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MEASURING IMPACT

CONSERVATION ENTERPRISES: Using a Theory of Change Approach to Examine Evidence for Biodiversity Conservation



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Front Cover: A participant in a chili pepper enterprise harvest crops as part of the Uganda Biodiversity Program. Photo credit: Judy Boshoven

Back Cover: In Dhaka, Bangladesh, Sharmin Sultana holds up a frame from the honey bee hive she purchased with a loan from the microcredit development program of a local NGO. Photo credit: Sumon Yusuf, Courtesy of Photoshare.

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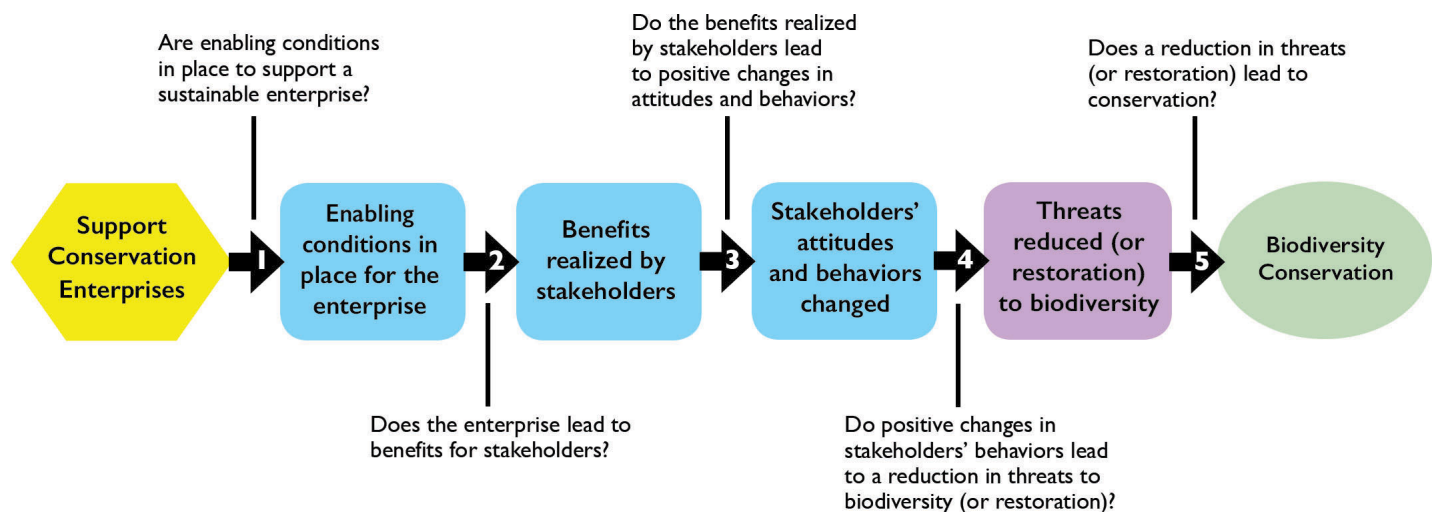
- E3** Bureau for Economic Growth, Education, and Environment
- FAB** Office of Forestry and Biodiversity
- USAID** United States Agency for International Development

INTRODUCTION

Promoting conservation enterprises is a strategic approach that is widely supported by United States Agency for International Development (USAID) biodiversity funding, yet limited evidence exists regarding the effectiveness of this strategic approach in achieving conservation outcomes. In November 2015, Roe et al. published a systematic review examining the evidence for the effectiveness of alternative livelihood activities, including conservation enterprises.¹ Their review examined effectiveness in relation to assumed intermediate results in a theory of change² but was not explicitly designed to examine the evidence supporting or refuting the assumptions in the theory of change itself. This brief examines the evidence presented in the studies referenced in Roe et al.'s systematic review relative to the conservation enterprises theory of change described in Figure 1. This generalized theory of change for conservation enterprises was developed as a learning tool by USAID's Bureau for Economic Growth, Education, and Environment Office of Forestry and Biodiversity through its Measuring Impact project to help Missions that program biodiversity funds design more effective, evidence-based programs. It is the focus of a participatory Conservation Enterprises Collaborative Learning Group under the Biodiversity Cross-Mission Learning Program.³

Studies were included in Roe et al.'s review if they assessed evidence for a change in: 1) attitudes to conservation; 2) the behavior of the people posing a conservation threat; or 3) the status of the biodiversity focal interest. These outcomes are captured in two of the intermediate results in the conservation enterprises theory of change. Of the studies included in Roe et al.'s systematic review, 17 addressed the effectiveness of one or more activities supporting conservation enterprises covering 18 different activities.

