

**Why behavior change matters to
the GEF and what to do about it
A STAP Advisory Document
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ABOUT STAP:

The Scientific and Technical Advisory Panel (STAP) provides independent scientific and technical advice to the GEF on its strategies, programs and projects. <https://stapgef.org>

ABOUT GEF:

The Global Environment Facility (GEF) was established on the eve of the 1992 Rio Earth Summit to help tackle our planet's most pressing environmental problems. Since then, the GEF has provided close to \$20.5 billion in grants and mobilized an additional \$112 billion in co-financing for more than 4,800 projects in 170 countries. Through its Small Grants Programme, the GEF has provided support to nearly 24,000 civil society and community initiatives in 133 countries. <http://www.thegef.org>

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Executive summary

The Global Environment Facility (GEF) seeks to address the root causes and consequences of global environmental change by transforming markets and behaviors: unsustainable practices and behaviors are fundamental drivers of global environmental change, and responding to those practices and behaviors can help transform systems.

The Scientific and Technical Advisory Panel (STAP) has observed that many GEF projects involve behavior change, at both the individual and institutional levels. However, behavior change is often an implicit objective: that is, the outcome sought is clear, but *how* the outcome is to be achieved is not. STAP believes that projects are more likely to succeed if behavior change is spelled out explicitly.

This advisory document draws substantially on a review of the literature on behavioral science and on a synthesis of case studies, tools and approaches, both commissioned by STAP.

This document is based on one of the many behavior change frameworks reported in the literature. This one has six strategic levers. Three of these levers have been used traditionally: material incentives, rules and regulations, and information. However, decisions are also affected by three other levers: the context in which choices are made (or “choice architecture”), emotional appeals, and social influences.

These six levers can be used in various combinations to target behavior change. This document demonstrates their use through five case studies: reducing wild meat consumption through economic incentives (Brazil); arresting land degradation by returning to traditional agricultural systems (Mexico); reducing overfishing by strengthening collaboration among fisherfolk (Indonesia); enhancing silvopastoral systems through peer-to-peer learning and payment for ecosystem services (Colombia); and reducing rhino poaching by empowering stakeholders to protect rhinos while improving local livelihoods (Namibia).

Each case study describes the behavioral challenges; the targeted behaviors (what was being sought and who needed to participate); the interventions used; the outputs and outcomes; and the knowledge and learning achieved by stakeholders.

On the basis of the scientific literature and the synthesis of case studies, STAP recommends that a checklist of six issues should be used, with supporting questions, in designing and implementing GEF projects.

STAP is planning further work on behavior change and will hold a workshop in early 2021.

Introduction

It is well established that human behavior is responsible for driving global environmental change. Intensified consumption, population growth and other human activities have led to accelerated global change. These actions have resulted in local, regional and Earth system changes, such as increasing temperature and changes in precipitation, loss of biodiversity, ocean acidification, local freshwater shortages, unsustainable land-use change and deforestation, and chemical and waste pollution.^{i,ii,iii,iv,v}

Environmental planning in the Anthropocene^{vi} requires acknowledging complexity, interconnectedness, cross-scale implications and uncertainty. The current pace and scale of climate change is posing risks to people's lives in many areas, including food and agriculture, water, energy, and transportation. COVID-19 demonstrated how unexpected shocks can reverberate across societies, quickly undo progress towards the Sustainable Development Goals, and put at risk the resilience of human and natural systems. Understanding human behavior, and its consequences across scales, both temporal and spatial, is therefore paramount in dealing with change and in planning for a more sustainable future. Behavior change requires us to look at how environmental practices are influenced by stakeholders' values, cultural norms, power dynamics and other social structures, as scholars recognize in the literature: "Actions of individuals create the socio-cultural contexts to which they later adapt, and those contexts, in turn, shape human actions in a way that their actions perpetuate these contexts."^{vii}

The Global Environment Facility (GEF) seeks to address the root causes and consequences of global environmental change by transforming markets and behaviors:^{viii} unsustainable practices and behaviors are at the heart of the drivers of global change, and responding to these practices and behaviors can help transform systems.^{ix,x}

