

CEE review 11-009

HUMAN WELL-BEING IMPACTS OF TERRESTRIAL PROTECTED AREAS

Systematic Review Protocol

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1. Background

Protected areas (PAs) are globally considered as one of the primary methods to conserve biodiversity and other Global Environmental Benefits (GEBs). The amount of land placed under some kind of protection has been growing steadily at the global scale, a fact highlighted by the recent Global Biodiversity Outlook 2010 as one of the very few positive achievements over the past years to protect the Earth's biological and genetic resources, and help to maintain ecosystem processes. PAs are diverse in their governance and objectives and defy simple definition. Types of PAs have been categorised by the World Commission on Protected Areas (WCPA) of International Union for the Conservation of Nature (IUCN) and used to classify entries in the World Database of Protected Areas (<http://www.wdpa.org/>). PAs range from strict conservation to various degrees of human use and occupation. The extent to which designation of protected areas is actually translated into protection and effective management varies substantially depending on many factors.

In parallel, there has been considerable debate on whether, apart from their effects on GEBs, the net impact of PAs on human well-being at local or regional scales are positive or negative (Ferraro et al. 2011). The review fully acknowledges that the establishment of some protected areas (WCPA categories 1-4) has never had as its focus social and human development as will be considered in this review.

However, considering the significant proportion of global biodiversity funding that is devoted to PAs, enhancing understanding of the causal relationships between protected area management and local community welfare is important, as it may help advance both the conservation agenda that is achieved through protected areas while improving the targeted opportunities that exist to simultaneously enhance socio-economic development.

Thus, lessons that may be extracted from this review can inform future investment decisions, and therefore is highly relevant for international governmental and non-governmental organisations.

The relationships between terrestrial protected areas and human well being are likely to be complex and time dependent. Individual protected areas have often been subject to many changes over time in their status and management. Any one of these changes could have effects on human well-being. Prior to protective status being formalised, biodiversity may have been protected spontaneously by particular populations or it may have been used unsustainably. The management approaches implemented by indigenous and local communities would have well-being costs and benefits. The subsequent establishment and governance of protection status may have taken these management approaches and lifestyles into account, or it may have changed them thereby bringing other costs and benefits compared with the previous management approaches. This is all likely to be very site specific and culturally dependent and thus must be understood within specific contexts.

It will often be hard to attribute a given effect to a single identifiable cause. The impact of the existence of a PA, at any point in time, will integrate both its current status and management and those in the past. Common examples would be where an area is initially allocated one level of protection status, e.g. "Forest Reserve"; the protection status of the same area is subsequently changed, e.g. to "National Park"; the amount and type of protection management activities

change greatly over time, e.g. due to political and resource changes in government institutions, securing of external funding, inputs by non-government institutions, enactment of new policies (e.g. encompassing some form of participatory management) and changes in levels of ecotourism and how ecotourism is managed.

Thus, investigating the relationship between protected areas and well-being needs to take into account:

- a) Context and lifestyles of local and indigenous communities before protection status was established.
- b) Whether the establishment or governance of protection status considers the circumstances and lifestyle of local and indigenous communities.
- c) Whether circumstances and lifestyles change as a consequence of protection status.
- d) Whether the creation of a protected area generates incentives for human populations to settle in and around the area in search for new opportunities.
- e) What well-being benefits were realized by populations not living within the geographic influence of the protected area.

This review will employ two approaches to synthesis; a quantitative synthesis of causal relationships and associations, and a framework synthesis of people's views (see section 3.6). At the outset of the review the following broad questions were posed and these have been used to guide development of specific inclusion criteria (below):

Livelihood strategies

Were communities/people affected positively or negatively? Did the establishment or change in status of the PA or management activities within the PA generate or decrease specific production opportunities (e.g. more demand for labour, herding activities and associated products no longer viable, new demand for particular food handicraft or services or products, etc.)? Did the PA influence (i.e. increase or decrease) migration generally, and of particular social groups? Has this differentially impacted (positively or negatively) the most vulnerable groups in local communities (e.g. women, children, poorest sectors of community).