Figure 1: The theory of change described for conservation enterprises



¹ Conservation enterprises provide income to participants through the production and sale of goods and services such as ecotourism, beekeeping, and crafts. Roe et al. 2015 examined a broader range of alternative livelihoods that included use of alternative resources or methods of exploiting resources in addition to conservation enterprises.

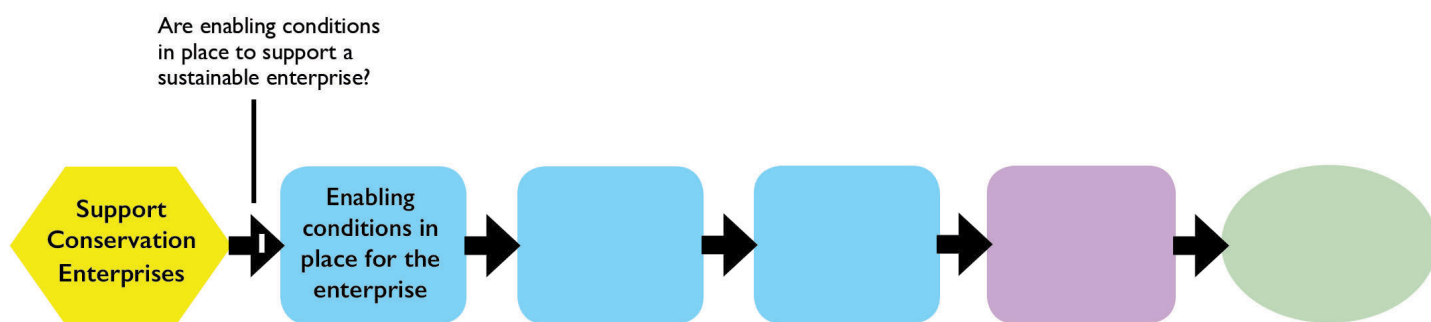
² See Annex for a brief overview of Roe et al.'s results.

³ Information about the Conservation Enterprises Collaborative Learning Group is available at: <https://rportal.net/conservation-enterprises/>

EVIDENCE FOR THE ASSUMPTIONS IN THE THEORY OF CHANGE

The theory of change for conservation enterprises assumes that supporting the enabling conditions for conservation enterprises will lead to benefits for stakeholders, changes in their attitudes and behavior, and a reduction in threats to biodiversity conservation. In this section, the evidence is examined from the perspective of the learning questions associated with each assumption in the theory of change. The synthesis presented here builds on the findings of Roe et al., pulling in additional evidence related to assumptions in the theory of change.

LEARNING QUESTION 1: ARE ENABLING CONDITIONS IN PLACE TO SUPPORT A SUSTAINABLE ENTERPRISE?



This learning question addresses the first outcome in the theory of change: whether the right enabling conditions are in place to support a sustainable enterprise.

Most studies focused on activities where one or more conservation enterprises had been established and identified a number of enabling conditions (e.g., access to credit or training) put in place as part of the project design. Some of the enabling conditions incorporated into project design included:

- Access to credit or capital in the form of micro-credit or grants to purchase equipment
- Capacity of participants to develop new skills and knowledge
- Involvement of local people in joint decision making and benefit sharing
- Establishment of strong institutional frameworks

A few activities failed early on because enabling conditions were not in place to establish the enterprise.

- One activity that intended to establish a parrot trade encountered bureaucratic and legal hurdles to the extent that the enterprise was never established (Martinez-Reyes 2014).
- Participants in an activity that engaged women in making crafts from butterfly wings found that there was no market for the product and that the enterprise was too time-consuming to be profitable (Martinez-Reyes 2014).
- Another activity was never established due to technical problems with propagating the tree that provided the saleable commodity (Engh 2011).

