13 To what extent are livelihood assessments institutionalised in PA management plans?

Of 182 PAs, 125 stated that livelihood assessments were part of their management plan, 55 PAs stated that they were not and data was unavailable for 2 PAs. Figure 8 represents the relationship between having carried out a livelihood assessment and having a component for it in the protected areas management plan.

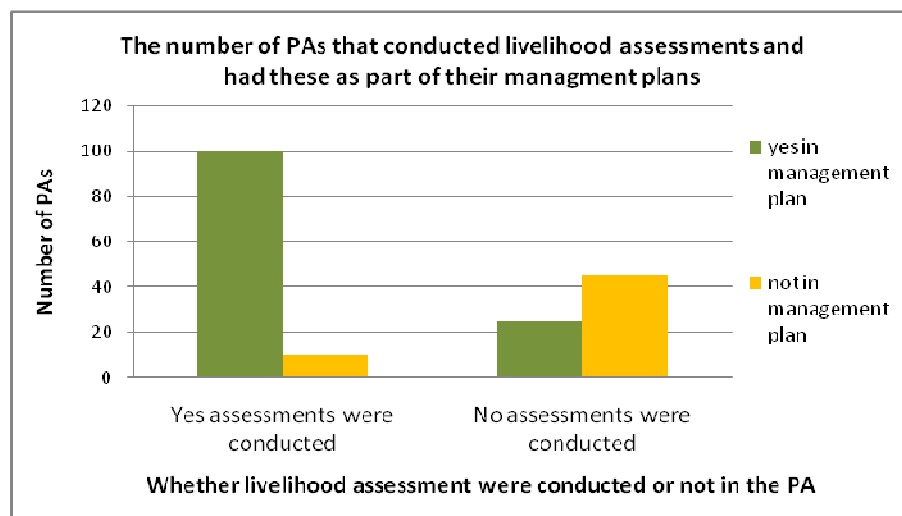


Figure 8. Graph of the number of PAs that conducted livelihood assessments and those that did not and if this was part of their management plan.

If a PA had a livelihood assessment component in their management plan, it increased the likelihood of having conducted an assessment (80% compared to 18%; figure 8). This relationship was found to be significant (Chi-sq=61.417, P=0.0001). Once the values were converted into standardised residuals, all four cells were beyond the 2.61 threshold for $\alpha=0.01$. In consequence, all cells were driving the significance of the chi-square test and the relationship is most probably true.

5.14 What sorts of PAs have livelihood components as part of their management plans?

The same variables as those mentioned above in section 5.12 were analysed per PA according to the presence or absence of a management component for livelihood assessments. As protected areas were more likely to conduct a livelihood assessment if it was part of their management

plan, many of the same variables were significant. Table 6 summarises the results of chi-square tests that were conducted, these are described in further detail below.

Table 6. Summary of Chi-square tests related to the likelihood of having a component for livelihood assessments in PA management plans by different variables.

Variable	Chi-sq value	P value	Where there any significant contributing factors?
IUCN category	0.144	0.931	---
IUCN governance regime	1.016	0.602	---
UN World Region	36.570	0.0001	Yes
World Bank Economies	42.896	0.0001	Yes
PA area	2.068	0.558	---
PA date of establishment	13.114	0.004	Yes
Portuguese and English responses	21.1	0.0001	Yes

IUCN category

Of the 180 PAs, 125 had management components encouraging livelihood assessment. Of these most belonged to category II (37%) and to category IV (20%). Proportionally, 66% of II, 31% of IV and 20% of IUCN category I PAs had livelihood assessments as part of their management plan, Once these were grouped as described above in section 5.12, IUCN category was also not a significant factor in predicting livelihood components in PA management plans.

IUCN governance regime

Of the 125 PAs, most (62%) were government managed. Most PAs within each governance regimes had livelihood assessment components as part of their management plans (with exception of PPA). For CCA PAs this value was 78%, in CO-M it was 72% and in GOV it was 69%. Thus as for having conducted an assessment, IUCN governance regimes proved to be insignificant predictors of have management components that may encourage a PA to conduct livelihood assessments.

Country and Global Regions

Of all the PAs to have management components for livelihood assessments, the majority (61%) were from Africa. Asian and African PAs were more the most likely to have livelihood

assessments as part of their management plan (94% and 88% respectively) whilst those from the Americas and Oceania were less likely to have (41% and 50%). Once Asia and Europe were removed due to small sample sizes, this was significant at Chi-sq=36.570 P=0.0001 and standardised residual values revealed the four cells for Africa and the Americas were driving the significance of the chi-square test ($\alpha=0.05$).

World Bank Economies

Of all the 180 PAs that had management plan data, 153 PAs had country data that could be classified into one of the four World Bank Economy Regions and 125 PAs had management components that encouraged PAs to conduct livelihood assessments. Of these 50% were from low income countries, 20% from lower middle income countries, 14% from upper middle income countries and 5% were from high income countries. Once high income countries were removed from the analysis, PAs in low income and low middle income countries had more management components (94% and 83% respectively) regarding livelihood assessment than expected in their counterparts from upper middle income countries (Chi-sq=42.896 P=0.0001). Standardised residual exposed three cells responsible for driving the significance of the chi-square test: PAs that had no management component in both low income and upper middle income countries and those that did have a management component from upper middle income countries ($\alpha=0.01$).

Area

Of the total 132 PAs that had area data, 92 PAs had management components that specified livelihood assessments. Of these most were between 10 000 and 100 000 km² (38%) and over 100 000 km² (35%). Proportionally however, the majority of PAs in each area group had management components. Given the little variation in the data, no significant relationship was found.

Protected areas dates of establishment

Of all 120 PAs that had establishment dates, 88 had management components for livelihood assessments. Of these 88, most (41%) were established before 1970, and almost a quarter were (24%) between 1990 and 1999. As for the likelihood of conducting an assessment, those PAs established before 1970 (86%) and between 1990 to 1999 (88%) were more likely to have a management component whereas those established between 170 and 1989 or those from 2000 to present were less likely (Chi-sq=13.114 P=0.004). One cell was found to be the contributor to

the significance of the chi-square test: the number of PAs that had no management component and were established from 1970 to 1989 ($\alpha=0.05$).

5.15 Portuguese versus English responses

The most striking difference between data from the Portuguese-speaking responses and the English version are the proportions of PAs that had or carried out livelihood assessments. This relationship is in fact significant with English responses having confirmed PAs have conducted livelihood assessments more often (70%) than otherwise expected and Portuguese (24%) responses less often (Chi-sq=23.58, $P=0.0001$). Standardised residual calculations revealed that only the Portuguese responses (both those that have and have not conducted assessments) contributed towards the significance of the Chi-square test ($\alpha=0.01$).

Likewise if the relationship between email questionnaire language and the likelihood of having a component for livelihood assessments in PA management plans are considered then 77% of English responses have management plans versus only 35% from the Portuguese responses. This relationship is also significant (Chi-sq=21.1 $P=0.0001$). As above, Portuguese responses contributed to the significance of the Chi-square test ($\alpha=0.05$).

5.2 The online survey

As the online survey link was sent to those respondents from the email questionnaire survey that confirmed a livelihood assessment had been conducted in their PA, it took considerably longer to obtain responses. Of the 112 emails containing the link that were sent, only 25 replied from the English version and another 5 from the Portuguese version, bringing the total sample size to 30. Both the English and Portuguese responses have been combined for this analysis. The 10 questions asked and the number of responses can be seen in table 7.

Table 7. The Online Survey questions and number of responses.

The Online Survey questions and answers	Number of responses
1 When was the most recent assessment?	
Within the past 12 months	14
Over 1 year ago	12
Over 3 years ago	0
Over 5 years ago	2
Over 10 years ago	1
I don't know	1
2 Why was it carried out?	

It is part of our National government policy	5
It is part of our organisation's policy	8
It is part of our protected area policy	5
It is part of our management plan	11
It is required by our donors	4
I don't know	1
Other	14
3 Which impacts of the PA were measured?	
Negative impacts	3
Positive impacts	3
Both positive and negative impacts	23
I don't know	1
4 Which livelihood components were assessed?	
Human	17
Social	21
Natural	21
Physical / Built	16
Financial	21
I don't know	1
Other	5
5 Impacts were looked at in relation to:	
Gender	13
Age	9
Ethnic group	9
Education level	14
I don't know	2
Other	12
6 Was it based on an existing framework?	
No	11
I don't know	5
Yes	14
7 Which tools were used?	
Environmental economics	12
Participatory techniques	16
Structured and Semi-structured interviews and questionnaire surveys	22
Unstructured interviews and questionnaire surveys	14
I don't know	1
Other	5
8 Who collected data?	
Protected area management staff	11
Staff from National organisations/institutions	12
Staff from International organisations/institutions	9
National Researcher(s)	13
International Researcher(s)	14
Local community members	17
I don't know	0

9 Have any of the results been analysed?	
No	2
Yes but not published	19
Yes and they have been published	7
I don't know	2
10 Have the results been used to influence PA management?	
No, and I don't think they will be used	0
Not yet, but they may be used	9
Yes the results will definitely be used	7
Yes, they have already been used	13
I don't know	1

Key results regarding the questions have been divided into three sections: 5.21 addresses the motivations behind conducting livelihood assessments (i.e. questions 1, 2, 6, 9 and 10), section 5.22 discusses assessment scope and sensitivity (i.e. questions 3, 4 and 5) and data collection methods (questions 7 and 8). Contrary to section 5.1 above, responses are analysed individually as opposed to the number of PAs they may represent. A few responses from the online survey were valid for multiple PAs but because this section is particularly concerned with the nature of the methodology itself (see objective 4) they are thus regarded as single responses and are counted as such in table 7.