Social capital

Did the establishment and management of the PA contribute to the development/strengthening of social networks? Did it positively or negatively impact education and capacity building, e.g. by generating or decreasing opportunities for formal and/or informal education? Has PA establishment differentially affected more vulnerable groups (e.g. women, children, poorest sectors within local communities) in a positive or negative way?

Empowerment

Did the PA foster the empowerment of local communities and any particular social groups? Were new organizations/institutional arrangements created that represent the interests of communities and any particular social groups? Have these organizations developed activities

aiming at improving their livelihoods (e.g., legislation to support local livelihoods, land tenure, co-management of local resources, other social benefits)?

Human rights

Whilst recognising that the scope of human rights is very broad, in this review we will focus on the following question; were the rights of all local stakeholders, affected either positively or negatively by the PA? Consider e.g. rights to education, adequate access to food, clothing, health, choices.

Access to ecosystem goods and services and natural resources essential for well-being

Did the PA have any positive or negative impact on the access to ecosystem services and natural resources? For example were there changes in the cost (in terms of money, level of effort, or time) in obtaining firewood, clean water, and other resources/services? Was access to culturally significant places (e.g. sacred grounds) affected? Did self-sufficiency in food (by locally cultivating, hunting, raising animals, gathering) or access to medicinal plants change? Has this been a consequence of the direct impact of the PA through legal prohibition of access or indirect as a consequence of changes in infrastructure and-or institutions? Have any of these positive or negative impacts been disproportionately high or low on particular sectors of society?

2. Aims and Objectives of the Review

This systematic review will synthesise the empirical evidence of positive, negative or neutral impacts of PAs on human well-being at the local to regional scales, with emphasis on local communities and on the most vulnerable stakeholders, and contemplating as broad a definition of well-being as possible (see categories to be considered below). The primary research question is:

1. What are the human well-being costs and benefits of terrestrial protected areas?

Of particular interest are two secondary questions;

2. How are costs and benefits distributed among and within indigenous and local communities living inside and in the buffer zones of protected areas (by socio-economic status, gender, age etc)?

3. How do costs and benefits vary with governance, resource tenure arrangements, and site characteristics?

As the aim is to assess the human well-being impacts of protected areas in their current form and capture lessons for future interventions, relevant evidence may be provided by studies that generate hypotheses about impact, as well as studies that test hypotheses about impact. These studies will be inspected for evidence of positive and negative health and well-being impacts on populations living in or near protected areas.

3. Methods

3.1 Searches

The search will aim to capture the available scientific evidence (quantitative and qualitative) relevant to the question, whether published or unpublished. Different sources (specific and general) of information will be searched in order to maximize the coverage of the search. Literature appearing in peer-reviewed publications will be gathered together with reports from community organizations that could be directly impacted in a positive or negative way by the PA, and by governmental and non-governmental research and conservation organizations.

3.1.1. General search

Databases.

The search aims to include the following computerized databases:

- Web of Knowledge
- Scopus
- Agricola
- CAB Abstracts (inc. Global Health)
- PubMed
- EMBASE
- PSYCINFO
- Science Direct
- ECONLIT
- Index to Theses Online
- Directory of Open Access Journals
- British Library for Development Studies (<http://blds.ids.ac.uk/collect.html>)
- International Bibliography of the Social Sciences
- LILACS (Latin American & Caribbean Health Sciences Literature – Spanish language)
- SSRN/REPEC

Web search

An internet search will be performed using the following web sites:

- 1) www.google.com
- 2) www.jux2.com
- 3) www.scholar.google.com
- 4) <http://scientific.thomsonwebplus.com/>
- 5) www.scirus.com (web sources only)

These sites are most important for accessing qualitative data. Here the importance is not to identify all studies, but to identify additional themes and stakeholders to build a coherent understanding of the issues. The first 50 hits from each search will be checked for relevance. Any links present will be followed only once from the original hit.

3.1.2. Specific website search

Websites of specialist organisations will be searched (listed below), and where appropriate, this search will be restricted to the publications section on the website.