The Scientific and Technical Advisory Panel (STAP) has observed^{xi} that many GEF projects involve behavior change, in one way or another, either at the individual level (e.g. for small-scale farmers to adopt climate-smart agriculture or producers [soy growers, ranchers, etc.] to embrace sustainability) or at the institutional level (e.g. in policies, government agencies and sometimes both). However, such behavior change is invariably implicit and not often stated as an explicit project objective. The outcome sought is clear, as is whose behavior needs to change, but *how* this change is to be achieved is not usually explained. It is more likely investments will succeed if behavior change is spelled out explicitly, rather than being an assumption or an expectation.

This advisory document draws substantially on a review of the literature on behavioral science^{xii} and on a synthesis of case studies, tools and approaches,^{xiii} both commissioned by STAP. It also

complements STAP's previous advice on key enabling conditions for good project design, in particular on [theory of change](#), [multi-stakeholder dialogue](#) and [durability](#).

Levers of behavior change and case studies

This paper is based on one of several frameworks in the literature on behavior change,^{xiv} recognizing that a combination of instruments is necessary to foster pro-environmental behaviors. The framework consists of six strategic levers (figure 1) to shift behaviors in project design and implementation. Three of these levers have been commonly used:

1. **Material incentives** to make behavior more convenient and accessible by giving rewards and providing substitutes (or penalties) for the desired, or undesired, behavior.
2. **Rules and regulations** to require or encourage a desired behavior or to restrict or prohibit an undesired behavior.
3. **Information** about what the desired behavior is, why it matters and how to achieve it.

However, other considerations can influence individuals' decision-making and choices. For instance, individuals also make decisions based on the context, on emotions and on what others in their social network are doing. Therefore, three additional levers should be considered:

4. **Choice architecture** to change the context in which choices are made, including by providing steps, or options, to streamline complex decisions and focus on key information or actions.
5. **Emotional appeals** to encourage an emotion known to result in the desired behavior.
6. **Social influences** to understand how an actor relates to others in the social system, including those with power and prestige, and leveraging those dynamics to support changes in the actor's behavior.



Figure 1: Rare's Levers of Behavior Change Framework^{xv}

The following five case studies^{xvi} are drawn from STAP’s commissioned synthesis on behavior science and from STAP’s nature-based solutions analysis. Selection criteria^{xvii} were applied to narrow the selection. The case studies demonstrate how combinations of these six levers can be used to target behavior change.

The case studies focus on:

- Reducing wild meat consumption through economic incentives and other motivations (Brazil)
- Arresting land degradation by returning to traditional agricultural systems (Mexico)
- Reducing overfishing by strengthening collaboration among fisherfolk (Indonesia)
- Enhancing silvopastoral systems through peer-to-peer learning and payment for ecosystem services (Colombia)
- Reducing rhino poaching by empowering stakeholders to protect rhinos while improving local livelihoods (Namibia)

Each case study describes:

- Behavioral challenges
- Targeted behaviors (what was being sought and who needed to participate)
- Interventions used
- Outputs and outcomes
- Knowledge and learning achieved by stakeholders

The case studies illustrate several key elements important for designing and implementing projects, set out in the “How to design behavioral interventions in GEF projects” section. These elements are part of a systems-based theory of change process,^{xviii} which can be used to think through the logic and causal links in projects and programs, including how to tease apart change (including behavior change) and its causes.

Case studies

Case study 1: Drawing on stakeholders' insights and motivations to address wild meat consumption, Brazil¹

Environmental challenge: Biodiversity loss.

Targeted behavior: Reduce, not prevent, wild meat consumption while preserving cultural traditions.

The issue: In the Brazilian Amazon, wildlife trade is uniquely local and regional rather than international (such trade is often international in Africa and Asia). While this is positive for reducing wildlife exports, it means there is a smaller supply of meat to meet growing local demands for food and income. Wildlife at risk from the consumption of wild meat includes various types of mammals, birds, turtles and tortoises.

