

SYSTEMATIC REVIEW PROTOCOL

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Does the social equitability of community and incentive based conservation interventions in non-OECD countries, affect human well-being? A systematic review protocol

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Abstract

Background: An increasing number of conservation interventions aim to reduce their negative impacts on vulnerable people and to provide incentives aimed at improving overall human well-being. Community and incentive based conservation interventions have had variable rates of success in producing well-being outcomes, yet it is unclear why. Researchers have hypothesised that socially equitable conservation interventions will improve their likelihood of success. However, for community and incentive based interventions, there is a lack of evidence synthesis for the effect that social equity has on human well-being outcomes. Using this protocol, we will undertake a systematic review of relevant literature with the aim of using existing knowledge to address this gap.

Methods: This protocol outlines the methodology we will use to examine the research question: *Does the social equitability of community and incentive based conservation interventions in non-OECD countries, affect human well-being?* We will conduct a systematic review of available studies, using articles that measure the effect of social equity, defined as the absence of avoidable and unfair, cost and benefit distributions between socially stratifying factors. To make this process efficient, and in order to prevent replication, we will utilize and update a literature search, and sub-set of data, collected in a previous systematic map that assessed the quantity and strength of evidence to support the effects conservation interventions have on human wellbeing. We will critically appraise each study we identify and capture the degree to which interventions integrated social equity within project participation and outcomes. Where integrated, we will determine if studies record or describe the effect that social equity had on human well-being. We have developed a conceptual framework that describes the expected effect of social equity, in order to capture and understand these effects. To understand the strength of relationships in our framework, and where data availability allows, we will undertake and combine a series of qualitative and quantitative data syntheses. By undertaking this study, we intend to understand how social equity considerations, specifically within community and incentive based conservation interventions, can affect human well-being. A better understanding of these features will inform conservation practitioners and researchers on the extent to which they ought to incorporate social equity into interventions in order to promote human well-being.

Keywords: Nature conservation, Incentives, Social equity, Conservation planning, Human well-being, Input equity, Outcome equity

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Background

Historically, conservation interventions were most often designed to exclusively meet biodiversity goals [1]. However, there is increasing evidence of cases where conservation interventions have negatively impacted vulnerable human populations [2–4]. In order to mitigate against these negative impacts, there is a growing interest in involving and benefiting people in planning and implementing the conservation of biodiversity [5–7]. Generally, this involves engaging local stakeholders, and integrating socio-economic goals (more broadly termed *human well-being*), within conservation planning [7–9]. As such, there has been a strategic shift by many global conservation actors (ranging from practitioners to donors) towards incorporating human well-being goals into conservation activities [10]. This transition has also been seen at recent key global conservation events, such as the Millennium Ecosystem Assessment [11], and the Durban Accord on protected areas [12]. Subsequent to these changes, both the purpose, and implementation of conservation activities are transforming in many places. Human well-being is a complex concept and has a diverse set of definitions across the literature [13]. Fortunately, definitions relevant to human well-being and conservation were thoroughly described in a previous systematic map [14].

There are an increasing array of methods that consider interventions that promote well-being within local communities, while reducing negative biodiversity impacts [5, 15–17]. These *community and incentive based conservation* (CIBC) interventions are designed to provide a range of incentives to people in exchange for some conservation action. CIBC interventions were described by Spiteri and Nepal [18] as: conservation interventions which combine community based conservation and integrated conservation and development interventions. Community based conservation broadly aims to include people in the planning and implementation processes [15]; whereas integrated conservation and development programs aim to provide economic development opportunities [19]. As such, the main components of CIBC interventions are community, development incentives, human well-being, and nature conservation [18]. For this review, we use the definition of community as a group of people who share common geography, identities or interests [20]. The economic development incentives used in CIBC interventions can range from monetary payments and other economic benefits such as local infrastructure building, to less tangible incentives such as participatory and decision making power, improved health, or education [8]. Human well-being is also a complex and varied term, here we use the definition of human well-being as the quality of people's physical and psychological health

