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**Systematic Review Protocol**

**Title**
Are alternative livelihood projects effective at improving human well-being or reducing poverty in the context of community-based conservation in Sub-Saharan Africa? A Systematic Review Protocol

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**Corresponding author's email address**
samuel.adeyanju@ubc.ca

**Keywords**
Alternative livelihood projects, people-centred conservation, conservation and development trade-offs, rural development, well-being, Sub-Saharan Africa

**Background**
Over the past three decades, alternative livelihood projects have become increasingly commonplace in conservation and development interventions (Roe et al., 2015, Sayer & Wells, 2016). Despite their proliferation, there is limited evidence that alternative livelihood approaches have been effective in reducing pressure on natural resources and improving livelihoods (Wicander & Coad, 2018). Existing reviews have examined the impact or effectiveness of alternative livelihood projects on biodiversity conservation globally (Roe et al., 2015) and on wild meat hunting in a sub-regional context (Wicander & Coad, 2018). While these reviews have provided unique insights into the features of alternative livelihood projects and their impact on conservation outcomes, there is little evidence regarding the effectiveness of these projects, particularly on social dimensions and well-being outcomes. We acknowledge the existence of prior studies that have examined the social and conservation outcomes of protected areas (Oldekop et al. 2016), community forests (Hajjar et al. 2021) and community-based conservation (Brooks et al. 2013, Galvin et al. 2018). However, these studies did not concentrate on Africa (except Galvin et al., 2018), even though most community-based conservation programs have been established there (Brooks et al., 2013, Nelson et al., 2021, Roe et al., 2009). Additionally, these studies did not specifically or extensively explore the alternative livelihood concept that has been widely employed in various conservation initiatives across Africa (Wicander & Coad, 2018). In contrast, our review aims to specifically examine alternative livelihood projects implemented as part of community-based conservation programs in Africa. The benefits of a review with a more targeted subject and regional focus include: 1) exploring context-specific realities that may be unique to sub-Saharan Africa, which previous global studies may not have captured or addressed in their analysis; and 2) capturing the livelihood and well-being outcomes of conservation interventions (i.e., alternative livelihood projects) on local communities.

**Theory of change or causal model**
Alternative livelihood projects are derived from a conservation approach that combines economic development and biodiversity conservation aims. They are based on the assumption that existing livelihood strategies adopted by local communities negatively impact the environment and that

communities are willing to accept and adopt alternative livelihoods that are more environmentally friendly. The expectation is that the adoption of such practices will reduce pressure on the environment (due to the shift from resource depleting activities) and provide communities with a sustainable source of income/livelihood via those alternative livelihood activities (Barrett & Arcese, 1995, McShane & Wells, 2004, Wright et al. 2016).

**Stakeholder engagement**

This systematic review will involve researchers with many years of experience working in academic, research and NGO sectors with a focus on conservation and development interventions in different countries within Sub-Saharan Africa. The research will also engage local partners of the Centre for International Forestry Research (CIFOR)-led COLANDS–Collaborating to Operationalize Landscape Approaches for Nature, Development and Sustainability-initiative which works to reconcile multiple competing interests while generating multiple benefits for people in the three countries of implementation with two (Ghana, Zambia) of those countries in Africa. For more information, see https://www.cifor-icraf.org/colands/.

**Objectives and review question**

RQ: Are alternative livelihood projects effective in improving well-being and/or reducing poverty in the context of community-based conservation in Sub-Saharan Africa? This review will expand upon previous work (Roe et al., 2015, Wicander & Coad, 2018) by: • Exploring what kinds of livelihood interventions do better than others in terms of outcomes (direct, i.e., income, and indirect, i.e., health). • Exploring if the type of livelihood intervention differs between the kind of initiatives to which they are linked (e.g., conservation, or rural development) • Summarizing the results of existing reviews and analyzing if there is a shift in the ToC

**Definitions of the question components**

Please find the definitions in the attached document named "Additional file_definitions"

**Search strategy**

A comprehensive search will be performed to capture all information about alternative livelihood projects (intervention) and relevant outcomes associated with human well-being across various community-based conservation initiatives in Africa (population). The search strategy is based on the PICO (population, intervention, comparator, outcomes) framework commonly adopted in evidence synthesis (Collaboration for Environmental Evidence, 2022). Population - Community Based Conservation initiatives in Africa and the communities of people participating in them Intervention - Alternative livelihoods project Comparators - Prior to, during and after alternative livelihood intervention / without alternative livelihood intervention Outcomes - Change in livelihood status (positive, negative, or neutral), livelihood outcome, poverty reduction, well-being Peer-reviewed articles and grey literature based on primary data and written in the English language will be captured. Searches will be performed using bibliographic databases, search engines, and specialist websites to capture both scientific and grey literature. The Boolean operators (AND, OR) will be employed to group search terms into distinct blocks in line with the PICO elements to ensure the search is properly structured and easy to understand, review and modify as needed. Wildcards (denoted by asterisks '*') will be used to locate words with plurals or alternative word endings. Some key search terms are as follows (see detailed search strings in the attached document named "Additional file_search strings"). The search string will be adapted as necessary to match the requirements of the specific database/search engine. Intervention: alternative livelihood*, rural livelihood project*, sustainable livelihood*, sustainable livelihood project*, livelihood-focused intervention*, development project* Outcomes: poverty, human well*, socio-econom*, econom*, human health, livelihood*, social capital, social welfare, empowerment, equity.