What are we trying to achieve?

- Addressing the motivations behind, and barriers to, consuming less wild meat.
- Providing effective discounts to encourage domesticated over wild meat consumption.
- Implementing interventions to incentivize shifts from wild to domestic meat consumption.

Who needs to participate? Women, because they most often buy and prepare the meat in Tapauá, and fisherfolk, who control fish supply. Four focus groups participated.

Interventions trialed

- Public information (e.g. visual media, mass media, giveaways, church visits, print media).
- Community engagement strategies (e.g. door-to-door visits, commitments or pledges, cooking courses).
- Economic incentives (discount coupons for chicken in the intervention condition and coupons for cleaning products as the control condition).

Outputs

- \$3–5 chicken coupons increased chicken consumption and decreased fish consumption for households already consuming those meats, but they did not reduce wild meat consumption.
- Households consumed more fish and chicken, rather than pork, as a result of the interventions.

Outcomes

- Increased knowledge about wildlife ecology across comparison groups.
- Those in the community engagement group increased their stated preference for fish, chicken and beef.
- 92% of people in the community engagement group made a public commitment to reduce wild meat consumption.
- Some actors (in the community engagement intervention) reduced wild meat consumption by 62% (compared with a treatment without any price incentives); this change in consumption was attributed to the shifting perceptions around wild meat consumption.

Knowledge and learning: Identifying the problem and defining activities on the basis of stakeholders' insights and underlying motivations, and being specific about the behavior targeted for change, are all crucial in designing interventions. Material incentives are not always enough to change behavior on their own and can lead to unintended outcomes; conducting research with the target actors can reveal important insights and validate the underlying motivations and barriers needed to design a successful

¹ University of Florida conducted the research for this case study. Further information is available in the paper by Williamson, K., Bujold, P.M., Thulin, E. 2020. Behavior Change Interventions in Practice: A Synthesis of Criteria, Approaches, Case Studies & Indicators. Rare Center for Behavior & the Environment and the Scientific and Technical Advisory Panel to the Global Environment Facility. The paper is available at stagef.org

intervention. Cultural context – what the actors will find appropriate and will be likely to adopt – is a critical consideration for interventions.

Case study 2: Relying on cultural practices and traditions to increase sustainable farming, Mexico²

Environmental challenge: Land degradation.

Targeted behavior: Return to sustainable land management practices of intercropping by encouraging traditional practices.

The issue: For centuries, the people of Tojtíc in Mexico have intercropped beans, maize and squash – otherwise known as the Milpa system. While most farmers value their native Milpa seeds, some farmers have been incentivized, by promises of higher profits, to use commercial seeds and chemical fertilizers for their main production plots and have moved their native seeds over to their smaller, household gardens. After adopting industrialized methods as their primary form of farming, the sustainable practices of intercropping and natural nutrient management have been increasingly lost or devalued. This decline of indigenous agricultural systems has negatively affected Mexico’s biodiversity, climate resilience, nutrition and public health.

What are we trying to achieve?

Understanding which behaviors, if changed, could have the biggest impact on biodiversity, food security and ecosystem health.

Who needs to participate?

Tojtíc farmers of Mexico.

Interventions trialed

- Composting organic waste (rather than burning it).
- Reducing use of chemical fertilizers.
- Sharing and exchanging native Milpa seeds with other farmers.
- Distributing advocacy and training materials in native Tsotsil language (materials included a slogan, a comic book, a puppet show and a mural).

Outputs

- The number of farmers who adopted agroecological practices increased from 52% to 90%; the practices included adoption of organic waste composting, increased intercropping, and reduction of chemical inputs (fertilizers and herbicides).
- 65% of the Milpa farmers increased production and consumption of maize, beans, squash and other crops associated with Milpa, thereby increasing the biodiversity of their farms and the nutritional value of their diets.

Outcome

A significant recovery in sustainable Milpa planting practices and consumption of Milpa products, leading to improved ecological, social and nutritional outcomes for the community.