[21]. Coutts and Hahn [22] provide a useful typology for understanding the relationship between nature and human well-being. They present nine specific ecosystem services (such as water and air quality), and describe their well-being implications. Nature conservation objectives in CIBC interventions can include species or ecosystem protection or monitoring, habitat restoration, or sustainable resource use [23]. An example of a CIBC intervention was the community based development project in A'Ukre, Brazil [24]. The A'Ukre project involved local communities working alongside a non-government conservation organisation to establish a CIBC intervention. The community accepted an agreement where economic incentives would be provided to the local community as an alternative to logging. This agreement was established using participatory processes, with local community members acting as key decision makers. Other examples of CIBC projects include: integrated conservation and development programs [25–27], a range of payment for ecosystem services schemes [28], ecotourism enterprises [29], and agroforestry projects [18, 30].

As this range of projects suggests, there have been many CIBC interventions implemented. However their success has been highly variable [18]. Several projects have resulted in either poor biodiversity or poor human well-being outcomes, and in some cases both [31–33]. Conversely, other projects have resulted in positive outcomes for both nature and local people [34]. Unfortunately, a clear understanding of why CIBC interventions may be successful or fail has proven to be elusive. Consequently, there have been several studies aimed at identifying the most important factors leading to positive or negative outcomes in CIBC interventions [18]. However, there are still knowledge gaps which researchers need to address. In particular, there is a critical knowledge gap regarding the role and the effects of social equity in conservation interventions [35]. While the health and social sciences have a long history of examining the relationships between social equity and human well-being [36], this topic is rarely addressed within the conservation literature [35, 37]. As conservation interventions increasingly integrate human well-being outcomes, addressing this knowledge gap is crucial to maximise their success.

The social justice literature defines social equity as *the absence of avoidable and unfair cost and benefit distributions between socially stratifying factors* [36, 38]. Social equity is an important for distributive justice across societies in general [39]. Within societies, people distribute the costs and benefits derived from any action (e.g. policies, programs, or specific developments) according to a spectrum of socially stratifying factors [40, 41]. These stratifying factors are the delineations between society members according to perceived cultural,

socio-economic and, or physiological differences [42]. Common stratifications include, gender, ethnicity, religion, health, income, and social class. As such, unfair or avoidable cost and benefit distributions among these stratified groups, are social inequities. Together, these equitable and/or inequitable distributions and stratifications make up a society's 'social equity landscape'. This landscape can widely deviate between different societies, and is therefore contextual. Assessment of social equity usually involves post hoc analysis of the manner in which some service or good was distributed amongst socially stratified groups [43]. There is strong causal evidence that a socially equitable balance of intervention costs and benefits results in more positive human well-being outcomes [38, 44, 45]. Therefore, assessing and understanding social stratifications and equity is important in any social intervention, including CIBCs [18].

Due to its importance, social equity is an increasingly examined issue in the conservation literature (e.g. [35, 37, 46, 47]). However, there are relatively few studies which explicitly examine the effects of social equity on human well-being outcomes in these interventions [35, 48–51]. More common is the focus of social equity on biodiversity outcomes [35, 37]. For CIBC interventions, previous studies have often only superficially considered the relationship between human well-being outcomes and social equity, if at all [18]. This is a critical knowledge gap as there are several case studies describing how the lack of accounting for social equity has led to perverse outcomes [18, 49, 52, 53]. For example, Agarwal [44] recounts how a community forestry project failed to account for gender equity in an already gender imbalanced community. This led to a reinforcement of gender inequity and as a result a further disempowerment of local women. In another account, Dressler et al. [33] discuss a case involving socioeconomic inequities in a community based forestry project, which was intended to reduce poverty and improve local biodiversity. In this case, poor accounting for existing cultural inequities resulted in the local privileged class denying poorer community members access to the project's benefits. As a result, the project had the unfortunate effect of actually reinforcing local poverty, rather than relieving it.