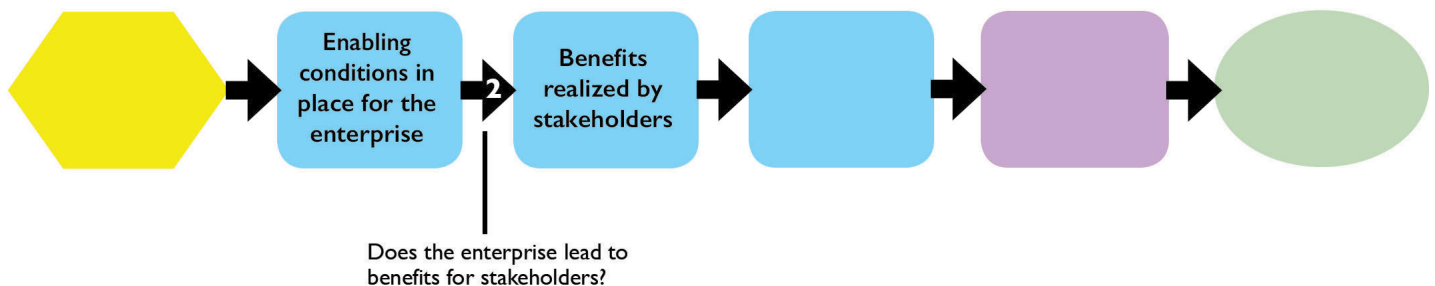
Some studies identified enabling conditions that had not been adequately considered during design and implementation of the activity, such as profit potential, opportunity costs, or a lack of shared interests. These enabling conditions sometimes affected participation in the conservation enterprise.

- One activity realized limited uptake of the introduced cropping system that required high labor inputs and depended on a scarce resource that would otherwise be used for more highly valued crops (Eastmond and Faust 2006).

Activities in which the enterprise was established, but had neutral or negative outcomes at later stages in the theory of change, often discussed enabling conditions (or the lack thereof) that affected sustainability of the enterprise. Enabling conditions that affected the benefits that participants received from the enterprise are discussed in Learning Question 2 below.

These findings indicate that there are still knowledge gaps regarding the enabling conditions that need to be in place for enterprise establishment and sustainability. Measuring, documenting, and sharing information regarding the enabling conditions (e.g., access to credit, inputs, and markets) will improve our understanding of what is needed to launch a conservation enterprise strategy.

LEARNING QUESTION 2: DOES THE ENTERPRISE LEAD TO BENEFITS FOR STAKEHOLDERS?



This learning question focuses on whether the enterprise generates net benefits for participants. Most studies included some qualitative or quantitative assessments as to whether participants realized benefits.

- All of the studies reporting on activities in which enterprises were established mentioned some aspect of economic benefits. Generally, benefits were measured in terms of income as reported by participants. A few studies included general statements about the profitability of the enterprise or mentioned whether the enterprise had generated or raised incomes without any quantitative evidence.
- Most commonly, studies reported on the average change in income for individuals or family units, e.g., increases in daily or annual income or the proportion of income attributable to the enterprise. Some studies reported on benefits at the community level, such as the number of participants that saw an increase in income.
- Other indicators that were used to assess economic benefits included gains in “durable assets” or group measures such as the percentage of participants reporting they had enough income to meet their daily needs.
- Some studies also mentioned non-cash benefits, such as cultural values or traditional skills/knowledge, that participants were able to maintain in connection with the conservation enterprise. Food security (in the case of a small-scale dairy activity) and reduced risks associated with livelihood diversification were also cited as benefits.

One study assessed a project where the enterprise was established but participants received no significant economic benefits.

