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A HOW-TO GUIDE FOR INTEGRATING BEHAVIOURAL SCIENCE IN GREEN CLIMATE FUND PROJECTS

Piyush Tantia, Martin Prowse, Deborah Sun Kim, Fatima Moussas



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A how-to guide for integrating behavioural science in Green Climate Fund projects

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About this IEU Learning Paper

Behavioural science is the study of behaviour using an array of disciplines, including sociology, psychology, economics, anthropology and political science. Currently, limited evidence exists regarding the impact of behavioural science interventions on climate outcomes in developing countries. Most GCF programmes are likely to face behavioural challenges but anticipating them may be difficult. Based on insights from behavioural science and GCF funding proposals, this paper offers a short checklist for use during the project appraisal process.

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ABSTRACT

Most Green Climate Fund (GCF) projects contain opportunities to integrate behavioural science insights into projects, but these low-cost opportunities to facilitate short- and long-term positive changes may not be easy to anticipate. To encourage GCF staff and project developers to identify potential behavioural opportunities, we present a short checklist to highlight which elements of GCF projects may benefit from the application of behavioural science. These are all elements where groups of people must adopt a new behaviour, make a complex decision or execute a complex task. The checklist can be utilized during the review and appraisal of project proposals. If deemed relevant, project developers could adjust proposals to realize behavioural opportunities.

SUMMARY CHECKLIST

Step 1: Identify stakeholder groups and organizations who will interact with your project.

- Households and individuals, including smallholder farmers
- Communities: Villages, farmer cooperatives or other groups of beneficiaries working together
- Government: NDAs, ministries, legislative or administrative arms, central or local government
 - Extension workers: Workers who go into the field to educate farmers
- IAEs, DAEs: Multilateral development organizations, private sector firms and non-governmental organizations, e.g., infrastructure providers, financial institutions, energy providers, technology providers
 - Sales staff: employees or agents of private sector firms interacting with individuals or communities, e.g., farming input sellers, loan officers

Step 2: Identify opportunities for applying behavioural science.

- Adoption of new farming practices
- Response to climate forecasts by farmers and communities
- Take up of different livelihood strategies by people and communities
- Use of new technology (including different fuel sources)
- Adopt and use a new financial product (firms, households)
- Reliance on government or firms for
 - Infrastructure and built environment
 - Setting up and managing financing facilities
 - Facilitating the adoption of new practices or products by firms and/or households
 - Allocation or distribution of resources
- Risky investments by financial institutions or firms
- Community-led governance and maintenance of infrastructure or natural resources
- Behaviour of staff interacting with individuals or households, e.g., input sellers

Step 3: Confirm possible behavioural barriers.

- Read the relevant section of this learning paper for the items in the list above that apply to the proposed project (see Table 2).

Step 4: Adjust proposal to minimize the likelihood of behavioural problems.

- Consider using behavioural experts in project design as appropriate

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ABBREVIATIONS

AE	Accredited entity
ARAF	Acumen Resilient Agriculture Fund
DAE	Direct access entity
FMCN	Fondo Mexicano para la Conservación de la Naturaleza
FP	Funding proposal
GCF	Green Climate Fund
GHG	Greenhouse gas
IAE	International accredited entity
IEU	Independent Evaluation Unit
MSME	(Micro-), small- and medium-sized enterprise
NDA	National designated authority
PICSA	Participatory Integrated Climate Services for Agriculture
SAP	Simplified approval process
UNDP	United Nations Development Programme
USD	United Nations dollar

A. INTRODUCTION AND OBJECTIVES

The Green Climate Fund (GCF) has an opportunity to accelerate the impact of its investments by incorporating a behavioural science perspective into project proposals. The Independent Evaluation Unit (IEU) has published two learning papers and a toolbox that can support the application of a behavioural lens to GCF projects. The first paper examined 128 GCF projects and found that 82 per cent could benefit from applying behavioural science (Krüger and Puri, 2020). The second paper summarizes several behavioural principles and applies them to four GCF projects as case studies (De Roy and others, 2021). The toolbox illustrates how behavioural insights can improve project effectiveness and efficiency (Kim, 2022). This paper builds on this previous work by proposing a checklist for highlighting which elements in project proposals could benefit from integrating behavioural insights.