In order to avoid further negative outcomes, understanding and incorporating the effect of social equity in CIBC interventions is critical. However, due to the gaps in the evidence base describing the relationship between human well-being outcomes and social equity, parties undertaking CIBC interventions are unlikely to know how to most effectively incorporate social equity. Klein et al. [37] suggest that social equity is important within two key conservation intervention processes. During participatory project phases, which Klein et al. have

termed input equity (such as design, implementation, and evaluation—e.g. ensuring participation and decision making power is equitably distributed amongst stakeholder groups at each project stage), and within project outcomes, which Klein et al. have termed outcome equity (e.g. ensuring the distribution of project costs and benefits among stakeholders is equitable). Furthermore, Klein et al. describe the important link between socially equitable participation, and socially equitable outcomes. Greater equity in participation is more likely to result in greater equity in outcomes. This is a practical and useful framework to conceptualise the role of social equity in conservation interventions.

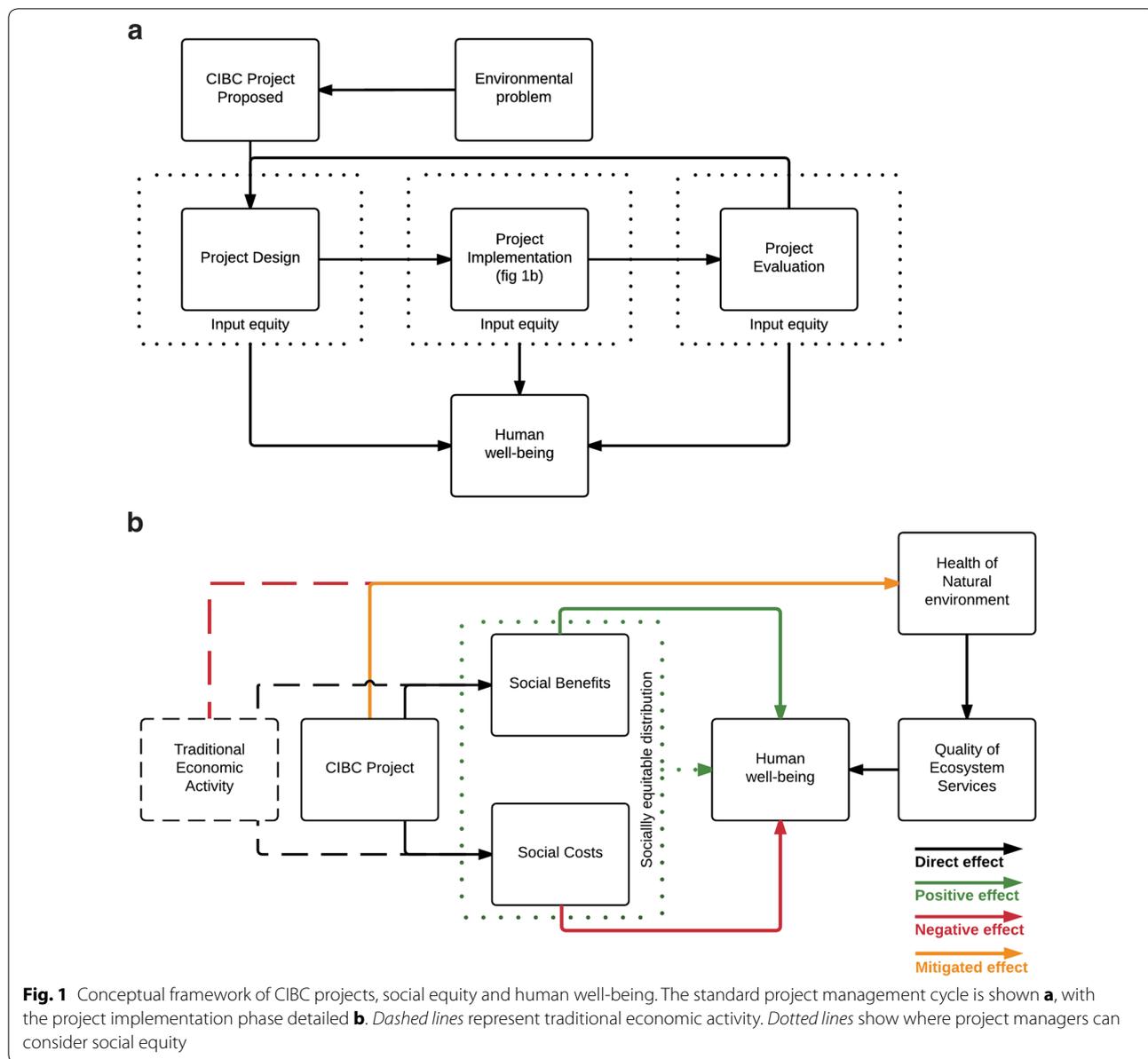
A conceptual framework for CIBC interventions, social equity and human well-being

In order to interpret the results of this study we have developed a conceptual framework based on the standard conservation project management cycle [54]. Our conceptual framework illustrates how CIBC interventions, social equity and human well-being relate (Fig. 1).