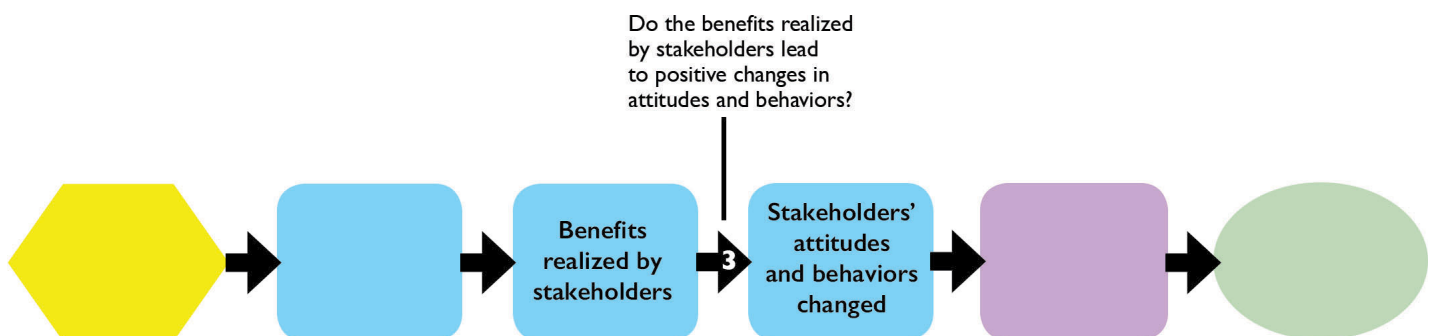
- The ProManejo project in Brazil provided training in commercial production of previously non-marketed forest goods and services, but found no significant change in income for people participating in the program nine years after its start, even though earlier participants may have received economic benefits (Bauch, Sills, and Pattanayak 2014).

Whether or not participants continue to receive benefits from the enterprise may depend on enabling conditions related to profitability remaining in place. These enabling conditions may be subject to external factors outside of the activity's control. A few studies identified external factors that could change the profitability of the enterprise and consequently affect the benefits that participants receive.

- Participation in a homestay program associated with a conservation-oriented language school was dependent on strong demand from visitors, but the area was susceptible to guerrilla activities. Langholz (1999) postulated that if guerrilla activities increased, the number of tourists would decrease and participants in the program would no longer receive monetary compensation for hosting homestays.
- Increased transportation costs and changes in world-market demand were identified as factors affecting the profits participants incurred from butterfly farming (Eng 2011). Fluctuations in these factors made it more difficult for participants to find buyers and make a profit from the enterprise.

These findings indicate that conservation enterprises do not always confer sufficient benefits to participants, and that there is a lack of understanding regarding which aspects of benefits are most important to measure. Measuring net economic benefits (e.g., profit) generated from the enterprise may not be sufficient. Instead, to understand the effectiveness of the enterprise's benefits for motivating the desired conservation attitudes and behaviors of stakeholders, implementers need to consider the distribution of benefits among stakeholders and the timing and marginal contribution of these benefits at the individual and household level. For example, does the enterprise provide a marginal increase in household income for all participants? Implementers need to understand the relative importance of cash versus non-cash benefits, as well as the sustainability of the benefits over time.

LEARNING QUESTION 3: DO THE BENEFITS REALIZED BY PARTICIPANTS LEAD TO POSITIVE CHANGES IN ATTITUDES AND BEHAVIORS?



Learning Question 3 is the question most closely aligned to the evidence presented in the systematic review. The review addressed the question of whether participation in the conservation enterprise results in changes in attitude or behavior, rather than whether the benefits realized as a result of participation led to these outcomes. However, since most studies reported that the enterprise generated at least some benefits to participants, not all of which resulted in positive changes in attitudes or behavior, it is possible to examine the relationship between benefits and changes in stakeholders' attitudes and behaviors in some cases.

Thirteen studies indicated that participants in the enterprise realized some level of benefits. Of these, there were six studies in which changes in behavior were assessed and there was evidence for positive changes in behavior. Six studies assessed changes in behavior but found no or limited evidence for positive changes in behavior. In two of these cases there was evidence for positive changes in attitude even though behaviors did not change. One study found evidence for positive changes in attitude but did not assess changes in behavior.

- Blomley (2010) studied the introduction of a variety of enterprises, including tourism and agriculture, in communities located near national parks in Uganda. They found that, although the enterprises were stated to have generated income, and attitudes towards the park improved, participants continued to use resources from the park.
- Herrold-Menzies (2006) found that wetland resource users in the Caohai Nature Reserve in China received income from participation in micro-enterprises and reported improved relations between the local community and reserve, but there was no change in use of protected resources in the reserve.

When the conservation enterprise provided supplemental or additional income to households, rather than serving as a primary source of income, the benefits provided by these enterprises were unlikely to change threat-inducing behaviors that served as a primary source of income.