² Centro de Investigación y Servicios Profesionales A.C. conducted the research for this case study. Further information is available in the paper by Williamson, K., Bujold, P.M., Thulin, E. 2020. Behavior Change Interventions in Practice: A Synthesis of Criteria, Approaches, Case Studies & Indicators. Rare Center for Behavior & the Environment and the Scientific and Technical Advisory Panel to the Global Environment Facility. The paper is available at stapgef.org

Knowledge and learning: Understanding cultural practices and traditions can provide a meaningful starting point for change or return to prior, more effective, practices. (Of note, this case is not introducing a change but reverting to prior behaviors.) The interventions addressed multiple behaviors with similar motivations and barriers, showing that a good intervention can have multiple benefits across social, environmental and health dimensions. Building opportunities for peer learning, descriptive norming and capacity-building can help overcome major barriers to change.

Case study 3: Creating collaborate approaches to reduce overfishing, Indonesia³

Environmental challenge: Overfishing.

Targeted behavior: Reduce overfishing and competition between fisherfolk that is resulting in the degradation of fisheries.

The issue: In the Dampier Strait of Indonesia, overfishing and the lack of rights to fishing areas were creating major challenges for coastal fishing communities. Over 60% of fishers in Dampier Strait distrusted fishers from outside their village, and trust in fellow villagers was at an average of 55%. Knowledge was also a major barrier. There were also misperceptions and denial about the impacts of overfishing on fish stocks.

What are we trying to achieve?

- Improving the sustainability of the fisheries.
- Promoting collaboration approaches with key agents across scales to provide robust and durable changes in behavior.
- Addressing conflicts between actors.
- Legitimizing solutions and building trust among a range of actors.

Who needs to participate?

Local fisherfolk and others from outside the villages; village leaders; customary and religious leaders; and fish buyers.

Interventions trialed

- Co-designing collaborative approaches underpinned by stakeholders' customary, religious or traditional values.
- Designing a rights-based system and appealing to village leaders through workshops with the village, customary and religious leaders of 19 communities, drawing maps of what they considered to be their fishing grounds.
- Maintaining sustainable fishing behaviors within the newly designated areas by facilitating the registration of fishers' boats, highlighting key messengers in the community who supported the new rights-based system, organizing pledges in the community to uphold the fishing regulations, and other interventions.

Outputs

- A community-created map of 21 access areas, one for each of the 19 villages as well as several common fishing areas that villages would share.
- A rights-based system that, beyond granting exclusive rights to local fishers, outlined the types of gear that could be used and the fish that could be caught in the fishery.
- Final designations of no-take zones, or marine reserves, that would be off limits to fishers to help the fish populations grow.

³ The United States Agency for International Development implemented this project. Further information is available in the paper by Williamson, K., Bujold, P.M., Thulin, E. 2020. Behavior Change Interventions in Practice: A Synthesis of Criteria, Approaches, Case Studies & Indicators. Rare Center for Behavior & the Environment and the Scientific and Technical Advisory Panel to the Global Environment Facility. The paper is available at stapgef.org

Outcome The Dampier Strait network of 211,000 hectares is now the largest network of Territorial Use Rights for Fishing + Reserve in the world, and there has been a 44% increase in sustainable fishing behaviors.

Knowledge and learning: Strong, legitimate institutional and knowledge foundations are needed for behavioral change. Co-creating and promoting collaboration approaches with key agents across scales can provide robust and durable changes in behavior. Collaborative approaches need to build on stakeholders' customary, religious or traditional values and address conflicts between actors, thereby legitimizing solutions and building trust. Addressing different motivations through a range of strategies and behavioral principles makes an intervention increasingly effective.

Case study 4: Understanding silvopasture to reduce degradation, Colombia⁴

Environmental challenge: Land and forest degradation.

Targeted behavior: Curtail cattle ranching land-use practices by adopting silvopastoral systems.