With this framework, we have simplified the standard conservation project management cycle, by breaking it into three phases: design, implementation, and evaluation (Fig. 1a). At each phase of the cycle, CIBC project managers may consider input equity by making decision making and participatory power socially equitable [37]. By accounting for input equity, the likelihood of human well-being and socially equitable outcomes is increased [18].

Outcome equity is determined during the implementation phase, when costs and benefits are distributed amongst socially stratified groups (Fig. 1b) [37]. Our framework displays how traditional economic activity aims to improve human well-being, but also results in negative effects to the natural environment. This can have the effect of compromising the quality of ecosystem services, which in turn can negatively affect human well-being [22]. Additionally, such activities result in social costs and benefits being distributed among socially stratified groups (outcome equity). When project managers account for output equity the likelihood of positive human well-being outcomes is increased [18]. The key difference between traditional economic activity and CIBC interventions is the latter are undertaken with the dual goals of improving human well-being, while also mitigating against threats to the natural environment [34].

This framework was developed in order to identify causal linkages between social equity and human well-being in CIBC interventions. We aim to use it to identify key points within the intervention cycle where social equity affects human well-being. Specifically, we will use our



framework to; illustrate and understand concepts, direct our data extraction method; interpret and synthesize available data, and; present results in a clear framework.

Assumptions

This framework was developed from discussions held at an expert workshop on conservation and social equity, and from concepts proposed in topical research articles [18, 33, 35, 37, 44, 47]. We have also used these sources to build several assumptions in to our framework. Explicitly, our assumptions are:

Within community and incentive based conservation interventions;

1. Socially equitable distributions of costs and benefits positively affects human well-being [33, 47].
2. Socially equitable participation in CIBC projects positively affects human well-being [33, 44, 47, 51].
3. Social equity has an effect (positive or negative) on CIBC project outcomes [35, 37, 47].

Objective of the review

We will synthesize available evidence for the effect that incorporating social equity into project participation and outcomes has on human well-being, in CIBC interventions. Explicitly, we will assess the effects of socially equitable stakeholder participation, and socially equitable

outcomes on human well-being. To achieve this, we will conduct a systematic review by utilising and updating data from an existing evidence map [8]. We aim to clearly characterise existing studies in order to understand when, where, and how CIBC interventions have included social equity in project participation or outcomes. In turn, we will examine what (if any) effect this had on human well-being outcomes. Where data availability allows, we will conduct qualitative and quantitative data syntheses. As a result, we expect that our results will inform future interventions and potentially increase their likelihood of success. Our primary research question is:

Does the social equitability of community and incentive based conservation interventions in non-OECD countries, affect human well-being?

To answer our primary research question, we will address a series of secondary research questions:

1. How is social equity considered within participatory processes of community and incentive based conservation interventions?
2. Are outcomes of community and incentive based conservation intervention outcomes socially equitable?
3. Which types of community and incentive based conservation interventions account for (participation or outcome) social equity?
4. Within community and incentive based conservation interventions, what is the strength and robustness of evidence within studies, which document the effects of socially equitable participation or outcomes on human well-being?

From systematic map to systematic review

A further, methodological objective of this review is to utilize and update an existing systematic map.

Systematic mapping, is an important exercise where researchers systematically collect and map out all relevant literature on a specific research question/objective [55]. While, this mapping exercise is important for understanding the breadth of the literature, it does not produce any data synthesis. Rather they provide an excellent blueprint for understanding where systematic review questions, and data synthesis might be pertinent (e.g. where specific sub-topics have an extensive literature base).