5.21 Motivations behind conducting assessments and their design

Why

In terms of the main motivation for conducting the livelihood assessment(s) (question 2), most respondents cited only one answer item. Of these, protected area, organisation and PA management plans were usually coupled with donor requirements. The most popular reason for conducting assessments was because it was part of the PA management plan (37%) and over a quarter (27%) also stated that it was part of their organisation policy. Almost half of the respondents (47%) added details or checked the 'other' box; most of these were related to Academia (6 respondents). Two respondents had carried out the assessment as part of larger initiatives, namely the TNC MPA study in Asia (for details table 2 in Results section 4.3) and a 'Poverty-Forests Linkages Toolkit' developed by PROFOR by the World Bank. Other reasons given include: as policy lobbying tool, as part of monitoring activities and to help identify village development measures.

When

Most respondents acknowledged conducting a livelihood assessment fairly recently, 87% (26) before 3 years ago and almost half the PAs had conducted assessments within the past 12 months 47%.

Assessment design and outputs

In terms of basing the assessment on existing frameworks, respondents were somewhat divided. Whilst 47% stated that it had been based on existing frameworks, 37% stated that it was designed specifically for that occasion. Existing frameworks included the use of general frameworks such as 'PRA' and 'economic modelling'. Respondents that named specific tools included the TNC MPA initiative, the IUCN/WCPA tracking tool for management effectiveness, the SOCMON SEM-Pasifika How is your MPA doing and the Human ecological profile. A minority said they made use of National approaches (from Philippines and from Brazil).

Inline with the discussion in section 4, most of these assessments were analysed but as of yet not published (63%). However, almost a quarter (23%) of respondents stated that results had been analysed and published.

None of the respondents said they didn't think results would be used to influence management and most respondents 43% claimed that they had in fact been used to influence PA management whilst 30% said that they had not yet been used to influence management but maybe used in the near future. Of those that provided extra details on how results had been used to influence the PA management plan, respondents said that it was used to guide collaborative resource management via a National Forestry Association, and to inform a National 5 year development plan. Another respondent stated that results were used to add community development and participation. Of those who said results would definitely be used, the majority stated only how they would be used, mostly for 'PA management plan' and one respondent said that result be used for political lobbying favouring community involvement with conservation and ecotourism. Only one respondent admitted as to why results would but had not been used as of yet: for lack of funding.

5.22 Scope and sensitivity

As for those methodologies in section 4, most assessments here (77%) also claimed to have looked at both positive and negative impacts.

Also in line with section 4, all but 3 respondents also asserted having looked at impacts from more than one livelihood component (i.e. 90%). The most common types of impacts were those

of social, natural and financial nature (all 70% of responses), with less respondents having measured human and physical impacts. Additional details included establishing land tenure relationships and the rights responsibilities of local communities as identified by the community itself.

As for the intra-community demographic variation, under half (47%) of respondents claimed to have differentiated impacts by education, and even fewer considered gender, age or ethnicity. From the 'other' option: the majority provided extra details on described how they applied the demographic variables such as the specific indicators used or how data was collected, and why by justifying their variable(s) of choice. A minority stated that none of these were looked at (2) and a few provided details on any counterfactuals they may have used like assessing people at varying distances from the PA or repeating the assessment in neighbouring villages.

Data collection

Most respondents used more than one of the different tools used to collect livelihood data 77%. The most common tool used were structured and semi-structured interviews or questionnaires (73% of respondents), and over half also used participatory techniques (53%). Additional tools were named by respondents: GIS and community mapping, and general observations.

In terms of who collected the data, most respondents had more than one collector. The most common response item was community members (57% of responses), and then 47% mentioned international researchers collected data, 43% mentioned national researchers, 40% had staff from national organisations and institutions.

6. RESULTS: THE CASE STUDIES

As outlined in section 3.3, the case studies attempt to address objective 5:

5. Investigate the types of assessments and methodologies that have been published in the scientific and grey literature and compare the methodologies reported in the global survey to those which have been published

A total of 46 case studies were analysed. They were published between 1998 and 2008 and from 26 countries in total spanning all UN World regions except Europe and Oceania. All IUCN categories were represented to varying degrees, the great majority analysed PAs of category II. Few data on governance regimes were found, except when they had already been specified by a contact by the email questionnaire.

The main motives behind conducting the case studies and how they were published (by who and output forms) are considered separately in section 6.2 that follows. Section 6.3 outlines further details regarding case study methodologies.

6.1 How do the case studies compare to the online survey responses?

Questions that were both addressed by the online survey (Section 5.2) and the case studies are presented in the sub sections that follow.

Motivations behind conducting assessments and their design

Figure 9 shows the proportion of case studies that based their assessments on previous methodologies. Like the online survey many did not base it on existing frameworks (37%). As data and any text presented in case studies were the only means of determining if the methodology had been based on existing frameworks, for just over half of the case studies this was not possible to determine (52%). Also in contrast to the online survey respondents, only 2% of the case studies reviewed explicitly say they had used existing frameworks (versus 47% from the survey).

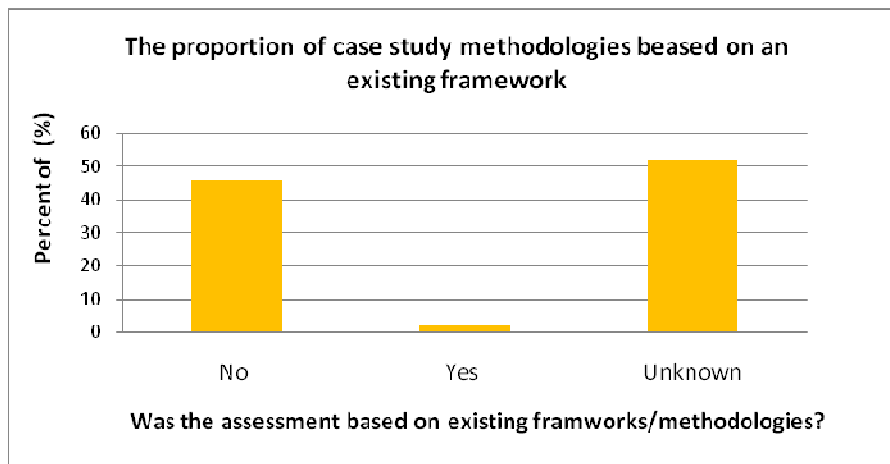


Figure 9. Graph of the percent of case studies that based their methodologies on existing frameworks or other methodologies.

It was often complicated to determine whether case study results would or would not be used to influence PA management, thus 76% of the time, this question was labelled as 'unknown'. However, a fifth (20%) stated that they had indeed already been used. Figure 10 shows the proportion of responses and the extent of influence assessments had on PA management.

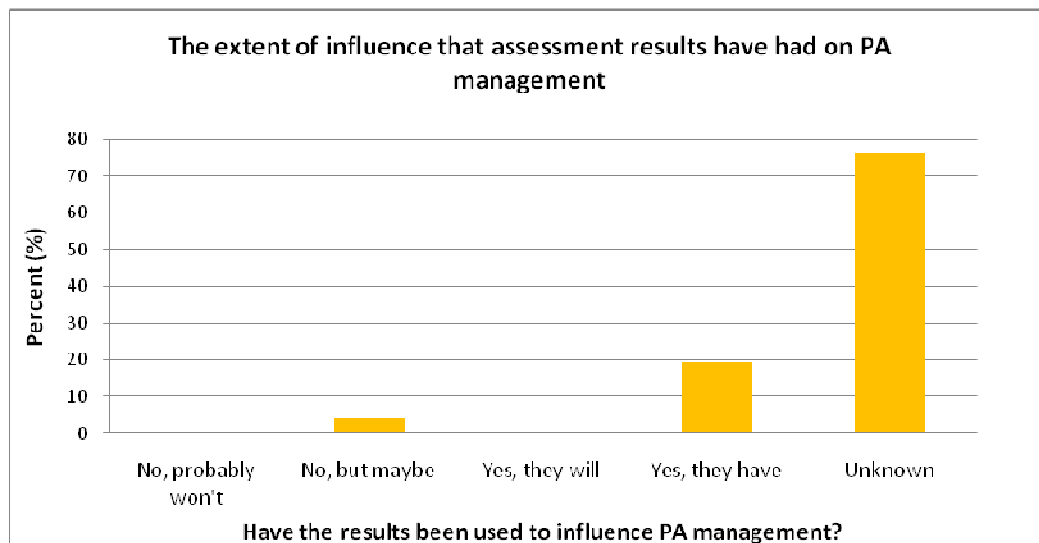


Figure 10. Graph of the percent of case studies that had results that were used to influence PA management.

Scope and sensitivity

As for the for the online survey, most of the case studies reviewed also claimed to have looked at both positive and negative impacts (67%; see Figure 11). However a larger proportion of the case studies looked at negative impacts only, i.e. a third 33% versus 10% from the online survey. None of the case studies only looked at positive impacts.