Behavioural science has been proven to be a useful tool for accelerating project, programme and policy impacts in many settings (for examples see ideas42, 2018; Social and Behavioral Sciences Team, 2016). In a joint report with the United Nations Environment Programme, behavioural science research and design firm, ideas42, described how behavioural science has been used to promote sustainable consumption. In one project, ideas42 worked with the World Bank to reduce water consumption by 4.6 per cent by including a peer benchmarking sticker on water bills. The stickers compared the household's water consumption to the average level in the neighbourhood and included a few tips for conservation if the household's consumption was higher (Aibana, Kimmel and Welch, 2017). The checklist proposed in this paper is a simple approach to predicting the elements of a project that may lead to behavioural challenges and highlights specific opportunities to overcome these challenges. The checklist is useful in guiding project developers and GCF staff who appraise project proposals (such as in the interdivisional review, including staff from the Division of Mitigation and Adaptation and the Private Sector Facility).¹ This is because behavioural evidence repeatedly demonstrates that people prefer accessing shortcuts to making decisions. We have developed the checklist for a broad audience that need not have any expertise in behavioural science. Even if the project team has behavioural experts, we recommend using the checklist as an aid. Expert surgeons and pilots have used checklists for decades to avoid forgetting a critical step (Gawande, 2007). Behavioural research shows that when people think about tasks that span far into the future, they tend to ignore the details. As a result, they underestimate the time and resources required. Psychologists call this phenomenon the “planning fallacy” (Buehler, Griffin and Ross, 1994).

B. WHEN AND HOW TO USE THIS TOOL

Often, complex programmes are implemented at great expense only to discover that the behaviour of individuals and organizations have become major impediments to impact. Behavioural science can help at that stage, but not as much as it could have before the programme was fully designed and implemented. After implementation, too many elements of the programme are difficult or expensive to change. A more efficient approach is to consider human behaviour while developing a proposal for GCF funding.

¹ See <https://www.greenclimate.fund/document/appraisal-guidance>.

Table 1. Who should use this tool, when and why?

Who should use this tool	IAEs/DAEs, GCF staff involved in appraising project proposals
When to use this tool	During proposal development
Why use this tool	Identify behavioural opportunities that overcome possible impediments to impact if not addressed

Source: Authors

The GCF Secretariat could incorporate the checklist into its appraisal process to identify opportunities for improving outcomes with behavioural science.

The checklist points to common components in climate adaptation and mitigation programmes that are likely to lead to behavioural challenges, for example, changing farming practices or implementing a new financing facility. Krüger and Puri (2020, p. 21) recommend steps for incorporating behavioural science into project designs. The first step they recommend is to “build a theory of change and identify the last mile”, where the last mile (the intention-action gap) refers “to a lack in capability, motivation or opportunity that prevents individuals and groups from changing behaviour which is otherwise (privately or publicly) beneficial” (Krüger and Puri, 2020, p. 5). The checklist in this paper is useful for identifying the parts of the project where behavioural barriers could be overcome. Finally, the checklist in this paper could add to evaluation rubrics as it includes underlying project design elements that may not receive as much attention as they warrant. For example, in a project using a financing facility to ease the adoption of a new technology, the evaluation may not focus on whether the financing is proving onerous for firms or if the low adoption of the technology is due to the financial institution not approving enough loans.

C. THE TOOL

STEP 1: IDENTIFY STAKEHOLDER GROUPS AND ORGANIZATIONS WHO WILL INTERACT WITH YOUR PROJECT

The first step is to reflect on all the groups of people and organizations that the project engages. This step encourages thinking about people in addition to technical and policy issues and is simply a precursor for the next step. As we mentioned in the introduction, people tend to ignore details when they think far into the future. To avoid that problem and be able to see all the places where people interact with the project, it must be broken down. Because the project is likely complex and evolving, the different components and stages must be considered separately. It can be helpful to imagine the ideal scenario for how the project is implemented and how all the components operate in the ideal future.²

After breaking down the project into its components, programme designers should reflect on whether any of the groups in the checklist below are NOT involved in any component or stage of the project. As most groups are likely involved, it is safer to reflect on which ones are not involved.