<http://www.conservation.org>
<http://www.dfid.gov.uk>
<http://ekh.unep.org/>
<http://www-esd.worldbank.org/gef/>
<http://www.etfrn.org>
<http://www.fao.org/>
<http://www.ifad.org/>
<http://www.iied.org>
<http://www.iucn.org>
<http://www.livelihoods.org>
<http://www.odi.org>
<http://www.pfc.cfs.nrcan.gc.ca/>
<http://www.recoftc.org>
<http://sgp.undp.org/>
<http://www.tropenbos.nl/>
<http://www.undp.org/>
<http://www.unep.org/>
<http://www.unep-wcmc.org/>
<http://www.usaid.gov/>
<http://dec.usaid.gov/index.cfm>
<http://www.waldbau.uni-freiburg.de/forlive/Home.html>
<http://web.worldbank.org>
<http://povertyandconservation.info>
<http://www.forestpeoples.org>
<http://www.rightsandresources.org>

3.1.3. Search terms

Combinations of the following English search terms (where * denotes a wild card to search for alternative word endings) will be applied to the databases and internet search engines:

(“protected area” OR “nature reserve” OR “wilderness area” OR “national park” OR “regional park” OR “state park” OR “provincial park” OR “natural monument” OR “management area” OR “forest reserve” OR “wetland reserve” OR “game reserve” OR “world heritage site”)

AND

(Poverty OR “human well*” OR economic* OR “human health” OR livelihood OR “social capital” OR “social welfare” OR empowerment OR equity OR “ecosystem services” OR “natural resources”)

An initial scoping using the full combination of the above recorded 6466 hits in WoK

Where studies are reported in other languages, relevance will be assessed initially from their titles and abstracts (translated if necessary). Foreign language reports that cannot be reviewed by the current team will be listed as ‘awaiting assessment’.

Citations from computerised databases will be downloaded and imported into an Endnote library and duplicates deleted.

3.1.4. Handsearching

Bibliographies of all articles included at full text will be searched for further relevant articles.

3.2 Study inclusion criteria

The following inclusion criteria will be applied in order to select from those captured by the search, articles that are relevant to the review question.

Populations: Human populations/communities currently or previously living in or near terrestrial protected areas – Global in scope

Exposure: Establishment/implementation of terrestrial protected areas with IUCN classifications I-VI defined in the World Database of Protected Areas.

Types of study: Studies will be eligible for this review if they:

- (a) evaluate the impact of protected areas on human well-being (outcome evaluations which use the following study designs with appropriate comparators Randomised Controlled Trials (RCTs) / Controlled Trials (CTs) CTS, control-intervention site comparisons, interrupted time series, Before-After/Control-Intervention (BACI) designs);
- (b) are econometric studies based on stated or revealed preferences or production function approaches, in which the comparator may be modelled, or implicit in survey responses
- (c) seek to identify protected area factors that influence human well-being (e.g. cohort studies, case-controlled studies, modelling studies) or
- (d) seek qualitative evidence on people’s views about protected areas and human well-being

Additional inclusion criteria for quantitative data synthesis

Comparators; for quantitative studies estimating effect sizes, comparators may be explicit in the study design, i.e. study type a (above). Alternatively the counter-factual may be modelled, it may be reconstructed from the memories of respondents, or it may be implied by the reported perceptions of respondents (e.g. in stated preference, or qualitative social research).

Outcomes: Specific human-well being indicators linked to those broad questions set out in the Background section (e.g. Livelihood strategies, social capital, empowerment, human rights, access to ecosystem services and natural resources). Examples are measures of income,

education, health and other mainstream socio-economic indicators; World Bank and UNDP human development index measures and measures that consider health, longevity, education, gender equity, food security, livelihood diversity, subjective/reported measures of wellbeing, resilience, measures of social capital, and indicators of human rights

Additional exclusion criteria for qualitative evidence

Studies of people's views will be excluded if they:

- focus solely on the development or validation of a measurement tool without also presenting views separately from the validation of the tool;
- report trials or other outcome evaluations, unless it was clear from the abstract that they collected data about views as part of a process evaluation;
- do not provide a description of their methods of data collection or of their methods of data analysis.