McKinnon et al. [14] have produced a systematic map which outlines the quantity and strength of evidence regarding the impacts of nature conservation on different dimensions of human well-being. Importantly, McKinnon et al. categorised a sub-set of literature as studies which examined conservation interventions related to

livelihood, economic and other incentives. Within this category, they identified 740 articles. As this is a rich literature base, we have utilised the McKinnon et al. sub-category to develop our research questions. By using an existing map, we prevent needless repetition of mapping the literature. Moreover, we have developed our research questions knowing that there is an extensive literature base of at least 740 articles relating to our research topic. We will utilise the list of articles and replicate the methodological processes used to produce them as the basis for our systematic search. Additionally, we will bring this sub-category of the McKinnon et al. the map up to date. As the original map only assessed literature published before 2014, we will replicate the methods used by McKinnon et al. to livelihood, economic and other incentives category for literature produced between 2014 until the present.

While this systematic map to review method provides several advantages, it is important to note that it does limit our review scope only to those studies which assess how social equity affects human well-being outcomes. As such, assessing the interactions between social equity and other factors (such as biodiversity and other biophysical outcomes) are not within the scope of this review. Furthermore, by retaining the search strategy of the McKinnon et al. systematic map, we also retain the methodological limitations of the original study, including literature that is: English language only, focussed on non-OECD countries only, and publicly available online.

Methods

Searches

All searches will be conducted in the English language. However, references, and records of non-English studies will be retained for potential use in future studies. Citations, including search dates, will be stored in bibliographic management software Endnote X7 [56].

Existing evidence base

Our search will build off a sub-set of relevant literature identified by McKinnon et al. [14], which systematically mapped the evidence base on the impacts of nature conservation interventions on human well-being. We will target a sub-set of studies within the systematic map that fit our typologies (see Additional file 1). While extensive, the original literature search by McKinnon et al. [14] is now out of date. We will re-run the search string from this study in order to include literature from 2014 until the present from the same peer-reviewed publication databases; The Web of Science [57], and Scopus [58]. Using Endnote X7 bibliographic management software [56], we will combine search results and screen for duplicate articles.

Search terms

We will use a string of English language search terms to query literature databases and search engines. This search string was developed in the McKinnon et al. systematic map [8, 14] and replicated exactly here. The original authors used an extensive process to develop their search string; including reviewing similar maps and reviews, iterative evolution of the string, utilising expert consultation and employing a test library. The previous systematic map identified linkages between human well-being and nature conservation interventions. As such, there is a direct overlap with our study as the impact of incentive based interventions on the social equity landscape is a subset of human well-being and nature conservation linkages. With this study we will also add to the evidence base within the original systematic map by adding social equity elements (see Additional file 2).

Intervention: (“conservation” OR “conserve” OR “conservancy” OR “protect*” OR “management” OR “awareness” OR “law*” OR “policy*” OR “reserve*” OR “govern*” OR “capacity-build*” OR “train*” OR “regulation” OR “payment for ecosystem services” OR “PES” OR “ecotourism” OR “sustainable use”) AND

Intervention qualifiers: (“marine” OR “freshwater” OR “coastal” OR “forest*” OR “ecosystem*” OR “species” OR “habitat*” OR “biodiversity” OR “sustainab*” OR “ecolog*” OR “integrated” OR “landscape” OR “seascape” OR “coral reef*” OR “natural resource*”) AND

Outcome: (“wellbeing” OR “well-being” OR “well being” OR “ecosystem service*” OR “nutrition” OR “skill*” OR “empower*” OR “clean water” OR “livelihood*” OR “(food) security” OR “resilience*” OR “vulnerability” OR “(social) capital” OR “attitude*” OR “perception*” OR “(human) health*” OR “human capital” OR “(traditional knowledge” or TEK) AND

Outcome qualifiers: (“human*” OR “people” OR “person*” OR “community*” OR “household*” OR “fisher*” OR “collaborative”)

Specialist searches

We will conduct a targeted search of non-peer reviewed, grey literature that relates to IBC interventions. As this literature base is not uniformly organised, we will undertake several approaches to identify and capture relevant articles and documents. We have identified a list of donors and implementing agencies engaged in relevant conservation activities (Table 1). Access permitting, we will conduct an initial search of the websites and data bases of these organisations. Further to this, we will contact key informants within these organisations, requesting their assistance in finding relevant literature. Furthermore, we will ask respondents for direction toward other key informants. Throughout this process,

we will add any relevant articles to our list for further screening.