- Schuhbauer and Koch (2013) assessed an artisanal fishing activity in the Galapagos Marine Reserve as an alternative to commercial fishing. Although participation was limited, those participating said that the enterprise covered about 50% of their income, but only four of seven fishers interviewed had stopped commercial fishing.
- Hill et al. (2012) reported mixed results in terms of behavior change among villages in the Philippines where seaweed farming was introduced. The benefits that participants received were generally viewed as supplemental income. Half of villages reported a reduction in fishing, but fishing increased in four villages where participants received benefits from seaweed farming.

A few studies provided evidence that participation in an enterprise that provides benefits may be more likely to lead to changes in behavior if doing so imposes time and resource constraints on the behavior posing the conservation threat.

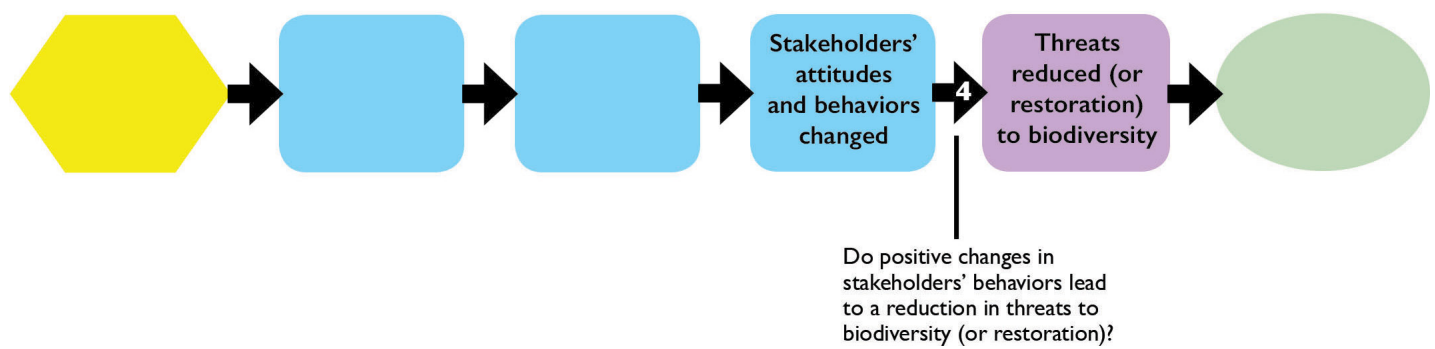
- Stronza (2007) found that direct employment in an ecotourism lodge led to a decline in farming and hunting, whereas those employed in selling goods and services to the lodge had fewer time constraints and were able to continue to engage in behaviors posing a conservation threat.

One study provided evidence that changes in behavior were due, at least in part, to a direct connection between benefits from the conservation enterprise and the status of the biodiversity focal interest.

- Butterfly farmers in Tanzania recognized a resource constraint associated with the enterprise (Engh 2011): participants reported that they would not “destroy the forest or cut down native trees” because they recognized that doing so would endanger income from the enterprise which relies on these resources.

These findings suggest that there are still important information gaps regarding the linkages between enterprise benefits and positive changes in attitudes and behaviors of enterprise participants. How different benefits may motivate changes in stakeholders' attitudes and behaviors is still not well understood. In fact, in some cases enterprise benefits may be motivating an increase in threat-inducing behaviors (e.g., Blomley 2010). To better understand if enterprise benefits lead to the desired changes in attitudes and behavior, implementers need to make their assumptions explicit and have systems in place to track change. For example, is a marginal increase in household income from enterprise participation resulting in a switch from overuse or illegal use of natural resources to purchasing goods to fulfill household needs? By exploring the extent to which particular benefits lead to positive changes in attitude and behaviors across different contexts, implementers will have a better understanding of the types of benefits that are needed to achieve desired changes in attitudes and behavior in their context.

LEARNING QUESTION 4: DO POSITIVE CHANGES IN PARTICIPANTS' BEHAVIORS LEAD TO A REDUCTION IN THREATS TO BIODIVERSITY (OR RESTORATION)?



A reduction in threats is particularly difficult to assess at the level of an enterprise approach as it occurs at a broader spatial scale over which multiple strategic approaches to conservation may be occurring. Of the studies included in the review that assessed conservation enterprise activities, only one reported on changes in both behavior and the status of the threat.