3.2.1 Screening studies: applying inclusion and exclusion criteria

In the first instance, the inclusion criteria will be applied on title only, to remove spurious citations. Articles remaining will then be filtered by abstract and further, by viewing remaining articles at full text.

Hits from web searches will be filtered initially with the inclusion criteria on the abstract of articles (or introduction section or equivalent if an abstract is not available), and then at full text. URLs for hits deemed relevant at abstract will be maintained within an Excel spreadsheet, and subsequently filtered at full text.

3.2.2 Screening studies: quality assurance process

To check for consistency of application of inclusion criteria, two reviewers will apply the inclusion criteria to a sample of articles at the start of the abstract filter. The kappa statistic will be calculated to measure the level of agreement between reviewers. If kappa is less than 0.6, the reviewers will discuss the discrepancies and clarify the interpretation of the inclusion criteria. This may entail a modification in the criteria specification and such modifications will be recorded. After this discussion, and adjustments where appropriate, one reviewer will apply the inclusion criteria to the rest of the articles.

Two complementary non-exclusive pools of studies will be formed: a pool of studies providing quantitative data of causal relationships/associations; and a pool of studies presenting qualitative data, e.g. people's views and perceptions.

In this dual but combined approach two teams with specific mandates reflected in section 3.6 will work in parallel from this stage of the review, and then converge towards a combined synthesis and report. The teams will coordinate activities and products during the process, so that the final report will retain the richness of their different approaches, methods, results, and conclusions, but at the same time combine the two streams of information into a unified set of final conclusions, messages and recommendations.

3.3 Potential effect modifiers and reasons for heterogeneity

Quantifiable effect modifiers to be considered will include the following (both in terms of current status, and past changes):

Factors related to PA; PA category, ecosystem/habitat type, size, protection status, time since initial establishment, time since change in status, management type, management quantity/quality, compensation measures, associated projects (e.g. ecotourism, public health programmes):

Factors related to inequalities amongst populations; operationalized by use of the PROGRESS-Plus framework (Oliver et al 2008; Kavanagh et al. 2008, 2009) to capture broad social determinants of health: Place of residence, Race¹/ethnicity, Occupation, Gender, Religion, Education, Socio-economic position and Social capital (Evans and Brown 2003) and other characteristics attracting discrimination, such as age and disability (Krieger 1999), and contextually relevant features, such as in this case, location of PA; remoteness, country (geographical or economic indices), human population density, migration², baseline poverty, livelihood strategy (e.g. nomadic versus settled), and time dependent circumstances, such as time since protected area established. This provides a framework for selecting characteristics within each dimension relevant to PAs and human well-being. Not all the dimensions may be relevant, and others may emerge from the literature. The framework will be useful for prompting recognition of characteristics potential relevant to the relationship between protected areas and human well-being, and for tabulating evidence collected from research reports.

3.4 Study quality assessment

Quantitative: quality assessment will be based on study design in terms of its susceptibility to bias. Most studies are expected to be either (1) site comparisons, where sample size and method of selection of treatments and controls sites of subjects within them will be key elements of study quality, as will be reporting of baseline condition and possible confounding factors or (2) time series where before and after measurements are likely to be confounded by other variable. For example, where there have been multiple changes in designation with blurring of boundaries between each. A secondary consideration of quality will be the validation of measures. A record will be made of whether, where and how measures have been validated, and this information used during the interpretation of the findings. Sensitivity analyses will be conducted if the data allow

Qualitative data: The tool that will be used for assessing the quality of studies was developed by Harden (2007) and built upon systematic reviews conducted in the EPPI-Centre that synthesised qualitative data of young people's views (e.g. Rees et al. 2009) which is also applicable to adult populations.

¹ The term 'race' relates to human population types based on external phenotypes. It is now understood that such categorisation is not meaningful and can be considered pejorative.