- Households and individuals, including smallholder farmers
- Communities: Villages, farmer cooperatives or other groups of beneficiaries working together
- Government: National designated authority (NDA), ministries, legislative or administrative arms, central or local government
 - Extension workers: Workers who go into the field to educate farmers.

² One approach to this is to conduct a project premortem – see Klein (2007).

- IAEs, DAEs: Multilateral development organizations, private sector firms, non-governmental organizations, e.g., infrastructure providers, financial institutions, energy providers, technology providers
 - Sales staff: Employees or agents of private sector firms interacting with individuals or communities, e.g., farming input sellers, loan officers.

STEP 2: IDENTIFY OPPORTUNITIES FOR APPLYING BEHAVIOURAL SCIENCE

The second step is identifying which of these groups may engage in which of the behaviours listed below. We offer 13 types of climate intervention (nine main types and four sub types). These types of projects are not representative in a strict sense and were selected to offer a flavour to the reader of the very broad scope of project types.³ For each type, organizations or individuals may fail to adopt the new behaviour, may not adhere to it over time, or may not adopt the behaviour exactly as intended by the designers. Where resource allocation is involved, there may also be challenges related to good governance and equitable distribution.

D. ADOPTION OF NEW FARMING PRACTICES

Farmers having to adopt new farming practices due to either mitigation or adaptation is a common element of many GCF projects and can lead to behavioural challenges for several reasons. For example, a farmer may trust an existing practice because it has yielded a good crop in the past. Adopting a new one can feel risky because it could cause a loss in yield. This would be an example of status quo bias or favouring the status quo despite the availability of better options (Samuelson and Zeckhauser, 1988). If most other farmers are not adopting the new practices, doing something else can feel uncomfortable (Goldstein, Cialdini and Griskevicius, 2008). If the farmer must change the frequency of some behaviour, such as weeding or watering, that presents a challenge because the existing frequency could be habitual, therefore automatic. Breaking an old habit and setting up a new one requires carefully disrupting the triggers of the old one and setting up new triggers.

Triggers are often a cue in the physical environment or even another habit (Verplanken and Wood, 2006).

A case study from the IEU's adaptation evaluation (Binet and others, 2021) describes how GCF project FP034, entitled "Building Resilient Communities, Wetland Ecosystems and Associated Catchments in Uganda", was initiated when officials from the Ministry of Water and United Nations Development Programme (UNDP) observed how poor households drained wetlands to plant rice and vegetables (GCF/B.15/13/Add.07). Heavy precipitation would wash away the crops, posing a risk to life and livelihoods. The project aims to complement ecosystem restoration, allowing the wetland to regulate hydrological flows, with livelihood diversification efforts, including using solar pumps to shift water to adjacent agricultural land to support agricultural production. The project does this by removing constraints to key value chains (aquaculture, fish farms, livestock and small and medium-sized enterprises). Furthermore, as women in these communities traditionally undertake the manual labour linked to wetlands, it is anticipated they will particularly benefit and are a focus of project activities.

Ultimately, FP034 has created an incentive process so that people are involved, and communities see the benefits of doing things differently (see Binet and others, 2021). That said, interviewees contacted as part of the IEU's adaptation evaluation explained that it is very hard to change communities' beliefs about their livelihood options, which can be explained as a form of status quo bias. By demonstrating the benefits of diversification and entering higher-value commodity chains,

³ Readers are encouraged to visit <https://www.greenclimate.fund/projects/dashboard> to check the current breakdown of the GCF portfolio.

the project aims to encourage the adoption of innovations and new ways of subsisting – an approach that could be enhanced by using behavioural insights.

E. RESPONSE TO CLIMATE FORECASTS BY FARMERS AND COMMUNITIES

Project designs often include a component for farmers, communities and/or governments to better plan agriculture using climate forecasts. Understanding and responding to climate data, and planning agriculture more carefully, can present many behavioural challenges if not designed carefully. For example, farmers could be accustomed to weather indicators from different sources and simply not pay attention to new data or guidance. People's attention is limited, and they only attend to what they are looking for (Mack, 2003). People also tend to be overly optimistic that negative events will not affect them or are overconfident in their ability to handle a negative event (Shepperd and others, 2015). The same research shows that even people's moods can affect their assessment of future risk. These tendencies can cause planners and farmers to ignore data signalling climate risks.