The issue: Land area devoted to cattle ranching in Colombia has increased dramatically, rising from 14.6 to 38 million hectares in the last 50 years. Currently, 38% of the total land surface and 89% of all agricultural land in the country are set aside for raising cattle. This cattle ranching is responsible for land and forest degradation, and it employs methods that are both expensive and inefficient for small- and medium-scale farmers.

What are we trying to achieve?

- Understanding the social and political risks of the project, the socioeconomic situation of ranchers and the barriers to adoption for small and medium-sized farm participation.
- Identifying the necessary incentives for adoption of silvopastoral systems.
- Modifying cattle ranchers' negative perceptions on the coexistence of trees on grazing lands.

Who needs to participate? Cattle ranchers, extension officers, producer associations, environmental organizations, educational institutions, banks and a variety of non-governmental organizations working in the region.

Interventions trialed

- Increasing access to loans and microfinance investments, as well as adequate payment for the ecosystem services protected by silvopastoral systems.
- Providing silvopastoral systems training sessions and facilitating peer-to-peer information exchanges between the farmers who were using silvopastoral systems on their land and those who were not.

Outputs

- 4,100 family farms in five regions of Colombia have adopted silvopastoral techniques in cattle ranching.
- 32,000 hectares of land were converted to silvopasture, and incomes increased by \$523 per hectare, per year.

⁴ The World Bank – Global Environment Facility implemented this project. Further information is available in the paper by Williamson, K., Bujold, P.M., Thulin, E. 2020. Behavior Change Interventions in Practice: A Synthesis of Criteria, Approaches, Case Studies & Indicators. Rare Center for Behavior & the Environment and the Scientific and Technical Advisory Panel to the Global Environment Facility. The paper is available at stagef.org

- Participating farms planted over 2.6 million trees, of 80 distinct species, that captured more than 1.2 million tons of carbon.
- 21,000 hectares of key habitats for biodiversity were conserved and improved through the adoption of silvopastoral techniques.

Outcomes

- Participating farmers experienced increased pride and investment in their work as cattle ranchers.
- Increased peer-to-peer knowledge transfers, enhancing the productivity and sustainability of ranches and raising the standard of living for farmers and their families

Knowledge and learning: Understanding farmers’ contexts and their perceptions of the problem is essential to developing effective interventions aimed at enhancing the sustainability of silvopastoral practices. Building on the experiences and results of prior projects can provide a starting point for intervention design. The use of common language in disseminating information on different silvopastoral schemes is necessary for adoption. Providing a baseline incentive for farmers to protect ecosystem services counteracts the need for farmers to clear the land for grazing. The technical assistance provided through experienced and trusted extension agents has proven to be the most effective component of the intervention.

Case study 5: Shifting behaviors and harnessing motivations for rhino conservation, Namibia⁵

Environmental challenge: Biodiversity loss.

Targeted behavior: Reduce rhino poaching through more engagement and investment in the people living near parks and reserves.

The issue: Traditional fortress models of conservation have resulted in a lack of engagement with and investment in the people living near parks and reserves. Though Namibia has a record of successful community-based conservation practices, in 2011 local community leaders and guards felt a need to make a change to their practices to try and reduce poaching pressure on rhino populations. Field conservationists from the existing Rhino Custodians Program in the area noticed that existing efforts tended to focus too narrowly on poaching and labelling poachers as criminals, rather than on the larger system that was causing people to poach rhinos in the first place. Additionally, models of fortress conservation in local parks were perceived as prioritizing the needs of wildlife over people, contributing to local communities’ lack of interest in participating in conservation.

What are we trying to achieve?

- Developing an understanding of how people value rhinos as well as who got to make decisions about rhino conservation.
- Shifting conservation from a top-down model to a community-based approach.

Who needs to participate?

Different actors at different scales: local rhino custodians, regional community rhino custodianship, and the national ministry of environment and tourism.