The tool uses eight criteria which cover:

- i) study design and methods (the rigour of study sampling, data collection and analysis); findings (the grounding/support of study findings by data and the breadth and depth of the findings themselves) and the use of methods/approaches to privilege the perspectives and experiences of study participants, for instance through a balance between open-ended and fixed response options, and between the use of an a priori coding framework and induction in the analysis; the listening attitude of the researchers; or involving advocates in designing the research

3.5 Data extraction strategy

Generic coding: quantitative and qualitative:

Studies that meet the inclusion criteria will be described using a pre-determined coding tool developed for the purposes of this review. This will describe consistently across all studies:

- the aims and focus of the research (e.g. women's experience of PA's, evaluation of PA's on social empowerment for rural populations)
- details about the sample and setting (e.g. age, gender, geographical location),
- details about the PA (classification, history)
- the study design (e.g. RCT's, focus groups, interviews)
- domains of human well-being described or measured

Study populations will be distinguished using a PROGRESS-Plus framework that encompasses:

- broad social determinants of health and well-being (Place of residence, Race/ethnicity, Occupation, Gender, Religion, Education, Socio-economic position and Social capital (Evans and Brown 2003))
- characteristics that impinge on health and well-being by attracting discrimination
- other contextual features that may be particularly pertinent to experiences of protected areas (e.g. indigenous or immigrant status; membership of subsistence or commercial economy; involved or excluded from establishment and governance of protected area).

Reports will be inspected for evidence of

- issues important to people living in or near PAs about their establishment, governance or maintenance.
- broad participation in the establishment, governance or maintenance of PAs, as part of collaborative partnerships sharing decision-making or as respondents to consultations
- PAs incorporating into their establishment, governance or maintenance issues that are important to people living in or near PAs

Quantitative data extracted will include means and variance measures of human wellbeing indicators as well as measures of potential effect modifiers as listed in section 3.3

Qualitative data extracted from 'views' studies will include participant's views in the forms of quotes and authors interpretations and conclusions.

We will use EPPI-Reviewer (Thomas & Brunton 2007) to record details of each study included in the qualitative synthesis, including descriptive and evaluative codes and text and the data used and produced during synthesis.

3.6 Data synthesis and presentation

Quantitative synthesis:

A narrative synthesis of data from all included studies, together with study quality assessment, will accompany summary findings of each study presented in a user-friendly tabular or graphical form. The review will also attempt a quantitative synthesis of effects from the collected studies. If data permit, random effects meta-analyses will be performed on means and variances of effects of terrestrial protected areas. It is anticipated that a number of different weighting methods might be used, including inverse of variance, and sensitivity analyses performed where appropriate.

Qualitative synthesis:

The quality of studies will be used to make decisions about whether a study should be included in the synthesis.

Framework synthesis is the method of choice where important concepts are identified in advance and where other important concepts may be revealed by the research literature. Framework synthesis can accommodate a broad range of literature employing different types of studies, and allows the framework to structure a subsequent synthesis of the quantitative findings and the views findings.

Framework synthesis will draw on methods used in previous EPPI-Centre reviews (Oliver et al 2008, Lorenc et al. 2008). It will involve developing grids or tables to enable the sorting and presentation of research data. These grids/tables will provide a clear structure for organising the data for synthesis and will be informed by the review question and conceptual framework. The framework will continue to be revised until it is coherent and coding is completed. The tabulated data will then be used to produce thematic summaries. Using this approach will include a graphic illustration of the path from the original research data, to individual study author's descriptions and analysis to the findings of the qualitative review synthesis before informing the final cross-study synthesis.

3.6.1 Comparison across study types and production of recommendations

The outcomes of the independent quantitative and qualitative syntheses will be matched and compared within a framework that distinguishes categories of PAs, different socio-economic positions, and possible outcomes including livelihood strategies, social capital, empowerment, human rights and access to ecosystem resources. In combining the quantitative and qualitative

elements the review will seek to understand why and how positive and negative impacts occur and how future PA investments might be made more effective.

The following questions will guide this cross-study comparison:

1. In circumstances where the quantitative synthesis indicates that PAs affect human health or well-being positively or negatively, does the 'views' synthesis suggest how this may happen?
2. Does the 'views' synthesis suggest how else PAs may affect human health or well-being? If so, have these issues been studied quantitatively? If not, does the views synthesis suggest these are important issues?
3. Do the findings of the 'views' synthesis offer possible explanations for heterogeneity within the quantitative synthesis?

4. Potential Conflicts of Interest and Sources of Support

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