GCF project FP002 “Scaling Up the Use of Modernized Climate Information and Early Warning Systems (M-CLIMES)” shows how tailored seasonal and short-term climate information can make a difference in risky agricultural environments (GCF/B.11/04/Add.02). The project has been co-financed by the GCF (USD 12.3 million), UNDP (USD 1.8 million) and the Government of Malawi (USD 2.2 million). It supports government efforts to respond to the challenge of climate change and has gathered, developed and shared weather- and climate-based agricultural information by establishing a national centre of excellence.

The project used the Participatory Integrated Climate Services for Agriculture's (PICSA) approach to climate information. The University of Reading designed the approach using historical climate records, participatory tools and seasonal forecasts, allowing smallholders to choose how to improve their agricultural activities to better suit local climates and livelihood options. Training sessions allowed smallholder farmers to choose crop, livestock and livelihood options. In a train-the-trainer approach, so-called ‘lead’ farmers are designated as focal points, trained and asked to pass on information to others. If it happens successfully, this peer-to-peer communication could act as a social influence. The lead farmers may also feel more motivated to follow through on their agricultural activities because that would be psychologically more consistent with advocating those practices to other farmers. The role of ‘lead’ farmers is also embedded as a “social norm” in rural areas, such as through the *achikumbe* approach taken by President Kamuzu Banda after independence. Social norms are what we see or know as socially acceptable or common behaviour. We look to our peers to fathom the prevailing social norms. Lead farmers visibly adopting new farming practices can create a new social norm in the community. The IEU's Learning-Oriented Real-Time Assessment programme estimates the PICSA approach led to positive outcomes for lead farmers in the use of seasonal forecasts, changes to crop activities, yields and income (see Independent Evaluation Unit (2022), which corroborates earlier assessments in Malawi and other settings completed by Clarkson, Van Hulst and Dorward, 2020; Steinmüller and Cramer, 2017; Clarkson and others, 2019; Clarkson and others, 2017; Dayamba and others, 2018). The degree to which these benefits are also experienced by smallholders who receive training from ‘lead’ farmers is as yet unclear.

F. TAKE UP OF DIFFERENT LIVELIHOOD STRATEGIES BY PEOPLE AND COMMUNITIES

Households construct a living by combining a range of activities. They can mitigate climate risks by taking up different livelihoods across different sectors and spatial scales (for the evolution of the

livelihoods frameworks to understand how people make a living, see; Chambers and Conway, 1991; Ashley and Carney, 1999; Ellis, 1998, 2000). In this respect, climate interventions can support more diverse livelihood strategies across farm, non-farm and off-farm categories through decoupling activities from exposure to climatic risks. For example, irrigation, wage employment in an urban context, and forecasting and insuring tend to reduce the probability of climate risks. Decoupling may also limit the harm from climate impacts, such as smoothing consumption or ensuring coping strategies are reversible (on risk and livelihood diversification, see Sinha and others, 1999; Moser, 1998; Devereux, 2001).

The Palli Karma Sahayak Foundation, a Direct Access entity from Bangladesh, has been funded by the GCF to implement the Extended Community Climate Change Project - Flood (ECCCP-Flood). SAP008 aims to improve the resilience of the ultra-poor, poor and vulnerable communities in key zones in Bangladesh which are liable to flooding, including five flood-vulnerable districts in Northwest Bangladesh, where 11 of the most vulnerable sub-districts and Union Parishads will be selected (GCF/B.24/02/Add.12). The project aims to directly benefit 45,000 households by the end of 2023 through the adoption of climate resilient livelihood options. Traditional livelihoods, such as subsistence agriculture and associated daily agricultural wage labour, not only bring in low levels of income but have a similar flood risk profile. The project provides grants to encourage the adoption of stress-tolerant crop varieties and a mixture of grants and loans for resilient structures for goat/sheep rearing. The project aims to operate through participatory groups of eligible citizens.