- Bauch, Sills, and Pattanayak (2014) used Landsat data to explore changes in forest cover over time, but the authors found no evidence of changes in deforestation rates by communities with the introduced enterprises and those without. There was also no behavior change in terms of the amount of cropland in use per household between these groups.

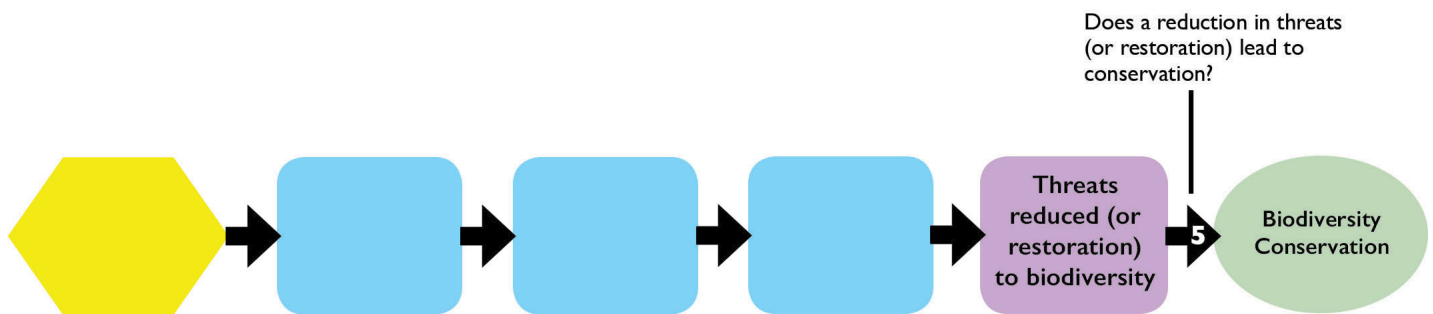
It was not always clear that the attitude and behavior changes that were reported in the studies provided the evidence needed to understand if they would lead to the desired threat reduction. Furthermore, a few activities assessed in the studies included in the review did not identify the explicit threats that the activity was intended to address.

- Novriyanto et al. (2012) reported on an activity that was designed to develop new livelihoods that “did no apparent harm to the environment.” While a small percentage of participants said they no longer practiced destructive fishing practices or used the forest for their daily needs, the activity focused on rebuilding economic opportunities after a natural disaster and did not appear designed with a goal of using conservation enterprises to reduce existing threats.
- Morgan-Brown et al. (2010) reported increased “participation in forest conservation” among participants engaged in butterfly farming, but did not further examine participation in “destructive forest uses,” the

behavior identified as the threat. Engh (2011) interviewed participants in the same activity. Participants said that they were less likely to harvest trees from the forest and would report illegal harvesting activities in the forest, but the study provided no further evidence on changes in the status of the threat (e.g., deforestation rates).

These findings suggest that there are challenges to measuring the contribution of changes in conservation behaviors of enterprise participants to overall threat reduction. However, to better understand these linkages, implementers need to make their assumptions explicit and identify the contexts in which relevant behavior changes of participants are contributing to the reduction in specific threats to biodiversity. The contribution to threat reduction from other interventions, such as improved law enforcement, should be considered.

LEARNING QUESTION 5: DOES A REDUCTION IN THREATS (OR RESTORATION) LEAD TO CONSERVATION?



Roe et al. identified one study as providing evidence relating to changes in the conservation status of a biodiversity target, but it was an activity promoting the use of alternative resources rather than introduction of a conservation enterprise aimed at income generation.⁴ The status of the biodiversity focal interest, in this case the forest, would be assessed by indicators such as size, condition, and functional aspects relating to persistence over time.

These findings suggest that there is a lack of documented evidence regarding the linkages between the reduction in threats and biodiversity conservation as a result of conservation enterprises. To better understand the effectiveness of the conservation enterprise, implementers need to make their assumptions explicit and measure whether or not the reduction in specific threats is leading to an improvement in the status of biodiversity interests. The relative contribution to biodiversity conservation as a result of other interventions, such as improved law enforcement or awareness-building, should also be considered.