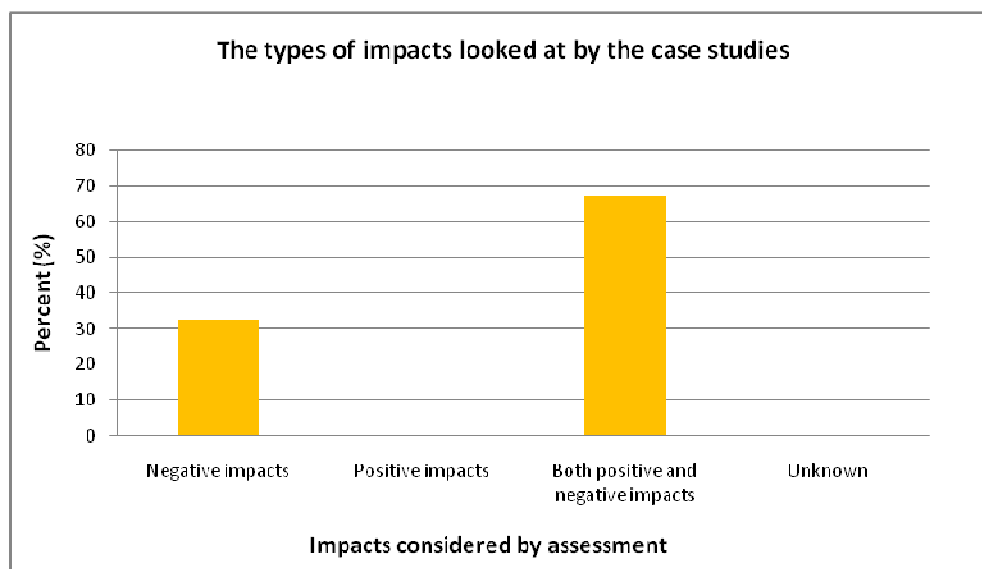


Figure 11. Graph of the percent of case studies that looked at positive and negative PA impacts on livelihood.

In terms of livelihood components, the case studies followed closely inline with results from the online survey (see Figure 12). For instance as Figure depicts, in both circumstances, natural (93%) and financial (89%) were the most common components assessed.

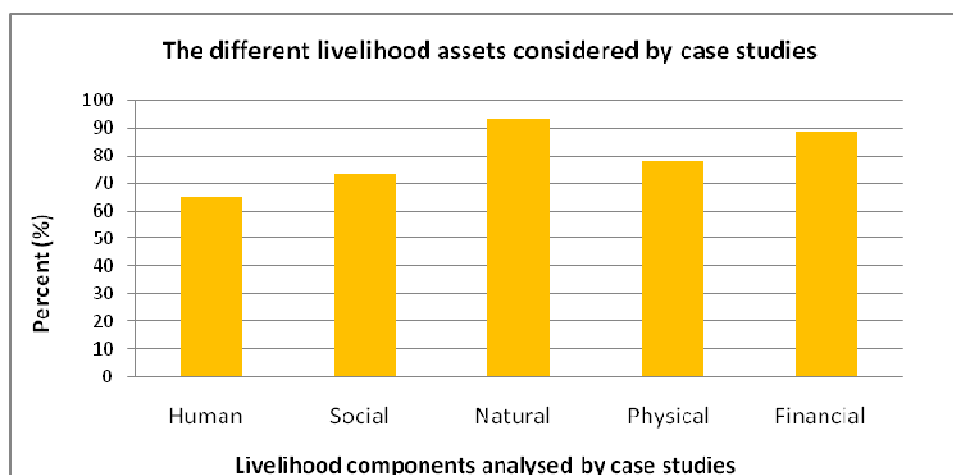


Figure 12. Graph of the percent of case studies that analysed PA impacts by the various livelihood components.

Figure 13 represents the response percentages for different population characteristics that impacts were considered against. Of the many demographic characteristics that impacts could have been looked at, few were considered and the largest proportion of responses remained

unknown (59%). An additional 13% of case studies stated other characteristics, some of these included: wealth, power, residency period, and occupation.

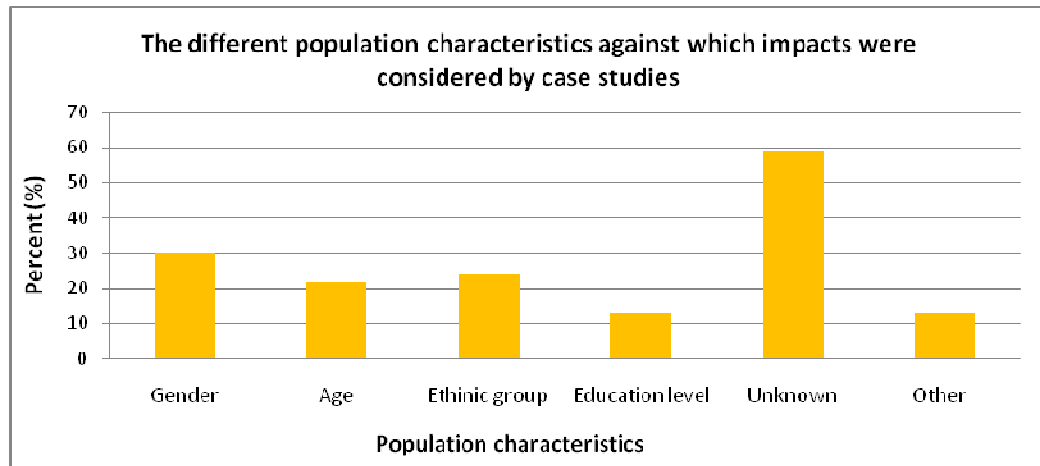


Figure 13. Graph of the percent of case studies that analysed PA impacts by different population characteristics

Data collection

Figure 14 shows the many tools available to collect livelihood data. Also in parallel with the online survey, the case studies most popular tool was structured and semi-structured interviews (41%). Environmental economics followed at 35% and participatory techniques at 33%.

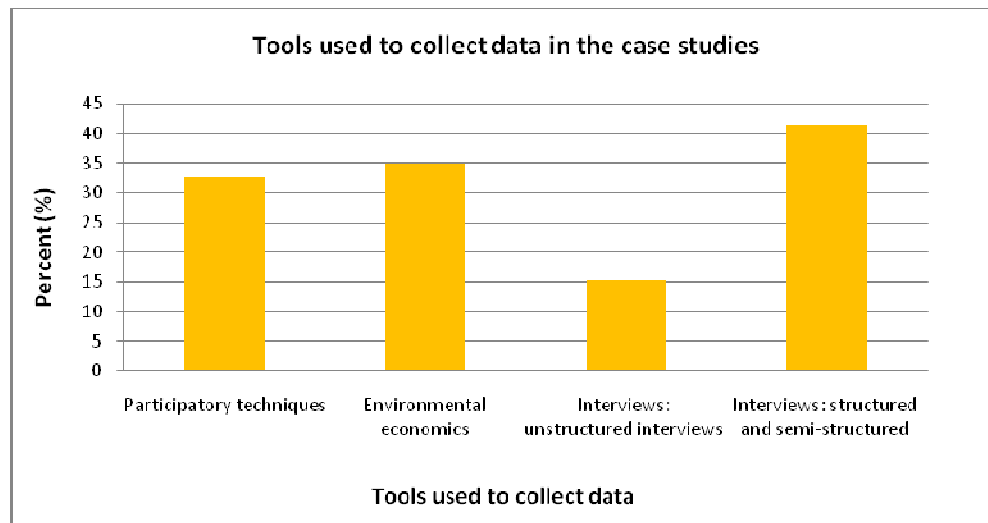


Figure 14. Graph of the percent of case studies that used participatory techniques, environmental economics or interviews to collect data.

Figure 15, shows the percent of responses and case studies in relation to different data collectors. The most obvious disparity is in the number of unknown, which comprised almost

half of case study responses (48%). Of the remaining case studies the majority only stated that (24%) that international researches took part in data collection. Contrary to the online survey only 9% of case studies mentioned staff from National organisations and institutions (as opposed to 40%) and only 7% of case studies (as opposed to 57%) mentioned that local community members took part in data collection. Moreover solely 2% mentioned PA management staff and staff from International organisations (versus 37% and 30% from the online survey respectively).