Taking up a new livelihood is not only a difficult decision from a behavioural perspective but following through on the decision is also challenging because it could involve many steps. The decision has several features of what Thaler and Sunstein (2021) call “fraught choices” – an uncertain and potentially distant benefit with an immediate cost and a lack of familiarity because the decision is an infrequent and complex one due to the different factors requiring consideration. After taking the decision, the person making the change may need to invest time or money, attend training, apply for jobs or take other steps towards successfully pursuing another means of making a living. Each of those comes with behavioural challenges too numerous to list here. ideas42 has come across livelihoods training programmes with generous incentives, where the participants either drop out before completing the programme or having completed the programme, take no steps to pursue a new livelihood. This is not an isolated issue.

An illustration of this is from the recently approved SAP023, a GCF ecosystem restoration project with the Fondo Mexicano para la Conservación de la Naturaleza (FMCN). The project is expected to reach over 63,000 direct and over 865,000 indirect beneficiaries in two watersheds, Ameca-Mascota and Jamapa, which have faced deforestation and forest degradation due to agricultural activities (GCF/B.28/02/Add.15). For example, in the Jamapa watershed, 42 per cent of the population lives in poverty, with 48 per cent having an income below the well-being threshold. Thirty-eight per cent are economically active, primarily involved in agriculture and cattle ranching. Annual vegetation loss in this watershed was 3.23 per cent between 1993-2011. FMCN fully recognizes that diversification of livelihoods is essential as agriculture is not only the main source of income but the main reason for land degradation. In a social landscape assessment conducted by FMCN, social norms were perceived to present potential challenges in executing some aspects of the project. However, anchoring the take up of new livelihoods through new social norms may provide opportunities to surpass prospective challenges related to the additional time and training required in pursuing new sources of income.

G. USE OF NEW TECHNOLOGY (INCLUDING DIFFERENT FUEL SOURCES)

Many strategies to combat climate change require households and firms to adopt new technology, for example, a new irrigation method or the necessary equipment for shifting to renewable energy sources. One example of adopting new technology is GCF project FP172 “Mitigating GHG emission through modern, efficient and climate-friendly clean cooking solutions”. FP172 is financed by a GCF grant (USD 21.12 million), the Government of Nepal (USD 20.95 million) and local-level co-financing (USD 7.06 million) (GCF/B.30/02/Add.04). The project’s accredited entity (AE) and executing entity is the Alternative Energy Promotion Centre, housed in the Ministry of Energy, Water Resources and Irrigation. The project addresses barriers limiting the transition from traditional inefficient cooking practices to efficient and climate-friendly cooking solutions. For example, on the demand side, there is limited awareness of the benefits of clean cooking solutions and subsidy schemes as well as a limited ability and willingness to pay for new technologies. On the supply side, the quality of clean cookstove solutions can be uncertain. There is a dearth of trained technicians (especially women) in the supply chain and limited incentives and institutions within local government and the regulatory framework. In scaling up existing government initiatives, the project aims to reduce an estimated 6.51 million tons of CO₂eq by increasing the use of modern, clean cooking solutions in 22 districts of the Terai region. It aims to switch 490,000 households from loose biomass, dung cake and fuelwood to Tier 3+ improved cooking stoves. It also aims to introduce biogas systems for 10,000 households that have sufficient livestock. In addition, the project will likely lead to numerous co-benefits such as improved health due to reduced indoor air pollution, time savings due to reduced fuelwood usage, and more employment opportunities.

Yet, adopting new technology is slower than people think (Rogers, 2010). That may feel unintuitive if the new technology adds conveniences at a low cost, but behavioural science insights give us some clues towards solving that mystery. For example, learning how to use new technology can feel more inconvenient than it is. Inconvenience may be due to disruptions while the new technology is installed. Many people are familiar with the inconvenience and difficulties of upgrading to a new laptop, mobile phone or household appliance. Early failures might erode trust in the technology even if they were caused by “user error”, for example taking longer to light a cookstove while still getting accustomed to how it operates. If others are not visibly using the new technology, then people will be uncomfortable adopting the technology. People may need to break an old habit to form a new one that fits with the new technology. For example, families may need to obtain fuel from a new location for a new cookstove or develop new habits if the cookstove must be operated differently. New maintenance routines may have to be adopted.