**Bibliographic databases**
The following electronic databases will be searched for relevant studies to help answer the research questions: • AGRIS: agricultural database (FAO) • CAB Abstracts • EBSCO Academic Search Complete • PubMed • Scopus • Web of Science All databases will be searched in English using University of British Columbia subscription.

**Web-based search engines**
The following online web-based search engines and research registers were selected to capture a broad spectrum of literature which are focused on the African region and freely accessible (search is conducted in English): • Journal Storage (JSTOR) • African Journals Online (AJOL) • Directory of Open Access Journals (DOAJ) • ScienceDirect • Google Scholar • ProQuest Dissertations and Theses Global. Despite the reputed proficiency of Google Scholar in locating additional grey literature compared to other search systems (Haddaway et al. 2015), Gusenbauer & Haddaway (2020) recommended that Google Scholar should be used as a supplementary tool alongside other prominent search systems. To maximize Google Scholar's capacity to capture grey literature, searches of article titles will focus on the first 200 to 300 results (Haddaway et al. 2015).

**Organisational websites**
Supplementary searches will also be carried out in English on the websites of reputable research and non-governmental organizations such as the Center for International Forestry Research (CIFOR), International Institute for Environment and Development (IIED), International Union for Conservation of Nature (IUCN), International Union of Forest Research Organizations (IUFRO) and others.

**Comprehensiveness of the search**
Given limited time and resources, searches will be performed in the English language only. Although our protocol contains a robust literature search process using databases and online sources, a limitation due to time constraints is our inability to issue a call for grey literature from experts and environmental organizations, particularly those based within the continent. However, an iterative development of search terms will ensure the search is as comprehensive as possible.

**Search update**
We do not plan to update the searches during the review because we anticipate publishing the review report within 12 months of the searches.

**Screening strategy**
Results from each database, web-based search engines and websites will be saved in a subfolder which will be imported to Covidence (https://www.covidence.org/) for screening. Covidence is a web-based software platform that streamlines the production of systematic reviews by helping with the screening, quality appraisal and data extraction stages of the review process. Through Covidence, title, abstract and full-text screening and deduplication will be performed. The screening of articles is a stepwise process which consists of three stages. In the first stage, researchers will read the title of all the articles captured during the search process. Irrelevant articles will be excluded, while those that meet the inclusion criteria will pass through to the next stage. In any case of doubt, articles proceed to the next stage for further scrutiny. The second and third stages of screening follow the same process, respectively screening the abstracts and full texts. Eligibility criteria are applied, and those that meet the inclusion criteria at each stage are included in the systematic review. If the study's eligibility remains unclear after full-text screening, more information will be sought to enable it to be included or excluded. Any studies whose eligibility remains unclear after this process will be listed in an appendix to the systematic review report (Collaboration for Environmental Evidence, 2022).

**Eligibility criteria**
The articles will be screened using the following inclusion criteria: • Relevant population: The study describes the impact on a specific case(s) of community-based conservation initiatives in one or more countries in sub-Saharan Africa. • Relevant intervention: The study describes an intervention that met our definition of an alternative livelihood project and adopted a broader focus on livelihood improvements, including well-being. As such, we exclude studies that only describe ecological or conservation outcomes of alternative livelihood projects. • Relevant comparator: The study compares the situation with that prior to the alternative livelihood intervention or with one or more control cases without an alternative livelihood intervention. • Relevant outcomes: The study assesses the effectiveness of the alternative livelihood project in achieving livelihood and well-being outcomes (including improvements in income, standard of living, and health). Thus, we will exclude studies that did not include an assessment of effectiveness, that only assessed effectiveness from the perspective of change in biodiversity conservation outcomes without consideration for livelihood strategies, or that examined broader projects without disaggregated analysis of the effectiveness of the alternative livelihood component. Exclusion criteria • Non-English studies • Studies that fall outside the geographic scope of the review (sub-Saharan Africa) • Previous review papers will not be included, but the bibliographies of such papers will be screened for primary source material of relevance.

**Consistency checking**
Consistency checking will be applied at various stages of screening title, abstract and full text. Two researchers will work independently to apply the pre-defined inclusion/exclusion criteria to ensure the reliability of the screening process (Collaboration for Environmental Evidence, 2022). Each article will be screened by at least two reviewers who will initiate consistency checking. To assess the screener agreement or interrater reliability, a kappa analysis will be performed on a sample of 100 randomly selected articles identified in searches and screened by the two independent reviewers. If the kappa score is less than 0.6 (the level above which agreement between researchers is considered substantial), the reviewers will discuss the discrepancies and address any differences in the interpretation of the inclusion criteria (see Roe et al. 2015).