⁵ Conservancy Rhino Ranger Incentive Programme & Rhino Pride Campaign led this project. Further information is available in the paper by Williamson, K., Bujold, P.M., Thulin, E. 2020. Behavior Change Interventions in Practice: A Synthesis of Criteria, Approaches, Case Studies & Indicators. Rare Center for Behavior & the Environment and the Scientific and Technical Advisory Panel to the Global Environment Facility. The paper is available at stapgef.org

**Interventions
tried**

- Building a Rhino Ranger program to bolster engagement.
- Identifying stakeholders to be empowered to protect rhinos and to gain the tools, skills and motivation to perform conservation actions that also improve stakeholders' well-being.

Outputs

The Rhino Ranger program to reduce poaching, in which rangers were chosen by their communities to track, monitor and protect rhinos in their conservancy and a network of rangers helped with capacity-building efforts, training and support.

Outcomes

- Poaching declined 83% during the first five years of the program, with no further poaching incidents reported at the time of writing.
- Positive attitudes developed towards the Rhino Rangers, and there was interest in having more in the community.
- Increased sightings of rhinos since the establishment of the Rhino Rangers: 79 to 918 in 4 years.

Knowledge and learning: Identifying and addressing the barriers to shifting behavior and harnessing stakeholders' motivations are essential for successful behavioral interventions. Equally important is understanding how stakeholders will be affected by an intervention and identifying which stakeholders need to be involved to make decisions across scales. Decision-making driven by local stakeholders creates both more durable behaviors over time as well as reinforcing ones supported by a range of actors. Collaboration built through a shared identity and purpose can drive behavior change (reinforced by branding, logos, slogans, etc.). Selecting and developing a core set of outcomes that are selected, measured and monitored is helpful for evaluating success.

How to design behavioral interventions in GEF projects

The case studies illustrate several key elements important for designing and implementing projects, which are set out below. These elements are part of a systems-based theory of change process, which can be used to think through the logic and causal links in projects and programs, including how to tease apart change (including behavior change) and its causes.

1. Identify target behavior

When designing an intervention, it is important to identify what changes are needed (see next element on stakeholder engagement):

- In the project to reduce wild meat consumption in Brazil, the project team had a very specific, twofold objective: decreasing (not stopping) meat consumption, and increasing domestic meat consumption. The targeted stakeholders were households, particularly women, who usually bought and prepared meat for their families. Cultural norms and values were built into the design of the project by removing the threat that turtle consumption, which has cultural significance, would be banned.
- The project to reduce overfishing in Indonesia identified three groups of target actors (fisherfolk, local leaders, fish buyers) and designed collaborative behavior change strategies by engaging those stakeholders about their needs, values and norms.

2. Engage stakeholders who have roles in the behavior and environmental issues at hand

All actors are embedded in a larger socioecological system that can enable or restrict their ability to adopt the target behavior. Interventions should be designed to influence the behavior of the direct actors as well as all the indirect actors elsewhere in the socioecological system. This includes treating actors throughout the socioecological system not only as targets for behavior change but also as active participants in the design and implementation of the intervention through sustained multi-stakeholder dialogue.^{xix}

Several of the case studies targeted a wide range of stakeholders to address the governing and decision-making system around environmental challenges. A comprehensive approach to behavior change can address the needs of multiple actors through a thorough mapping of stakeholders' motivations and the barriers to change.

Involving more people in a solution over the long term is likely to make the intervention more durable. Several case studies involved actors with different roles in the community; for example:

- The project to reduce wild meat consumption in Brazil engaged women and fisherfolk because they were the essential stakeholders in addressing the problem.

- The project to increase rhino monitoring in Namibia involved stakeholders at multiple scales, which helped to reinforce the intervention. The Rhino Rangers were selected by, and accountable to, their local communities and to regional rhino coalitions that monitor rhinos on conservancy land and use them to generate income.
- The project to reduce overfishing in Indonesia also involved multiple stakeholders. The intervention targeted 19 communities and individuals with the power to make decisions in order to create a rights-based system.

3. Design interventions reflective of the sociocultural context (e.g. culture, norms, values, economic aspects) of the stakeholders

The case studies demonstrate that behavioral change is not driven by universal human motivations but by motivations and barriers to change specific to the context. Understanding these specific motivations and barriers is critical to understanding cause and effect relationships between variables and to guiding effective behavioral strategies.