Bibliographic searches

Several other systematic reviews and maps have been undertaken which assess various relationships between human wellbeing and nature conservation [8, 14, 28, 59, 60]. In order to increase the comprehensiveness of our search, we will conduct both forward and backward bibliographic searches on these articles. We will further screen all literature extracted during this process.

Comprehensiveness of searches

Our search will be limited to online literature only, except from our outreach to key informants. As such we will not capture paper based articles and studies. Online articles tend to be more recent, and the publication databases Scopus and Web of Science are both limited to publications from 1970 onward. The comprehensiveness of the grey literature will be limited to what is publicly available, and what key informants are able or willing to share. Our search strategy is based around methods used in previous systematic reviews, and specifically designed for compatibility with the existing McKinnon et al. systematic map [14].

To test the comprehensiveness of our search, and compatibility with the McKinnon et al. systematic map, we will create a test library of 100 random articles from the original map. We will test the results of our search against this library to ensure that all 100 articles are captured. If any articles are not returned in our search, we will assess and refine the search strategy until they are included. Any such changes to the search strategy will be described in the final review.

Article screening and study inclusion criteria

Screening process

After completion of the search strategy, we will enter all results into the software package EPPI-Reviewer [61]. We will remove all duplicates and generate a primary list of references. Screening and data extraction will also utilise EPPI-Reviewer. All screening will be undertaken by three reviewers, including the primary reviewer. Non-peer reviewed literature will be preliminarily screened within EPPI-Reviewer using a modified version of our search string. Articles will be screened in three stages; title, article abstract, and full text. At each stage screening will be undertaken according to specific inclusion and exclusion criteria. We will produce a record of all articles excluded at the full-text stage, including a record of reason for exclusion.

To ensure consistency, at each stage of screening (title, abstract and full text) we will use Cohen’s kappa statistic

Table 1 List of specialist organisations and websites

Organisation	Website
AusAID	http://ausaid.gov.au
Bird Life	http://www.birdlife.org
Centre for International Forestry Research (CIFOR)	http://www.cifor.org
Conservation International (CI)	http://www.conservation.org
Convention on Biological Diversity (CBD)	http://www.cbd.int
European External Action Service (EEAS)	http://eeas.europa.eu
International Institute for Environment and Development (IIED) Publications	http://pubs.iied.org
International Union for the Conservation of Nature (IUCN) Publications SEED	http://iucn.org/knowledge/publications_doc/publications http://www.seed.uno
The Nature Conservancy	http://www.nature.org
The World Bank Independent Evaluation Group	http://ieg.worldbankgroup.org
The World Bank Development Impact Evaluation	http://www.worldbank.org/en/research/dime
United Kingdom Department for International Development Publications	http://www.gov.uk/government/publications?departments%5B%5D=department-for-international-development
United Nations Development Programme (UNDP) Environment & Energy Research and Publications	http://undp.org/content/undp/en/home/librarypage/environment-energy.html
United Nations Division for Sustainable Development (UN-DSD) Document Library	http://sustainabledevelopment.un.org/index.php?menu=1629&str=
United Nations Educational Scientific and Cultural Organization (UNESCO) Database	http://www.unesco.org/new/en/unesco/resources/publications/unescodoc-database
United Nations Environment Programme-World Conservation Monitoring Centre (UNEP-WCMC) Resources & data	http://www.unep-wcmc.org/resources-and-data
United Nations Environment Programme (UNEP) Knowledge Repository	http://www.unep.org/publications
United Nations REDD Programme (UNREDD) Library	http://www.un-redd.org
USAID Development Experience Clearinghouse	http://dec.usaid.gov
Wildlife Conservation Society (WCS)	http://www.wcs.org
WWF	http://www.panda.org

to measure the level of agreement between reviewers [62]. Consistency will be checked on a random sample of 10% of articles or 50 articles, whichever is greater. We will specify a minimum acceptable threshold of $\kappa \geq 0.6$, which corresponds to 'substantial agreement' between reviewers. Consistency checks below the acceptable threshold will be discussed between reviewers and another round of checks using the same sample size will be undertaken. This process will be repeated until kappa scores are above the acceptable threshold.