⁴ DeWan et al. (2013) reported that “Forest monitoring revealed a 23.7% reduction in tree-felling for fuel wood in forest surrounding villages where fuel-efficient stoves were used in place of conventional stoves” (p. 35). Although Roe et al. identified this as evidence of a positive change in the conservation status of a biodiversity focal interest, it is more accurately considered a measure of threat reduction.

IMPLICATIONS FOR THE CONSERVATION ENTERPRISES CROSS-MISSION LEARNING AGENDA

- ▶ Theories of change provide the framework for what to measure. Designing activities with an explicit theory of change and identifying appropriate indicators as part of project design, rather than during the assessment phase, can help to ensure that the outcomes that are measured are those most relevant for testing the assumptions underlying the strategic approach. Most activities included in Roe et al.'s review were not designed with a clear theory of change. While a majority of studies assessing these activities measured changes in attitudes, behaviors, or threat reduction, in the absence of an explicit theory of change they did not always measure the relevant changes in attitude or behavior to assess the effectiveness of the enterprise approach. For example, Morgan-Brown (2010) reported on “participation in forest conservation” rather than a specific behavior posing the threat to forests (i.e., destructive forest uses).
- ▶ The evidence for effectiveness of the strategic approach remains limited. At best, Roe et al. found that fewer than 40% of activities using conservation enterprises as a strategic approach had positive outcomes based primarily on changes in attitude and changes in behavior. As there is virtually no evidence linking benefits from enterprises to attitude and behavior change, and then to threat reduction and changes in the status of the biodiversity focal interest, this percentage likely represents an upper boundary. In the absence of a solid evidence base, a theory of change becomes even more important to project design as a way to monitor the effectiveness of the strategic approach in the early stages of project development and adapt as necessary.
- ▶ Evidence for effectiveness does not always address the underlying reasons for success of the strategic approach. Even after exhaustive literature review, Roe et al. were largely limited to assessing evidence from studies that report differences in individual outcomes between participants and non-participants rather on the potential relationships between intermediate outcomes in the theory of change. This evidence base can inform understanding of whether a strategic approach is effective but not necessarily why it is effective (or not). In order to understand why a strategic approach is effective, the mechanism by which the strategic approach leads to biodiversity conservation must be understood. This requires testing the assumed relationships between the intermediate results in the theory of change (i.e., whether achievement of one result leads to the expected change in the subsequent result). Designing studies with a theory of change that tests the soundness of assumptions across activities will help inform what works, what does not work, and why. In order to do this, activities must identify intended outcomes that are the focus of the strategic approach beyond behavior change in the theory of change, including threat reduction and changes in status of the biodiversity focal interest.

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ANNEX

Brief Overview of Findings on the Effectiveness of Activities Supporting Conservation Enterprises from Roe et al.'s 2015 Systematic Review on Alternative Livelihoods

Of the more than 100 alternative livelihood activities identified by Roe et al. (2015), only 21 activities had an assessment of conservation effectiveness and were included in the systematic review. Studies were included in the review if they assessed evidence for a change in 1) attitudes to conservation; 2) the behavior of the people posing a conservation threat; or 3) the status of the biodiversity focal interest. These outcomes are captured in two of the intermediate results in the conservation enterprises theory of change.

Roe et al.'s review included 17 studies addressing the effectiveness of one or more activities supporting conservation enterprises. These 17 studies covered 18 activities focused on supporting one or more conservation enterprises. Roe et al. scored activities as having a positive, neutral, or negative conservation outcomes based on the evidence for these three outcomes. Seven of these activities were considered to have positive outcomes, eight had neutral outcomes, and three had negative outcomes. There was no evidence from the review or the studies themselves that any of these activities were designed with an explicit theory of change to test assumptions about the relationships between the strategic approach and expected outcomes.

For the most part, the review reported on whether participation in the enterprise led to one or more intermediate outcomes. Studies on all 18 activities supporting conservation enterprises included some assessment of changes in attitudes, changes in behavior, or both. Only one study reported on changes in threat reduction in addition to changes in behavior. None of the studies on conservation enterprises projects reported on changes in the status of the biodiversity focal interest. The outcomes that were reported were not always those needed to test the assumption in the theory of change related to reducing specific threats to biodiversity. The results of this review confirm limited reporting of project outcomes and a fairly weak evidence base from which to inform investments in conservation enterprises.



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