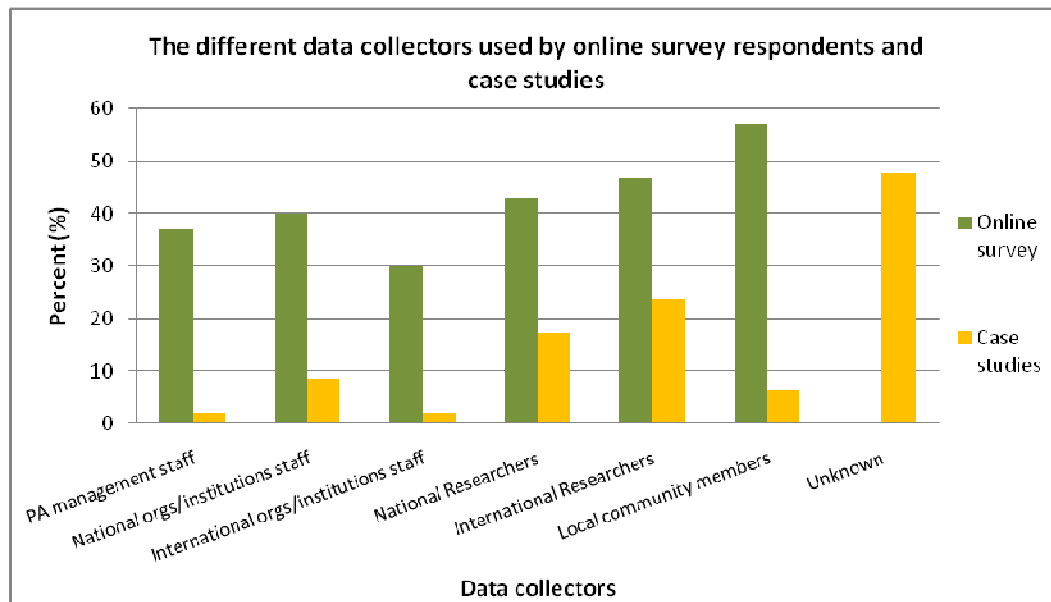


Figure 15. Graph of the percent of case studies and online survey respondents by the various types of data collectors.

6.2 Why and how were case studies published?

There was much variation in the reasons (or aims) of the case studies evaluated. Of the 46 case studies however, 41% (19) were attitudinal surveys. Most of these were polarised view points and few considered both positive and negative impacts to the same extent. The other most common reason given for conducting livelihood assessments was for various project or PA monitoring and evaluation purposes 17% (8).

The remaining reasons were extremely varied. A few focused on specific livelihood components such as financial assets like crops (Sehkar 1998; Naughton-Treves 1998) livestock (Bedunah and Schmidt 2004) or timber felling (Yonariza and Webb 2007). Two case studies from the USA used national data to assess whether wilderness areas have a net negative affect on local economies (Duffy-Deno 1998) and how public conservation lands affects employment (Lewis *et al.* 2002).

Abbot and Mace (1999) used law enforcement data and behavioural observations to examine the risk of detection and penalty posed to the majority of women that collect illegal firewood.

Table 8 shows the various institutions that commissioned case study publications and the most common forms of data output. International academics (i.e. those not from the study site, assessed by the authors work addresses) were responsible for the majority of publications (23 or 50%). International institutions and organisations or NGOs were the second most common author of the case studies (35%), followed by National academics (22%), and National organisations and institutions (15%). National government accounted for 9% of the case studies and PA management only 4%.

Table 8. Case study publishers and data output forms (numbers of case studies and percentages).

Case study publishers and data output forms	Number of case studies	Percent (%) of case studies
Case study publishers		
National government	4	9
National NGO / ORG	7	15
International NGO / ORG	16	35
PA management	2	4
National Academics	10	22
International Academics	23	50
I don't know	1	2
Other (please specify)	0	0
Data output forms		
Academic thesis or document/report	3	7
Peer - reviewed article	24	52
Web-publication	17	37
NGO/ORG report	17	37
National Database	0	0
Government/PA agency	1	2
Multi-media (GIS, video, mapping)	3	7
Policy reports	0	0

The most common form of data output were peer-reviewed articles (52%) and then NGO/ORG reports representing 37% of case studies and 37% was also readily available online as web-publications. Few case studies made use of multimedia like GIS and mapping (7%) and a small number were academic theses or documents (7%). None of the case studies were policy reports and none of them mentioned any contribution to National databases.

Data collection and time to publication

Of the 46 case studies, 26 provided information regarding when data was collected or assembled. The number of years between data collection and publication varied between 1 and 11 years with an average of 4 years. The majority of cases taking 2 (9) and 4 years (6) to publish data collected.

6.3 Methodology details

The table in Appendix H shows all the criteria used to review case studies methodologies, and the number and percentage of each variable. Only half of the case studies reviewed had described results and given some indication of methods used to collect data (52%). Over a quarter (28%) published results but failed to suggest how data were collected. An additional 15% cited other sources or documents for their methodology and 4% did not have any results.

In terms of scope, the great majority of case studies considered impacts between communities or regionally (85%). A considerable number of cases looked at intra-community (39%) impacts, fewer looked at intra-household and National scales and a minority considered them on a global scale.

Most data collected was qualitative (53%). Semi-quantitative data accounted for only 31% of the case studies. Whilst structured and semi structured interviews were the most common tool for collecting data (see Figure 14 above). However for 35% of the case studies, no details were provided on the nature of interviews, and 15% presented local opinions without stating how those opinions were collected ('no tool: just description'). Similarly, environmental economics weren't considered by almost half of case studies (48%) and for 15% it was not mentioned in any detail. Of participatory techniques (employed by a third of case studies), group discussions was the most predominant technique (26%), with very few using timelines of events, seasonal calendars and spatial mapping (7% respectively) and only one mentioned wealth ranking.

Most case studies made little attempts to have use controls in their methodologies. Data was collected just once for most case studies ('snapshots' comprised 59%), although 43% had elements of 'time-series' only 13% were considered 'before/after', and only 15% made use of a counterfactual of some kind and only 11% had 'reconstructed baselines'.

7. DISCUSSION

7.1 Strengths and weaknesses of current methodologies that assess livelihood impacts of PAs

According to Ferraro (2008) a credible study of the effects of PAs on the welfare of adjacent communities would include the following elements: 1) objectively measurable indicators of human wellbeing at an appropriate scale of analysis (individuals, households, communities and regions); 2) observations of the relevant indicators before and after the establishment of the PA (or alternatively some other control for the initial state and trend of social welfare is needed); 3) observations of the relevant indicators from both treated units (i.e. individuals or areas known to be potentially affected by protected areas and control units (i.e. individuals or areas similar to treated units in economic potential but known not to be affected, or less affected by protected areas) and 4) observations of the selected indicators of human welfare change over time. Additionally: a sense of robustness of the results to hidden bias from unobservable differences in treated and control units.

Wilkie *et al.* (2006) go into more detail and suggest that studies should specifically 1) evaluate the contribution of natural resources to PA-influenced and control household economies and how this changes over time as PA-resource regulations are formalised and enforced; 2) evaluate the influence of market and natural resource access, residence duration, access to health and education services, and ethnicity on household welfare; 3) compare the sources and levels of income of PA-influenced and control households over time; and 4) assess using the Gini coefficient the inequalities of income, health and consumption within and across households in PA-influenced and control communities over time. They encourage data to be collected by teams of intensively trained local language assistants led by experienced social scientists. Moreover they suggest data should be collected longitudinally, i.e. from the same households before and after PA establishment and ideally at 1, 3 5 and 10 year intervals.

Limitations to this study include the applicability of criteria chosen to compare methodologies in section 4, as different users (outlined in section 4.1) will have different aims and reasons for conducting assessments (sections 5.21 and 6.2). Moreover, how criteria are defined and the thresholds for each level (e.g. what constitutes as semi-quantitative or quantitative data), largely define how useful they are at differentiating methodologies. It should also be noted that there is much subjectivity involved in assigning methodologies to certain criteria. Unfortunately it was not possible through table 3 to measure bias in the weighting of criterion components,

differences in data sources or how comprehensive data collection was. For instance, if a methodology was biased towards only reporting positive impacts of PAs but did nonetheless include a very brief section on negative impacts it was still considered to have measured 'both positive and negative impacts'. For example, in relation to scope methodology III (IUCN/WWF 'Landscape tracking' tool) was considered at intra-household, intra-community and inter-community levels, although for the former two levels data were only available for sites in which the NGO had carried out projects.

Furthermore, the amount and quality of data per methodology varied greatly (see section 4.3). Methodology II (CARE/IUCN/AWF Assessment of PA costs and benefits) and VI (TNC How marine protected areas contribute to poverty reduction) both were considered for impacts by gender but how successful they were at doing so remains unclear. For example, methodology VI confidently stated that impacts had been differentiated by gender even though only 9% of those interviewed were women. The authors of methodology II were more sceptical: they believed they were not particularly successful at considering impacts by gender even though it was attempted through focus groups. Nonetheless some general conclusions can be drawn.

All data presented suggest that there is a vast gap in both methodologies, their application on the ground, and in the literature to improve scientific rigour of assessments and essentially to improve objectivity in data collection methods. In particular triangulation methods to ensure data reliability would be useful, in addition supporting qualitative data with more quantitative techniques. More remote sensing to assess how effective PAs are at conserving large stretches of land buffering against both internal and external threats to conservation would be ideal (Sunderland *et al.* 2008). If such GIS mapping technology were coupled with participatory mapping techniques, some very useful spatial data could be produced. Only 2 methodologies and 7% of case studies reviewed used participatory mapping techniques. Similarly only 3 methodologies and 7% of case studies produced GIS or multimedia outputs.

The need for a baseline is imperative; without it post facto assessments show little of how the establishment of PAs actually contribute to the wellbeing of surrounding populations (Brockington *et al* 2006; Ferraro 2008; Wilkie *et al* 2006). PAs most often occur in remote locations, thus it may be their physical isolation from common societal assets like access to goods and services (such as markets) and not the conservation of wilderness itself that causes the greatest impacts on surrounding peoples wellbeing (Wilkie *et al* 2006). However how effective are counterfactuals or reconstructed baselines at addressing post facto and ex ante predictions?