Inclusion criteria

We will only extract data from studies that meet our inclusion criteria.

Relevant subject(s)

To ensure replication, we have retained the McKinnon et al. [14] list of relevant subjects as follows. We will only include studies related to projects undertaken in non-OECD countries [63] (excluded nations in Additional file 3). Included studies must also measure or recount

some aspect of well-being of human populations, such as households or communities. Additionally studies must measure outcomes for specific, vulnerable or marginalised groups. Studies in any biome will be included.

Relevant intervention(s)

We will only include studies and articles which assess CIBC interventions. The typology used to identify CIBC interventions is adopted from Section 6 of the Unified Classification of Conservation Actions developed by the International Union for Conservation of Nature [23, 64] (see Additional file 1). We will exclude all non-incentive based intervention studies, including those that relate to disincentives such as government regulation and financial penalties.

Relevant comparator(s)

We will only include studies that use an appropriate comparator (including reported/perceived changes) or an alternative intervention as per Pullin et al. [59]. Appropriate comparators for quantitative studies include

randomised controlled trials, controlled trials, control-intervention site comparisons, interrupted time series, and before-after control-intervention designs. For qualitative studies the counter-factual may be modelled from respondent perceptions and experiences.

Relevant outcomes

Social equity We will include studies which discuss social equity dimensions, both as stakeholder participation and in the outcomes of an intervention. We have developed a typology for social equity outcomes (see Additional file 2). This typology is adapted from the PROGRESS + framework used for social equity reviews in the health sciences, combined with previous articles specific to social equity and conservation interventions [37, 41, 45, 65]. Our typology consists of two components; social equity metrics and social stratifications.

Human well-being We will include studies which measure or describe human well-being outcomes and categorise them using the ecosystem services framework, developed by Coutts and Hahn [22]. This framework describes four major domains of ecosystem services (provisioning, regulating, cultural and supporting), and nine specific ecosystem services (water, food, medicine, air quality, disease modulation, climate regulation, physical activity, mental health, and social capital).

Relevant types of study design

We will include all studies where the design measures or recounts the effect that social equity in stakeholder participation and outcomes, has on human well-being in CIBC interventions. These designs may include evaluations, case studies, observations, interviews, stakeholder workshops/focus groups, and ethnographies. Articles which use secondary data, such as other systematic reviews or meta-analyses will not be used, however a list of such articles will be retained in an Additional file for potential use in primary studies. Theoretical study designs and measures will be excluded, as will any studies which do not adequately describe their methods of data collection or analysis.

Study quality assessment

In order to ensure we only capture high quality data for synthesis, we will assess both study design and data quality. Additionally, we will only use data to inform our study where researchers have provided empirical evidence to support causal mechanisms of how social equity and human well-being interact (as per Ferraro and Hanauer [66]). We will appraise studies for reliability using a risk of bias assessment [67]. Risk of bias assessments

provide a method to identify potential biases in studies, such as exaggerated effect sizes, cognitive and response biases, acknowledgement of potential confounding variables etc. Our risk of bias assessment is based on the Cochrane Collaboration's tool for assessing risk of bias, which breaks bias into domains (e.g. Selection bias, performance bias, reporting bias), each study is then categorized as 'Low risk' of bias, 'High risk' of bias or 'Unclear risk' of bias [68–70].

Data extraction strategy

During the full-text assessment, we will extract available data using a code book (Additional file 1), and questionnaire (see Additional files 4, 5). The code book we have developed is based on the typologies defined within this protocol. The questionnaire will capture several broad qualitative and quantitative data types. To test the questionnaire, we will pilot it on a subset of studies. This test will enable us to refine the intervention and outcome typologies. By doing so, we will ensure that our typologies are consistent and easily applied.