Cost is an intuitive barrier and is often solved by providing financing solutions. As the next section explains, financing solutions add their own set of behavioural barriers to adoption. While cost is an intuitive barrier, there is an important behavioural aspect of it in the context of new technology, as indicated in the Nobel prize-winning findings of Kahneman and Tversky (1979) about loss aversion. They find that people respond to changes in wealth from some reference point and dislike losses roughly twice as much as they like the equivalent gain. Naturally, people try very hard to avoid losses. If an existing solution is working fine, people would not expect to spend anything at all to change that solution. As a result, any cost of new technology will feel like a loss, as the reference point for a reasonable price starts at zero. Even a subsidy will not mitigate this problem. In the case of cookstoves or new fuel sources, loss aversion may appear more subtly if the existing fuel stock must be discarded.

H. ADOPT AND USE A NEW FINANCIAL PRODUCT (FIRMS, HOUSEHOLDS)

Financing is a common solution to mitigate the initial cost of new technologies. However, typical financial products come with several behavioural barriers. Cumbersome paperwork and application processes are common examples. What seem like small obstacles to getting funding prove to be enough to deter people (Bettinger and others, 2012). Making loan payments is still a material cost and may be more visible and feel more visceral than the benefits of adopting the new technology. Similarly, insurance payments are an immediate cost in return for an uncertain benefit in an unknown future. People greatly discount future costs and benefits. Immediate costs and benefits loom larger than they should. Behavioural scientist David Laibson calls this phenomenon “hyperbolic discounting” (Laibson, 1997). If risk mitigation is one of the benefits, people are likely to undervalue it, as they tend to underestimate the probability of experiencing negative events (this behaviour is also mentioned in the section on using climate forecasts). These barriers can all be mitigated by designing the product features, communications, and sign-up process for financial products with behavioural science in mind.

SAP004, the Energy Efficient Consumption Loan Program, funded by the GCF, aims to improve access to finance (in the form of loans) for Mongolian consumers keen to purchase energy-efficient heating appliances and energy-efficient housing solutions (GCF/B.21/10/Add.37). The main goal is to create a pathway for energy-efficient consumption by incentivizing households to replace conventional, cheap, low efficiency appliances, such as those that burn coal, with efficient appliances. The uptake of new loans requires a shift in consumer behaviour through extensive awareness-raising and flexible terms in the financing agreement to lenders. While helpful, awareness-raising rarely proves to be sufficient to achieve behaviour change as consumers may form an intention to act but then not follow through for any number of the reasons listed above.

For example, the first component provides a concessional loan to consumers to buy energy-efficient heating appliances and housing solutions. A second component (financed by a GCF grant) focuses on community awareness-raising and capacity-building activities as targeted households with limited knowledge and access to energy-efficient solutions may not consider long-term cost-saving potential or health and environmental benefits when purchasing heating appliances or constructing houses. This includes increasing consumer capacity to identify opportunities in their household and institutional (internal and external) capacity to facilitate product financing, plus permanently removing old products from the market. Consumers are able to access low-interest rates and lengthened loan terms through the blending of GCF concessional funding with the commercial fund of XacBank, which is a Mongolian bank and a DAE of the GCF. Although interest rates will not be the lowest available on the market, concessional loans could shift consumers’ behaviour towards purchasing energy-efficient products over less efficient alternatives, especially if the behavioural barriers above are considered.

I. RELIANCE ON GOVERNMENT OR FIRMS

Many GCF projects explicitly or implicitly create the need for governments or firms to execute a complex initiative that will almost certainly present behavioural challenges, as outlined below. Those challenges would appear for the decision makers within organizations as well as employees who need to perform certain tasks included in the initiative. All GCF project AEs work with NDAs, which are public institutions that act as a bridge between the country government and the GCF. The IEU’s evaluation of the GCF’s adaptation portfolio and approach (Binet and others, 2021) focused on the pivotal role AEs and NDAs play, including their role in the United Nations Framework Convention on Climate Change reporting, funding and implementing agencies as well as for

national and sub-national agents such as national governments, local governments, civil society organizations, private sector organizations and academia.