Few authors provide details as how best to address a counterfactual or reconstruct a baseline. Of those methodologies reviewed in section 4, most often communities similar in size or socio-economic status were selected. However this fails address unforeseen externalities like spill over affects from PAs or surrounding communities. Moreover they do not address local confounding factors such as details of the physical environment, the subtle differences that may exist between groups of people of different ethnicity or culture.

Kwaw (2008) and Ferraro in methodology VII used matching methods to identify counterfactuals for their census data segments and were the only methodology reviewed to account for spill-over affects and hidden bias. However their data only relied on four variables (see table 2), although robust at spatial scales, it still fails to highlight local sources of conflict or resource use that participatory methods would bring to light, and that ultimately underpin human wellbeing. From the case study review in section 6, only 15% of the literature evaluated made use of counterfactuals and only 11% had reconstructed baselines of some sort.

The review of methodologies and the global survey have revealed that whilst most of these assessments allegedly looked at both positive and negative impacts, the case studies expose another picture. Over a 3rd of the published literature evaluated looked at negative impacts only. Thus, indeed as Sunderland *et al.* (2008) highlight the situation is 'highly dichotomous' and there is a greater need for unbiased assessments to be both conducted and published.

Methodologies that solely aim to assess impacts on National (like Andam 2008) or Global scales (such as De Sherbinin 2008; Upton *et al.* 2008) whilst academically informative, may be of little practical use in improving local PA management and reducing conflicts with communities on the ground. When attempting to address the overall 'good or bad' debate, such assessments may risk labelling PAs a 'shibboleth' (Redford *et al.* 2006) and fail to take into account confounding factors such as conservation projects and compensation mechanisms that maybe already in place, local culture, residency periods, IUCN categories, governance regimes or even the diversity of ecosystems and biomes concerned.

In line with Wilkie *et al.* (2006) suggestion above, all three data sets (sections 4, 5 and 6) imply that financial and natural impacts of PAs are often considered. However there is a greater need to consider human and social impacts of PAs. These aspects would be ideally assessed through participatory techniques and should produce locally defined indicators, like those used in the IUCN/WWF 'Landscape tracking' tool (methodology III).

There is also a need to increase assessment sensitivity and evaluate impacts by gender, age, religion, wealth, social status, and education. Ideally PA trajectories should be considered at historical spatial and temporal scales in order to disentangle problems from their location and context (Sunderland *et al.* 2008). Ethnicity has often played vital role in land disputes (Brockington 2004). Few methodologies (2 of 7) evaluated impacts by ethnicity, likewise did respondents from the global survey (30%) and only in 24% of the published literature (of which many were polarised qualitative accounts with no indication of how data was collected).

Lastly the feasibility of methodologies, more specifically their application on the ground must be considered. Whilst *et al.* (2006) in methodology IV produces extremely comprehensive data, it could be argued that their method is somewhat time consuming and expensive (Wilkie personal communication). Methodology application costs will vary depending on amounts of funding available to appliers and location. Nonetheless the topic should be more openly discussed. None of the methodologies reviewed mentioned any costs associated with their application.

Sunderland *et al.* (2008) encourages more systematic comparisons, using a larger number of case studies. There are many other relevant initiatives that could also have been looked at and many case studies obtained from other biomes. There is a great body of literature on marine PAs. For instance, in 2002 DFID's Natural Resources Systems Programme measured livelihood impacts of 75 MPAs in the Caribbean region (Garaway and Esteban 2002). More recently at UNEP-WCMC a chevening scholar Ivo Ngome has developed his own methodology for assessing livelihood impacts of PAs in sub-Saharan Africa.

7.2 The extent of livelihood assessment application on the ground

Whilst the global survey (section 5) provides some interesting correlations between PA characteristics and the likelihood of conducting assessments, it must be not forgotten that perhaps PAs with management components for livelihood assessments or that have conducted an assessment had most incentives to reply to the surveys in the first place. Together they comprise approximately 70% of sample size.

IUCN category and governance regime were not found to predict the likelihood of conducting an assessment or have a management component for one. Given that 36% of PAs from the email questionnaire were category II and only 5% were category III, evidently a larger sample of PAs would be ideal to review this variable. Likewise only 4% were private PAs and 62% were government managed. It is unlikely that private PAs with secure land tenures conduct the same amount of assessments or has same likelihood of having a management component than

government PAs that are most often inhabited by various communities (Brockington *et al.* 2006).

Livelihood assessments were carried out more than expected for Africa, and Asia, whilst less than expected for the Americas and Oceania. However no single cell was the significant contributor to the chi-square relationship. It is likely that this correlation is largely dependent on the geography of poverty or how income and economy groups are reflected in the north-south divide.

Accordingly, PAs in low income countries and lower middle income countries were more likely to have carried out an assessment than otherwise expected whilst PAs in upper middle income countries were less likely to conduct assessments. Additionally, the correlation had significant standardised residuals: the 'extreme cells' were drivers of significance i.e. the upper middle income and low income. It would be interesting to see where the recent growth of PAs has occurred. Most likely in the developing world where there is more space and biodiversity and less in developed high-income countries where land use and tenure have been long established.

However the sample size is biased towards Africa (48%), and there is also the issue of pseudo-replication in PAs from single respondents that further undermines interpretation. For instance all 35 PAs from Madagascar came from one respondent and accounts for 88% of the Eastern Africa and 40% of the entire African sample size. Moreover Brazil alone accounts for 69% of all Americas PAs and approximately 80% of the middle income PAs. To further obscure this correlation, Portuguese respondents conducted significantly fewer livelihood assessments and had significantly fewer management components than expected, with Portuguese data cells contributing towards the significance of the Chi-square test. It remains unclear why this has been observed.

Smaller PAs conducted more assessments than larger PAs but size did not affect the likelihood of having livelihood assessment components in the PA management plan. Perhaps this can be attributed to the feasibility in conducting assessments in smaller areas, i.e. less expensive as there are fewer people to assess.

The significance between having conducted an assessment and having management components according to PA establishment date is intriguing. Those established before 1970, perhaps have had enough time to devise appropriate biodiversity assessments and management plans and are in a better financial practical position to be concerned with local communities. Likewise those established most recently (2000 to present) have had less time.

Why PAs established between 1990-1999 were more likely to have conducted assessments and have livelihood components in their management plans, could have been influenced by International legislation like the Rio Convention 1992. Why those established between 1970 and 1989 were less likely to have either conducted assessments or management components remains rather ambiguous. The only data cell contributing to significance of the latter correlations was the number of PAs that had no management component established and established between 1970 and 1989. However as Figure 7 clearly depicts, the numbers of PAs in time periods less likely to have conducted assessments were almost equal in number with those that had, and hence this correlation would also greatly benefit from a larger sample size.

7.3 The way forward

Methods are needed to make the tradeoffs between conservation and development explicit, and to provide platforms for negotiation about these tradeoffs (Sayer *et al.* 2006). Moreover complex questions such as “how much natural forest should be sacrificed to provide local communities with additional agricultural capacities?” must be tackled (Sayer *et al.* 2006).

There is need for greater collaboration and dialogue with other fields of research such as political scientists (Agrawal and Ostrom 2006). Adams and Hutton (2007) suggest that political ecology provides potential space for dialogue between social scientist and conservationists who are largely trained in the natural sciences. Berkes (2004) reviews the evidence from community-based conservation schemes regardless of success focussing instead on interdisciplinary subfields that could shed more light on the conditions under which success or failure of community-based conservation may be analysed. These subfields include common property, traditional ecological knowledge, environmental ethics, environmental history, ecological economics and as above political ecology –together, these disciplines have potential in providing conservation science with a more sophisticated understanding of social-ecological interactions (Berkes 2004). These disciplines could in turn aid the development of the multidimensional conservation and development criteria that are still needed (Sunderland *et al.* 2008).

Many different conceptual models and Social Impact Assessment tools already in existence could be further developed and adapted for use in PAs. However relatively few assessments on the ground (47%) or in the literature based their methodologies on existing frameworks (42% were not, 52% unknown). Some potential tools include the IAIA (International Association for Impact Assessment) Social Impact Assessment International Principles, the World Bank PSIA (Poverty

and Social Impact Analysis), or FAO (UN Food and Agricultural Organisations) SEAGA (Socio-Economic and Gender Analysis) field hand book of PRA techniques (Wilde 2001). The USAID (United States Agency for International Development) AMAP (Accelerated Micro enterprise Advancement Project) reviewed many of the existing poverty assessment tools (USAID AMAP 2004). It would be valuable for further research if a similar review of poverty-environment indicators in a PA context could be produced.

Already in the marine realm such compositions are taking place: the GCRMN (Global Coral Reef Monitoring Network) Manual was released in 2000 at the 8th International Coral Reef Symposium in Bali to enhance understanding of communities and their relationship to coastal and marine resources. In recent years a SocMon Caribbean, and SocMon Southeast Asia were developed to compliment the GCRMN Manual by providing a methodology for regularly collecting basic socioeconomic data useful for coastal management at the site level; and a basis for a regional system by which site-level data can feed into national, regional and international databases for comparison. Similarly ICRAN (International Coral Reef Action Network) has initiated their Sustainable Livelihood Enhancement and Diversification through Coral Reefs and Livelihoods initiative (CORALI). More initiatives like this for terrestrial systems would be constructive.