For qualitative data, we will extract the text related to equity issues from studies as either participant data such as quotes, author descriptions, and author recommendations for use in a framework synthesis, as per Pullin et al. [59]. For quantitative data, we will extract study context, design, comparator details, social equity elements, and human well-being outcomes. All relevant descriptive and test statistics will be captured. Additionally, we will extract other descriptive quantitative, and qualitative data such as bibliographic information, geography, IUCN category, date(s) of project lifecycle, study aims and focus, details of the intervention, the subjects, and sample size.

A record of all data extraction activities, including an article identifier, and description of data extracted will be kept. This record will be maintained by one review and checked for repeatability by an additional reviewer. All extracted data records will be made available as Additional files 1, 2, 3, 4 and 5.

Potential effect modifiers and reasons for heterogeneity

Based on the background review, and consultation with subject matter experts, (pending data availability) the following list of effect modifiers will be recorded and considered:

- Geography and region
- Participant stratification (e.g. age and gender)
- Study methodology
- Intervention type

- Duration of intervention
- Sample size

Data synthesis and presentation

Following the full-text screening and data extraction processes we will synthesize data using relevant statistical packages implemented in R [71]. We will analyse all literature in the two-step process established by Pullin et al. [59]. First, we will undertake a framework synthesis of qualitative data. Second, we will synthesize available quantitative evidence that measures social equity and human well-being outcomes. We will extract data from individual case studies, and keep a record where a single case study appears in more than one article. These data syntheses will be used to interpret the quality of evidence informing our conceptual framework (Fig. 1). We will summarise the findings for each element of the model and assess the strength of linkages.

Synthesis methods are as follows:

Qualitative data

We will synthesize qualitative data using a framework synthesis as per Pullin et al. [59]. Framework synthesis is an iterative process whereby important concepts are captured in tables, which are iteratively developed and refined [72]. Once the data are refined, they are used to produce thematic summaries of key concepts. The starting basis for this framework synthesis will be the concepts identified in our conceptual framework (Fig. 1). Further important concepts are expected to be identified within the literature. By undertaking framework synthesis, we will be able to explore a broad range of literature to further develop and expand the thematic elements within our conceptual framework.

Quantitative data

We will synthesize extracted data in a series of summary tables that describe contextual information of studies and aims, methods, and outcomes. Furthermore, where data allow we will undertake meta-analyses, descriptive statistics, and statistical analyses which indicate how equitably costs/benefits are distributed such as, Lorenz curves, Gini coefficients, and correlations across studies [73–75]. However, the ability to conduct these analyses will be highly dependent on the quality and quantity of the data available.

Comparison

The syntheses of the qualitative and the quantitative data will be combined and compared. By combining these outputs, we will seek to answer our primary research question examining how social equity in CIBC interventions improves human well-being outcomes.

Data presentation

We will use tables to present data summaries and meta-analyses, including study contexts, and statistics. Figures will be used to represent concepts that emerge within the framework synthesis. Global and regional maps will be used to present data spatially. Our illustration of the theory of change model will also be presented.

Additional files

Additional file 1. List of excluded countries. List of countries that will not be included in the study.

Additional file 2. Typology for community and incentive based interventions. A typology of the various CIBC interventions, with examples and citations for each.

Additional file 3. Social equity typologies. Typologies for social equity metrics and common social stratifications.

Additional file 4. Code Index. Index of Codes to be used for full-text review.

Additional file 5. Code Lists. List of Codes to be used for full-text review.

Authors' contributions

GA and MM developed the study basis. GA wrote the manuscript. MM, SC, CK and JW provided input on the study background, research questions, and provided comments on the manuscript. GA, MM and SC developed the search strategy, and data extraction strategy. GA will coordinate the final review, analysis and presentation of results. GA will undertake the review of the full text articles and data synthesis. All authors read and approved the final manuscript.

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Competing interests

Authors MM and SC have worked on other evidence synthesis articles related to this subject matter. These reviewers are not a part of the review team which will critically appraise articles, or make decisions for inclusion.

Availability of data and materials

All data generated as a result of the full review will be available as Additional files 1, 2, 3, 4 and 5.

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