The IEU evaluation identified which NDA characteristics lead to greater and better delivery of climate finance. These characteristics include being neutral, delivering consistent and predictable actions and budgets, and knowing who to communicate with in the GCF. Engaging with the GCF requires multi-stakeholder dialogues, and many GCF projects themselves can be regarded as “complex initiatives”.

J. INFRASTRUCTURE AND BUILT ENVIRONMENT

Organizations must make investment decisions, plan a complex project and then execute the plan with fidelity. Several behavioural barriers are likely to arise in each of those stages. For example, in planning complex projects, we often underestimate time and resources because we forget the detailed steps. Psychologists call this the “planning fallacy” (Buehler, Griffin and Ross, 1994). In executing a project, especially where many people are involved, errors and failures can occur in following protocols, as well as group decision-making challenges such as a tendency to avoid structural change.

One example is FP013 “Improving the resilience of vulnerable coastal communities to climate change related impacts in Viet Nam”. The UNDP delivered project is improving housing and environmental infrastructure for greater resilience and strengthening livelihoods. The project supports vulnerable Vietnamese coastal communities’ resilience against flooding by integrating storm and flood resilient features into new housing, rehabilitating mangroves that serve as storm buffers and providing ecosystem resources for the communities’ livelihoods.

The UNDP noted within its funding proposal that key prospective barriers included “ineffective collaboration between ministries and programmes, preventing regulations critical for long-term climate resilience” (GCF/B.13/16/Add.05, p. 14-15). The UNDP also recognized that the availability of technical knowledge management for climate risk information was required for effective decision-making for both public and private sectors. While the project has delivered many of its targets for two of the key components (construction of resilient housing and mangrove rehabilitation), a recent Annual Performance Report for the project highlights how the third component on increased access to enhanced climate, loss and damage data for private and public sector applications is substantially delayed. UNDP also reported that force majeure events related to drought and saltwater intrusion in 2020, along with COVID-19 lockdowns, have delayed implementation. UNDP is considering an extension of the project closing and completion dates. Anticipating an extreme event such as the COVID-19 pandemic is difficult, but not designing a buffer in the project timeline for force majeure events is an example of the planning fallacy.

K. SETTING UP AND MANAGING FINANCING FACILITIES

Setting up and managing financing facilities are not always explicit in project designs. Still, financing facilities are a common feature of projects that require firms to invest in new technologies, or financial institutions to make new types of loans. In the project design, a government or financial institution may be called upon to set up a new financing facility. Much like the example of building infrastructure outlined above, new financing facilities require investment and planning decisions and complex execution. In execution, there is further complexity as the facility manager must encourage application at scale and accept applicants who may have been previously considered too risky. Loan underwriters at banks will experience loss aversion (Kahneman and Tversky, 1979) as these new loans could be much riskier than their prior reference point.

A good example is the FP097 CAMBio II project (GCF/B.21/10/Add.19), funded by the GCF and managed by the Central American Bank of Economic Integration. The project aims to improve the resilience of micro-, small- and medium-sized enterprises (MSMEs) in Central America through, *inter alia*, creating a credit line for intermediary financial institutions that finances credits for adaptation projects of MSMEs. The target population are MSMEs vulnerable to climate change in seven Central American countries: Guatemala, El Salvador, Honduras, Nicaragua, Costa Rica, Panama and the Dominican Republic. The project's complexity is quite clear from the following description. MSMEs apply to Central American Bank of Economic Integration for loans for adaptation projects of different amounts according to the firm's size. The MSME receives start-up training and can apply for technical assistance which matches their firm with a suitable service provider (although the amount of funding for this assistance is limited). Adaptation projects are evaluated according to whether loans are fully repaid and credible baseline and endline indicators exist. If this is the case, the MSME is eligible to apply for a grant. CAMBio II aims to provide loans to over 1,340 MSMEs across the region. Every firm that receives a loan receives start-up support and can apply for technical assistance and, on completion, a grant. This project was approved in October 2018. However, as of April 2022, less than USD 400,000 of the GCF approved USD 15.5 million in loans and grants had been disbursed, suggesting there were challenges in operationalizing the project across the region.