Additionally the Basic Necessities survey that has been recently adopted by WCS (Wilkie personal communication) is also a promising tool. It was developed by Rick Davies for Action Aid in 1998. The process is participative but produces quantifiable results and the analysis of data collected does not require highly specialised statistical skill. Moreover the results can be publicly presented in a way that is easily understood and costs approximately USD3-4 per household (WCS USAID Technical Manual 4). It involves asking households what they consider basic necessities that can be later compiled into a list and asked to all households in a yes or no format, thus ensuring poverty indicators are locally relevant.

The methodologies in existence today are poorly distributed, of the methodologies reviewed, documents were few and scarcely readily available, many reports only circulate within agencies and knowledge and understanding is inadequately shared, even with the legitimate local stakeholders (Sayer *et al.* 2006). Most assessments from the global survey were analysed but as of yet not published (63%) and only half of the case studies reviewed had described results and given some indication of methods used to collect data. Over a quarter of published results failed to suggest how data were collected. Greater effort is needed to bring monitoring and evaluation into the public domain as a means to increase transparency and promoting equity in conservation and development situations (Sayer *et al.* 2006).

The great majority of assessments both as methodologies, on the ground and in the literature were created and applied by International NGOs (most often because they are involved with the PA through their conservation programmes) or academics. None of the assessments and methodologies reviewed stated any form of contribution to a National database, and few explicitly collaborated with National Institutions and organisations. Although such databases may not exist, it would be more constructive if conservation practitioners abided to the CBD's "access and benefit sharing" of knowledge and actively distributed their data to local partners. This is vital given that many NGOs have programmes that only run for short periods of time. It would be interesting to conduct this review of methodologies and criteria with such NGO monitoring and evaluation policies, protocols and general codes of conduct; including for instance the general principles adopted by the Conservation Measures Partnership (CMP). Indeed NGO's like Birdlife International (BI), Flora and Fauna International (FFI) and Conservation International (CI) have initiated such schemes, however to what extent they apply these assessments in their sites remains to be revealed.

Likewise, a review of livelihood assessments in PAs and their extent in National legislations would be equally appealing. If countries are to realize the objective proposed at the 5th WPC 2003 i.e. PAs should contribute to poverty reduction at the local level and at the very minimum not contribute to or exacerbate poverty, then livelihood methodologies will play a vital role in attaining this principle. It would be ideal also to conduct these assessments before and after new PAs are established.

With published estimates of 40 000 to 45 000 displaced people from nine PAs in Central Africa alone (Cernea and Schmidt-Soltau 2003), ensuring unbiased and objective livelihood assessments are conducted is vital if societal support and approval for conservation is to continue. The unequal distributions of biodiversity conservation's immediate opportunity costs borne largely by local people from developing countries (Balmford and Whitten 2003) coupled with national pressures for economic development mean that conservationists are hardly in a position to lose such support. Regardless if negative impacts are found to outweigh benefits it is time the International conservation community confront this issue through collaboration, sound science, and adopting appropriate compensation mechanisms where they are needed. Conservation must be both ethically and practically justifiable in a landscape that includes "not only the biophysical components of an area but also social, political, psychological and other components of that system" (Farina 2006).

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Appendices

Appendix A

The UNEP-WCMC workshop to Review Approaches, Methodologies and Tools for Social Assessment of Protected Areas May 15th 2008

The (provisional) overall goal of the process is to:

“Identify /develop and evaluate a range of methodologies and tools for assessing the social impacts of protected areas that enable conservation policy and practice to better adhere to the globally accepted principle that protected areas should strive to contribute to poverty reduction at the local level, and at the very minimum must not contribute to or exacerbate poverty”.

To realize this goal the workshop participants agreed on the following question to guide the next steps: *“To what extent are PAs contributing to changes (positive/negative/intended/or not) in human wellbeing at the local level?”* (the term ‘well being’ is broadly applied in this case and includes local understanding(s) and definitions of poverty –in context access and benefit sharing, rights, cultural aspects etc.). Ultimately the aim is to develop a proposed general framework for PA assessment, a set of tools (or tool), and guidelines that can be put forward for discussion and endorsement by the WCPA PAEL task force and the CBD. This study has been produced in collaboration with the workshop.

The Workshop objectives (below) directly contributed to shaping this study, particularly objective II:

- i. To develop a framework that characterizes the different objectives in assessing PA social impacts, and the different ways in which results may be applied to conservation policy-making and practice.
- ii. Identify key criteria that can be used to characterize/differentiate different impact assessment methodologies/tools in terms of key differences in approach, scientific methods, purposes, underlying values and cost.
- iii. A global, comprehensive formal literature review of the grey and scientific literature on protected areas, their social costs and benefits (completed for forest PAs by UNEP-WCMC see Coad *et al.* 2008).
- iv. Development of a proposed general framework for PA assessment: set of tools (or tool), and guidelines that can be put forward for discussion and endorsement by the WCPA
- v. PAEL and the CBD.

Appendix B

OECD DAC 5 poverty core dimensions

Another commonly used framework is the OECD DAC (Organisation for Economic Co-operation and Development, Development Assistance Committee) guidelines on poverty reduction. The DAC guidelines on poverty reduction identifies five 'core dimensions of poverty' similar to the SLF. According to the OECD DAC guidelines, a good concept of poverty should not only include all dimensions of poverty, but also encompass the causal links between these dimensions and the crucial role played by gender and environmentally sustainable development in influencing these dimensions (OECD 2001). These 5 core dimensions or 'capabilities' are listed below:

1. Economic capabilities: meaning the ability to earn an income, to consume and to have assets.
2. Human capabilities: which are based on health, education, nutrition, clean water and shelter.
3. Political capabilities: which include human rights, a voice and some influence over public policies.
4. Socio-cultural capabilities: meaning the ability to participate as a valued member of a community.
5. Protective capabilities: which enable people to withstand economic and external shocks.

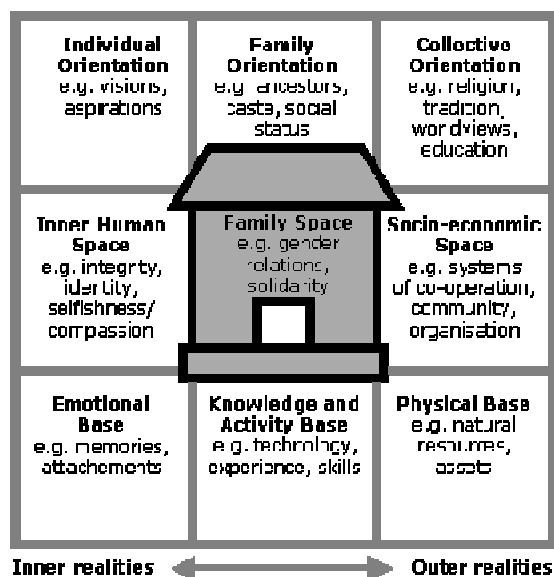
Pressure-state-Response framework (PRS)

A pressure-state-response framework is a proposed frame for environmental indicators and indicators of sustainable development (OECD glossary 2007). This approach identifies three themes against which data can be collected, the state of the habitat/human system, the pressures that this system faces and the human response to that framework (TICELPA DOC REFF). Included within the framework can be questions related to human livelihoods (TICELPA DOC). Indicators may also be interpreted using the adapted pressure-state-poverty-response (PSPR) framework by a World Bank's study (Shyamsundar 2002). The PSPR framework, a modified version of OECD's pressure-state-response (PSR) model, helps to identify the most appropriate indicators for understanding the impact of pressure factors not only on natural resources, but also on the poor (Giuliani 2007).

Rural Livelihood systems (RLS)

The Rural Livelihood system (RLS) is the outcome of research efforts between the Swiss National Science Foundation and collaborators in India (Premchander 2002?). It comprises of a

nine square 'mandala' covering nine aspects of peoples livelihood arranged in such a way that left to right corresponds to 'inner and outer' levels of reality: individual, family, community, and moving from bottom to top 'base, space and orientation' (poverty wellbeing website review module 2). The figure below represents the RLS model.



Appendix C

Social Impact Evaluations (SIE)

The fundamental SIE question is ‘what would have happened to those in receipt of a given intervention if they hadn’t received it in the first place’. The key challenge of SIE is to develop a counterfactual i.e. a ‘control’ group that is as equivalent as possible (in observable and unobservable dimension) to those in receipt of the intervention. This comparison is aimed at establishing causality that is, attributing observed changes in welfare to the intervention/program/project while removing confounding factors. SIE are mostly used for providing feedback in order to improve program and policy designs, for improved accountability and to ultimately allow policymakers to better allocate funds across programs. (World Bank, 2008).