Relying on traditional knowledge and celebrating natural resources helped create change for several target groups.

In the sustainable farming project in Mexico, planting Milpa had a significant ancestral legacy value to the community. And in the project to increase rhino monitoring in Namibia, a legacy of fortress conservation tactics caused local conservationists to re-envision conservation by examining existing relationships between people, wildlife and local decision-making powers in order to protect rhinos effectively.

It is important to understand the ways in which socioeconomic and cultural factors produce and reflect structural barriers to behavioral change, and how these effects influence the durability of outcomes.

4. Combine multiple behavior change strategies

The case studies used several types of strategy for behavior change, combining stakeholders' knowledge with informational approaches and social strategies. These strategies were specifically chosen because of their ability to address stakeholders' motivations and the barriers to change; they were neither random nor interchangeable.

There are many approaches and tools available on how to change behavior: these help distil insights into human behavior into something concrete and offer steps for designing behavioral solutions. It is not sufficient to understand behavioral and social science principles; it is important to be able to put them into practice.^{xx}

5. Embed a robust monitoring and evaluation framework for assessing behavior change

Most of the five case studies implicitly described a theory of change that linked behavioral, social and/or environmental outcomes. However, few, if any, had a robust monitoring, evaluation and learning framework. Some case studies had explicit plans to monitor behavior change beyond the end of the intervention, which is important for long-term durability.^{xxi}

6. Test and refine behavioral assumptions before implementing intervention at scale

Several of the case studies tested elements of the proposed interventions and revised the project design on the basis of the results:

- The research team in the project to reduce wild meat consumption in Brazil experimented with the level of the incentive (i.e. discount for chicken) that would be required to increase the likelihood of people purchasing domestic meat. The project team found that the type of incentive offered was more important than the dollar value.
- The campaign materials in the project to increase sustainable farming in Mexico were co-designed with community members to tailor messages most likely to resonate with the community.

These experiences illustrate the importance of validating behavioral assumptions before implementing an intervention at scale. There may not, of course, be sufficient time or funds to test and validate a proposed intervention. In the Colombian case study, building on the experiences and results of prior projects targeting similar behavior change provided an alternative way to validate assumptions.

Recommendations to the GEF

STAP recommends that the GEF consider using a checklist to assist project developers to structure interventions focusing on behavior change. The proposed checklist is shown in table 1.

Table 1. Behavior change checklist

<p>1. Describe the desired change in behavior</p> <p>Think about the problem. What does success look like? Whose behavior has to change?</p>
<p>2. Identify key stakeholders</p> <p>Bring together stakeholders to identify the problem and solutions. Who needs to be involved to change behaviors? Who can enable, and who might limit, decision-making and behavior change?</p>
<p>3. Map the desired change</p> <p>Describe the cause-and-effect relationships between coupled human-environment systems using systems thinking. What are the barriers, or enablers, of behavior change? What are the behavioral assumptions or risks?</p>
<p>4. Combine strategies, approaches and tools</p> <p>Use multiple approaches, techniques and tools to help address barriers to, or motivate, change. What are stakeholders' aspirations, values and needs, and how could the selected strategies support stakeholders in building capacity and agency?</p>
<p>5. Pursue monitoring, evaluation and learning</p> <p>Develop deliberate learning during project implementation to monitor and evaluate behavior change. What changes need to be monitored? For instance, is the behavioral change in question a direct means to an environmental end (i.e. a change in practice), or is it the end in and of itself (i.e. changed views about the importance of conservation)? What barriers are preventing the desired change, or what factors are enabling it? What type of learning is needed to achieve the project objective?</p>
<p>6. Test and refine assumptions before implementing intervention at scale</p> <p>Assess progress to foster reflection and innovation.</p>

What opportunities exist to challenge established behaviors and patterns and create new ways for scaling, innovation and transformation?