**Reporting screening outcomes**
The screening and reporting of the reviewed article will follow the ROSES (RepOrting standards for Systematic Evidence Syntheses) approach, designed for reviews in conservation and environmental management (Haddaway et al., 2018). Subsequently, a ROSES flow diagram will be produced.

**Study validity assessment**
To ensure the validity of the studies, a basic checklist of quality criteria adapted from previous systematic maps (Roe et al. 2014, Reed et al. 2015) has been developed to access the included studies. Hence, studies included in the synthesis must demonstrate the following: • Clear aims • Clear and repeatable methodology • Methodology appropriate to the assessment of the effectiveness • Outcomes that are measured accurately and reliably • Reported findings consistent with the methodology employed and the empirical data provided Any studies that do not meet the specified criteria will be excluded from the analysis, while studies that satisfy the ranking criteria to varying degrees will be assigned a high, medium, or low score. This is achieved by testing the criteria on key references, which can then be refined further during the data extraction process, including through consultation with recognized experts.

**Consistency checking**
Due to capacity constraints, this will not be tested.

**Data extraction strategy**

After the screening process is concluded in Covidence, the studies included will be exported to Mendeley Reference Manager (https://www.mendeley.com/) for data extraction. Extracted data captured using a short extraction template adapted from Roe et al. (2014) will be tabulated in a Microsoft Excel file for subsequent analysis. Data to be extracted will include: • Bibliographic information: author, year, title, publication, place published, publisher. • Basic information: location of study, alternative livelihood intervention (alternatives, compensation and/or incentive schemes), date and duration of the intervention, stand-alone intervention or component of a wider project, project funder(s) & implementer(s). • Relevant details considered by the study: conservation aim, target, target group of the alternative livelihood intervention, and scale of the alternative livelihood intervention. • Details of outcomes: effectiveness measure used (change in human well-being etc.), reported effect (positive/negative/no effect), duration of impacts, scale and sustainability of impacts, and the nature of any secondary impacts.

**Meta-data extraction and coding strategy**
N/A

**Consistency checking**
N/A

**Potential effect modifiers/reasons for heterogeneity**
N/A

**Type of synthesis**
The analysis of studies that meet the inclusion and quality assessment criteria for this systematic review will be done using narrative synthesis. The other two synthesis methods (qualitative and quantitative) may be used if the data is available and suitable.

**Narrative synthesis methods**
The review will employ descriptive statistics to analyze the evidence base, focusing on various project characteristics such as location, intervention type, well-being targets, and other variables. A narrative synthesis will be used to explore the different well-being outcomes (positive, neutral, or negative) of the alternative livelihood projects. Further, the review will explore what kind of projects do better than others in terms of outcomes and if the type of project differs between the kind of initiatives to which they are linked (e.g., conservation, combatting illegal activities, or rural development projects). Tables and graphs will be employed to visualize the data where appropriate.

**Quantitative synthesis methods**
If data from the evidence base is available in a suitable format and quality, then a quantitative synthesis may also be performed.

**Qualitative synthesis methods**
A qualitative synthesis may also be performed if data from the evidence base is available in a suitable format and quality.

**Other synthesis methods**
N/A

**Assessment of risk of publication bias**
N/A

**Knowledge gap identification strategy**

The systematic review may help to address knowledge gaps related to outcomes of alternative livelihood projects across various contexts of community-based conservation initiatives in Africa. Knowledge gaps will be identified by using tables and graphs to present data.

**Demonstrating procedural independence**
If a study written by one of the reviewers requires screening or data extraction, that reviewer will not perform these tasks for their own study.

**Competing interests**
The authors declare that they have no competing interests.

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**Author's contributions**
SA conceptualized the study with input from MR & TS. SA & NE co-drafted the manuscript, while MR, JR, and TS provided comments. SA & NE developed the search and data extraction strategies with input from MR, JR, & TS. SA will coordinate the review, including the analysis and presentation of the results, with help from NE, MR, JR, & TS. All authors read and approved the final manuscript.

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N/A

**References**
Please find the references in the attached document named "Additional file_references"

**Authors and Affiliations**


| Name | Country | Affiliation |
|---|---|---|
| ***Samuel Adeyanju*** | ***Canada*** | ***Faculty of Forestry, University of British Columbia*** |
| Ngozi Edum | Finland | University of Eastern Finland |
| James Reed | Indonesia | Center for International Forestry Research, Bogor |
| Mirjam Ros-Tonen | Netherlands | Department of Geography, Planning and International Development Studies, University of Amsterdam |
| Terry Sunderland | Canada | Faculty of Forestry, University of British Columbia |


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