Participatory Poverty Assessments (PPA)

A participatory poverty assessment, or PPA, has been defined as an instrument for including poor people’s views in the analysis of poverty, and the formulation of strategies to reduce it (Workshop glossary 2008)

Spatial mapping

The majority of PA impacts are considered at a ‘local’ scale of ‘communities’ but communities are by far homogenous in nature (Agrawal and Gibson 1999) and the extent of population settlements in and around PA’s vary. Poverty mapping is the ‘spatial representation and analysis of indicators of human well being and poverty’ is becoming an increasingly important tool for governments, donors, and NGOs to improve targeting of public expenditure, to implement development interventions, and in emergency response (Henninger and Snel 2002). Data can be obtained from a variety of sources – usually from national statistics databases and then mapping is done using GIS systems. These approaches are now being picked up by conservation scientists who are increasingly experimenting with techniques to look at poverty in relation to spatially distributed attributes of biodiversity – for example hotspots; protected area locations; ecosystem services (TICELPA). Past initiatives include: UNEP-WCMC ‘Forest and Poverty Mapping in South Asia (1999-2000), and the ‘Poverty Mapping Project’ implemented as a joint initiative by FAO, UNEP, and CGIAR (Consultative Group on International Agricultural Research) from 2001-2004. Many other institutions have been engaged in various poverty-environment mapping efforts and these include: WRI (World Resources Institute) ‘Mapping ecosystem services and poverty in Kenya’, UNDP ‘Mapping ecosystem services and poverty in Rwanda’, Asia Development Bank (ADB) ‘Poverty-environment decision support system’. These are reviewed for the 3rd IUCN World Conservation Congress in Kataryiya *et al.* (2005).

Appendix D

Socioeconomic indicators

Socioeconomic indicators can vary in scope from demographics, human wellbeing, to human health, or centred on access and use of natural resources. Examples of these include (respectively):

- Life expectancy by UN population division: the average number of years people would be expected to live if the current age-specific mortality conditions prevailed throughout their lives, (national, regional, and global scales).
- Malnutrition prevalence by WHO: the percentage of children under the age of five that are moderately to severely underweight and or suffer from wasting or stunting (national and regional scales).
- Water withdrawal by FAO OECD: The total water withdrawn divided by the population, (national and regional scales).

Socioeconomic indices

In terms of human livelihoods or wellbeing, the UNDP has developed perhaps the most recognized set of composite indices and these are listed below. In terms of the state of the environment, many other institutions and organisations that have developed a variety of indices. These include for example the Environmental Performance Index (EPI) by CIESIN (Centre for International Earth Science Information Network), the Environmental Sustainability Index (ESI) also by CIESIN or the Ecological Footprint (EF) by Reese and Wckernagal (as cited in PEP 2005). However, these are not particularly useful for assessing the impact of PAs on local livelihoods. More relevant human development indices developed by the UNDP (2004) are described (below). However, this list is not comprehensive. Other indices by the UNDP also include Gender Empowerment Measure (GEM) and Technological Achievement Index (TAI).

- Human Poverty Index (HPI): proportion of people below a threshold level in basic dimensions of poverty, which is defined differently for developing and developed nations (high-income OECD countries).
- Human Development Index (HDI): measure achievements of countries towards development based on a combination of life expectancy at birth, knowledge as: adult literacy rate and primary, secondary and tertiary gross enrolment ratio and standard of living as measured by GDP per capita in purchasing power parity (PPP) in US dollars.
- Gender-Related Development Index (GDI): measure the inequalities between men and women in the same ways for HDI but differentiated by gender.

Poverty-Environment Indicators

One definition of poverty-environment indicator is 'one which changes when better management of natural resources leads to a decline in poverty (broadly defined)' (Shyamsundar 2002). There are many possible indicators that may be used to assess the affects of PAs on local livelihoods such as those related to food security, land tenure, or access to common property and natural resources (such as water, fuel wood or NTFP's, Non timber Forest Products. Some may be also related to agricultural productivity, housing standards, or natural disasters. Shyamsundar (2002) (published by the WB) aimed at identifying possible poverty-environment indicators and produced a list that may be used to monitor the effects of environmental factors on health and poverty. Other initiatives include a study by DFID (2002) aimed at developing a set of generic poverty-environment indicators for potential use in Poverty Reduction Strategy Papers (PRSPs). WWF Macroeconomics Programme Office (DATE!) has developed an approach that classifies indicators according to three different categories of poverty-environment indicators: status, enabling conditions, and social capital in order to analyse the impact of macroeconomic and institutional reforms on the environment and on the rural poor (Reed and Tharakan 2004).

Appendix E

Email subject: **Global assessment: measuring social costs and benefits of protected areas**

As a conservation professional, we would like your expert input for a global assessment of protected areas.

UNEP-WCMC are undertaking a rapid global assessment of a variety of protected areas to establish the extent to which data are now being collected on the social costs and benefits of protected areas. We are interested in gathering examples from terrestrial and marine protected areas from around the world and under a variety of governance regimes (such as government national parks, private protected areas, community conserved areas, or government/community co-managed areas).

This study is part of a larger process that involves UNEP-WCMC¹, IIED², TNC³, CARE International and Imperial College (London), amongst others. The aim is to provide advice to the Convention on Biological Diversity (CBD) and other stakeholders on the best ways to measure the social benefits and costs of a protected area (where they may be necessary or appropriate), which would include making recommendations to the CBD on a set of approaches that could be used to collect unbiased and relevant information.

We'd very much appreciate some basic information about your Protected Area and answers to four simple questions (please respond no later than July 31st). **All responses will be anonymous.**

Protected area name:

Designation:

Country:

[IUCN Protected Area Management Category \(Ia-VI\)](#) :

1. Has there been any assessment conducted on this Protected Area (PA) and its effect on local people, communities, livelihoods⁴ and/or wellbeing⁵? **Yes/No**
2. Does your PA management plan include conducting an assessment? **Yes/No**
3. Are you aware of anyone else who is or has been conducting livelihood or social impact assessment⁶ in and around the PA? (i.e. local/international NGO's government sectors, research institutions) **Yes/No**
If yes, please could you specify their name and organisation?
4. How is the PA [managed and governed](#)? (Please select one of the four IUCN governance types and delete those answers that are not relevant)

Government Managed (e.g. Federal, National, Local Ministries or Agencies or government-delegated management to an NGO etc)

Co-managed (e.g. Trans-boundary management, collaborative management, joint management)

Private Protected Areas (e.g. declared and run by individual land-owner, by a non profit organisation like University/NGO, by for profit organisations like individual or corporate land-owners)

Community Conserved Areas (e.g. declared and run by indigenous peoples or local communities)

Thank you for answering these questions. **If you know of anyone else who could complete this survey for other protected areas, please let us know.** Similarly, if you have information on more than one protected area, please send us a completed e-mail for each protected area. If you would like any further information, or have

comments, please contact Lauren Coad at the Protected Areas Programme of UNEP-WCMC (lauren.coad@unep-wcmc.org)

We appreciate and are grateful for your time.

Kind regards,

The Protected Areas Programme

Definitions:

1 UNEP-WCMC: United Nations Environment Programme –World Conservation Monitoring Centre

2 IIED: International Institute for Environment and Development

3 TNC: The Nature Conservancy

4 By livelihoods we mean more than one's sources of income. A term that encompasses the dynamic dimensions of poverty and well being such as the 5 types of assets or capitals including Human; Natural; Social; Physical; and Financial capitals (see DFID's livelihood framework<<http://www.nssd.net/pdf/sectiont.pdf>> – UK Department for International Development)

5 A broad sense of wellbeing including local definitions and concepts of poverty in the context of access and benefit sharing, rights and local culture

6 Refers to any assessment or form of documenting intended and unintended livelihood consequences (both positive and negative) of protected areas on local communities

* * *

Pesquisa Mundial: avaliação de custos sociais e benefícios de áreas protegidas

Como profissional da área de conservação ambiental, gostaríamos da sua opinião, nesta pesquisa mundial sobre áreas protegidas.

A UNEP-WCMC¹ está realizando uma pesquisa mundial que avalia várias áreas protegidas para estabelecer, até que ponto, os dados estão sendo coletados sobre os custos sociais e benefícios de áreas protegidas. Nós estamos interessados em obter exemplos de áreas protegidas terrestres e marítimas no mundo todo, sujeitas a diferentes tipos de administração: parques nacionais, áreas protegidas privadas, áreas conservadas por comunidades, ou administradas conjuntamente pelo estado e pelas comunidades.

Este estudo faz parte de um projeto maior que envolve a UNEP-WCMC, IIED², TNC³, a Imperial College London, dentre outros. O objetivo é aconselhar a Convenção de Diversidade Biológica (CBD) e outras entidades sobre a melhor forma para medir os benefícios sociais e custos de uma dada área protegida (aonde forem necessárias ou apropriadas); o que incluiria recomendar para a CBD um conjunto de medidas que poderiam ser usadas na coleta de informações relevantes e imparciais.

Ficariamos muito agradecidos se pudessem nos fornecer algumas informações básicas sobre sua Área Protegida – respondendo apenas quatro perguntas até o dia 31 de Julho. **Todas as respostas serão anônimas.**

Nome da área protegida:

Designação:

País:

IUCN - [Categoria de gerenciamento da Área Protegidas \(Ia-VI\)](#):

1. Houve alguma avaliação nesta área protegida (AP) sobre seus efeitos nos habitantes locais, nas comunidades, nos meios de subsistência⁴ e/ou no bem estar⁵? **Sim/Não**

2. O plano de gerenciamento da sua área protegida (AP) prevê uma avaliação? **Sim/Não**

3. Você conhece alguém que esteja conduzindo, ou conduziu, uma avaliação⁶ sobre o meio de subsistência ou sobre o impacto social na área protegida ou perto dela (por exemplo: ONG nacional/internacional, setores de governo, instituições de pesquisa)? **Sim/Não**

(em caso afirmativo, poderia especificar o nome da organização?)