STAP is planning additional work on behavior change and will hold a workshop in early 2021. The workshop will consider further advice on behavior change, including best practices, metrics, and how social science can contribute to the understanding of behavioral science. It will involve academia, business, practitioners, think tanks, philanthropy, non-governmental organizations, and the GEF agencies and Secretariat.

Endnotes

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- ^v Intergovernmental Science-Policy Platform on Biodiversity and Ecosystem Services. 2019. *Global Assessment Report on Biodiversity and Ecosystem Services of the Intergovernmental Science-Policy Platform on Biodiversity and Ecosystem Services*. Bonn.
- ^{vi} The Anthropocene refers to Earth’s most recent geologic time period, which is characterized as being human influenced, or anthropogenic, based on overwhelming evidence that atmospheric, geologic, hydrologic, biospheric and other earth system processes have been altered by humans. Source: <http://www.anthropocene.info/>
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- ^{ix} GEF. 2015. GEF 2020: Strategy for the GEF.
- ^x Overland, I., Sovacool, B.K. 2020. “The misallocation of climate research funding”, *Energy Research & Social Science*, vol. 62.
- ^{xi} STAP analyzed 50 projects across environmental sectors that had been identified by the GEF Secretariat. The projects were deemed as having robust components on nature-based solutions. STAP’s presentation and a summary of a workshop on nature-based solutions can be accessed at <https://www.stapgef.org/workshop-nature-based-solutions>
- ^{xii} Bujold, P.M., Williamson, K., Thulin, E. 2020. *The Science of Changing Behavior for Environmental Outcomes: A Literature Review*. Rare Center for Behavior & the Environment and the Scientific and Technical Advisory Panel to the Global Environment Facility.
- ^{xiii} Williamson, K., Bujold, P.M., Thulin, E. 2020. *Behavior Change Interventions in Practice: A Synthesis of Criteria, Approaches, Case Studies & Indicators*. Rare Center for Behavior & the Environment and the Scientific and Technical Advisory Panel to the Global Environment Facility.

^{xiv} Rare Center for Behavior and the Environment, 2020. “Levers of behavior change”. Available at https://behavior.rare.org/wp-content/uploads/2020/05/Levers-of-Behavior-Change-Principles-and-Strategies_May-2020.pdf

^{xv} Williamson, K., Bujold, P.M., Thulin, E. 2020. Behavior Change Interventions in Practice: A Synthesis of Criteria, Approaches, Case Studies & Indicators.

^{xvi} The case studies’ titles and the entities that implemented the projects are (1) “Changing Wild Meat Consumption: An Experiment in the Central Amazon, Brazil”, School of Natural Resources and Environment, University of Florida; (2) “Campañas por la conservación”, Centro de Investigación y Servicios Profesionales; (3) “Improving Food Security and Livelihoods through Rights-Based Management of Coastal Fisheries in West Papua”, U.S. Agency for International Development; (4) “Mainstreaming Biodiversity in Sustainable Cattle Ranching”, Global Environment Facility; (5) “Large-Scale Black Rhino Conservation in North-West Namibia: A Review of the Conservancy Rhino Ranger Incentive Programme”, Conservancy Rhino Ranger Incentive Program.

^{xvii} Williamson, K., Bujold, P.M., Thulin, E. 2020. Behavior Change Interventions in Practice: A Synthesis of Criteria, Approaches, Case Studies & Indicators.

^{xviii} Stafford Smith, M. 2020. Theory of Change Primer. A STAP Document. Scientific and Technical Advisory Panel to the Global Environment Facility. Washington, D.C.

^{xix} Ratner, B.D., Stafford Smith, M. 2020. Multi-Stakeholder Dialogue for Transformational Change. Scientific and Technical Advisory Panel to the Global Environment Facility. Washington, D.C.

^{xx} Wendel, S. 2020. Designing for Behavior Change: Applying Psychology and Behavioral Economics. O’Reilly Media, Sebastopol, California.

^{xxi} Stafford Smith, M. 2019. Achieving Enduring Outcomes from GEF Investments. A STAP Document. Scientific and Technical Advisory Panel to the Global Environment Facility. Washington, D.C.