4. Como a sua AP é administrada e gerenciada? (Selecione, por favor, um dos quatro tipos de gerencia de IUCN e apague as respostas que não forem relevantes)

Administrada pelo governo (Ministérios ou agências federais, nacionais, locais ou administração de ONG delegada pelo governo)

Administração conjunta (gerencia “trans-boundary”/através das fronteiras, gerencia colaborativa, gerencia conjunta)

Áreas protegidas privadas (declarado e gerenciado pelo proprietário das terras individualmente; por uma organização sem fins lucrativos como ONG/ Universidade; ou por organização com fins lucrativos como proprietários de terras individuais ou empresas)

Áreas conservadas pelas comunidades (declarado e gerenciado por povos indígenas ou por comunidades locais)

Obrigado por ter respondido as perguntas. **Se souber de alguém que possa participar desta pesquisa sobre outra área protegida, por favor, nos avise.** Da mesma forma, se tiver informações sobre mais de uma área protegida, por favor, nos envie outro e-mail: um para cada área protegida. Se desejar informações adicionais ou quiser fazer comentários, entre em contato com Vanessa Richardson no programa de áreas protegidas da UNEP-WCMC (vanessa.br.uk@gmail.com)

Agradecemos a sua participação,
Sinceramente,

- O programa de áreas protegidas da UNEP-WCMC

Definições:

1 UNEP-WCMC: United Nations Environment Programme –World Conservation Monitoring Centre

2 IIED: International Institute for Environment and Development

3 TNC: The Nature Conservancy

4 Por meio de subsistência compreendemos mais do que uma fonte de renda. É um termo que engloba as dimensões dinâmicas da pobreza e do bem estar, tais como os 5 tipos de recursos ou de capitais: Humano; Natural; Social; Físico; e capitais financeiros (veja a estrutura dos meios de subsistência de DFID<<http://www.nssd.net/pdf/sectiont.pdf>> - Departamento BRITÂNICO para o desenvolvimento internacional)

5 um sentido amplo de bem estar, inclui definições e conceitos locais de pobreza no contexto de acesso e participação dos benefícios, direitos e na cultura local

6 referem-se a qualquer avaliação ou forma de documentação, voltada ou não, sobre as conseqüências dos meios de subsistência (tanto positivo quanto negativo) nas áreas protegidas no local

Appendix F

How does your protected area undertake livelihood / social impact studies?

Thank you for helping us with this Global assessment of Protected Areas!

As you may know from our previous e-mail, this survey is part of a wider process to identify and develop methodologies for assessing the social impact of protected areas. Ultimately this includes making recommendations to the CBD (and other stakeholders) on methodologies (a 'tool kit') that could be used to collect unbiased and relevant data.

A workshop was held in 2008 at UNEP-WCMC, in collaboration with TNC, IIED and CARE, in order to identify existing methodologies for assessing social impacts, and a further workshop will be held towards the end of the year to begin planning field testing of selected methodologies (to begin in 2009). For further information on these workshops please contact Lauren Coad (Lauren.coad@unep-wcmc.org).

We are keen to engage with and learn from as many protected areas practitioners as possible in this process, and we hope that through this survey we can learn about the methods that are currently in use for assessing social impacts, in protected areas around the world.

Thank you very much for your time – we really appreciate your input.

- The Protected Areas Team at UNEP-WCMC

1. Could you please fill in the following information regarding your protected area or park:

Protected area name:

IUCN category (if known):

IUCN governance (if known):

Country:

Email Address:

2. When was the most recent livelihood assessment carried out?

Over 1 year ago

Over 3 years ago

Over 5 years ago

Over 10 years ago

I don't know

If would like to give extra details on when the assessment(s) was carried out feel free to do so below

3. Why was the livelihood assessment carried out? (tick as many as you like)

It is part of our organisation's policy

It is part of our National government policy

It is part of our protected area

It is part of our management scheme

It is required by our donors

I don't know

Other (please specify)

4. Which impacts of the protected area on the local community were measured?

Negative impacts

Positive impacts

Both positive and negative impacts

I don't know

5. Which of the following categories of people's livelihoods components were assessed (e.g in terms of access/ability/quantity/quality)? (tick as many as you like)

Human (skills, knowledge, education, health)

Social (networks, connectedness, kinship, membership to formal groups, rules norms sanctions, political power, local culture)

Natural (ecosystem services, food, wild resources, water, erosion protection, access to land)

Physical / Built (Infrastructure, secure shelters, communication capacities, roads, transportation, sanitation, energy)

Financial (sources of income/cash inflow, available stocks, access to credit; to markets, liquidity, productivity)

6. Did you look at impacts of the protected area in relation to any of the following? (tick as many as you like)

Gender
Age
Ethnic group
Education level
Religion
Other (please specify)

7. Was the livelihood assessment based on an existing framework?

Yes, it was based it on an existing methodology/framework (If appropriate, please specify which)
Was the livelihood assessment based on an existing framework? I don't know
No, it was not based on any model/framework and was developed specifically for this occasion
I don't know
Other (please specify)

8. Which (if any) tools did you use? (tick as many as you like)

Economic valuation (E.g. Cost-Benefit analysis, household consumption of firewood/meat, Econometrics or assessments of local markets, and Environmental Economics as valuation of local ecosystem services and or products)
Participatory techniques (E.g. PRA –Participatory Rural Appraisal, PLA-Participatory Learning and Action, Beneficiary Assessments or community consultations and group discussions to build timelines, seasonal calendars, community mapping, livelihood matrix, wealth ranking)
Structured and Semi-structured interviews and questionnaire surveys (including open and closed answers, structured-just go through script, semi-structured-can have open discussions around a script)
Unstructured interviews and questionnaire surveys (open discussions based only on a general idea of what to be addressed)
I don't know

9. Who collected the data? (tick as many as you like)

Protected area management staff
Staff from National organisations/institutions working within the protected area
National Researcher(s)
Staff from International affiliated organisations/institutions working within the protected area
International Researcher(s)
Local community members
I don't know

10. Have the results been analysed?

No
Yes but not published
Yes and they have been published
I don't know
If results have been published could you please provide details of how to access these results?

11. Have the results been used to influence Protected Area (PA) management?

No, they have not been used and I don't think they will be
Not yet, but they may possibly be used in the future
Yes the results will definitely be used in the future to change PA management
Yes, they have already been used to change PA management
I don't know whether the results have been used or not

Please could you provide details as to why the data has not or will not be used to influence PA management. Alternatively if you have or intend to use data to influence PA management could you please provide some detail on how it will be used:

Thank you for contributing to our survey, this information will greatly benefit our assessment. Results will be made available in the coming months. If you would like to get in touch with us or leave any comments, feel free to do so below.

Kind regards,

-The protected area team at UNEP-WCMC.

Appendix G

Variable	Number of PAs that conducted a livelihood assessment	Number of PAs that did not conduct a livelihood assessment	Number of PAs with livelihood assessment in their management plan	Number of PAs without livelihood assessment in their management plan
IUCN category				
I	7	13	11	9
II	47	19	46	20
III	0	5	0	5
IV	26	5	25	6
V	6	1	5	2
VI	12	13	16	9
unset	4	1	5	0
unknown	10	13	17	4
IUCN governance regime				
CCA	18	14	25	7
CO-M	15	10	18	7
GOV	71	42	78	35
PPA	4	3	2	5
unknown	4	1	2	1
UN World Region				
Africa	69	19	76	10
Americas	16	33	20	29
Asia	14	2	15	1
Europe	0	2	0	2
Oceania	12	12	12	12
unknown	1	2	2	1
World Bank Economy				
Low income	57	12	63	4
Lower middle income	23	7	25	5
Upper middle income	13	30	17	26
High income	7	6	6	7
no data	12	15	14	13
Area				
less than 1000	13	6	14	5
1000 - 10 000	11	3	11	3
10 000 - 100 000	35	13	35	13
over 100 000	25	26	32	19
Date of establishment				
before 1970	34	8	36	6
1970 -1989	17	16	18	15
1990 - 1999	19	5	21	3
2000 to present	11	10	13	8

Appendix H

Criteria to review the case studies	Number of case studies	Percent (%) of case studies
Were results published?		
No	2	4
Yes but with no methodology mentioned or outlined	13	28
Yes but with the methodology elsewhere	7	15
Yes and the methodology used has been published in this paper	24	52
Scope of the assessment		
Intra-households	8	17
Intra-community	18	39
Inter-community/Regional	39	85
National	8	17
Global	3	7
Not mentioned	2	4
Data type		
Qualitative	31	53
Semi-quantitative	18	31
Quantitative	10	17
Interviews:		
No tool: just description	7	15
Structured and Semi-structured interviews and questionnaire surveys	19	41
Unstructured interviews and questionnaire surveys	7	15
Not mentioned in detail	16	35
Environmental economics		
Yes but not available in detail	7	15
Cost-Benefit analysis	7	15
Household consumption	7	15
Econometrics (markets)	6	13
Environmental valuation	5	11
Not mentioned at all	22	48
Participatory techniques		
Generalised PRA only	1	2
Group Discussions	12	26
Timelines of events	3	7
Seasonal calendars	3	7
Spatial mapping	3	7
Wealth ranking	1	2
Not mentioned	30	65
Controls:		
Baseline	0	0
Reconstructed Baseline	5	11
Counterfactual	7	15
Before/After	6	13
Snapshot	27	59
Time Series	20	43