L. FACILITATING THE ADOPTION OF NEW PRACTICES OR PRODUCTS BY FIRMS AND/OR HOUSEHOLDS

As described in some sections above, many GCF project designs require households and/or firms to adopt new technology, financial products or practices. An entity – government, a firm or a non-governmental organization – would need to design and implement solutions to facilitate that adoption, but project designs may not explicitly focus on that role. Even leaving aside the behavioural challenges of adoption, delivering a new product or practice is a complex endeavour. The organization responsible for delivery would need to engage in a marketing and communication programme, set up distribution for products, and potentially train and deploy extension workers or field sales staff. If a new product is distributed through agents, those agents would need to be trained. These components make for a complex programme that warrants adequate planning, with many execution steps that may need to be modified as it unfolds.

For example, the GCF is providing a USD 32 million grant to UNDP project FP072 “Strengthening climate resilience of agricultural livelihoods in Agro-Ecological Regions I and II.” It will allow the Zambian government to improve the ability of smallholders to manage climate risk by attending to constraints within key value chains, especially those that provide economic benefits for women (GCF/B.19/22/Add.14). The project's second component is strengthening farmer field schools. Each selected village (called camps in Zambia) receives training and inputs to support alternative livelihoods, including the distribution of inputs such as beehives and goats. Baseline data from the IEU's Learning-Oriented Real-Time Impact Assessment Programme, which interviewed 2,508 respondents, highlighted some of the challenges encountered within the project (Abidoye and others, 2022). These included unscheduled changes to the phased distribution of inputs, incomplete and inaccurate listings of beneficiaries, a lack of record keeping of distributions, and severe logistical challenges, including flooding and damaged infrastructure. Overall, at the time of the baseline survey, 58 per cent of the expected beneficiaries of goats had received these inputs (although not in the planned sequence). Moreover, only 20 per cent of the households who had received training in beekeeping had adopted this form of agricultural diversification. This low adoption rate is not surprising as one multilateral development agency recently reported a similar adoption rate for certain agricultural interventions.

M. ALLOCATION OR DISTRIBUTION OF RESOURCES

In any project where resources must be allocated to households or small and medium-sized enterprises, there will likely be a step in the process where a judgment must be made on who receives the resource. The resource could be cash or in-kind such as subsidies, financing, insurance policies, cash transfers, training programmes, new equipment or farm inputs. The selection process and human judgment component must be designed equitably. Features that people are apt to ignore, such as a complex application form full of jargon, can create inequity by deterring some people (Bettinger and others, 2012). Employees making selection judgments may be vulnerable to unconscious bias if they do not have rubrics based on relevant factors. Rubrics are one type of solution that could work to reduce the influence of factors such as gender or ethnicity that tend to trigger implicit bias (Greenwald and Banaji, 1995).

FP101 provides a USD 6.1 million grant and a USD 1.9 million loan to International Fund for Agricultural Development to manage “Resilient Rural Belize (Be-Resilient)”, which is hosted and implemented by the Government of Belize (GCF/B.22/10/Add.03). The project is introducing climate resilient agricultural practices, strengthening value chains, supporting producer organizations and upgrading infrastructure. The project covers all six districts in Belize. One component of the project is a matching grant fund that supports completing business plans tailored to each producer organization’s traits and broadens the range of crops grown. To avoid unconscious bias, the targeting procedure for the matching grant fund focuses on poor and vulnerable households in the identified districts defined based on objective metrics. Specifically:

- Poor households are defined by the project as households whose income is below the poverty line.
- Vulnerable rural families are households whose income is 25 per cent over the poverty line but likely to fall into poverty due to increased climate change effects and external economic shocks.
- All households must lease or own 25 to 50 acres – they only cultivate a small part of the land and are engaged in part- or full-time farming.
- Consistent with the importance of women in the rural economy, 40 per cent of project participants will be women. Youth will comprise 20 per cent of project participants.

The poverty line to be used is based on the national poverty line (not the global USD 1.90 per day poverty line) using the Belize Country Poverty Assessment, August 2010, adjusted for inflation since this time. This national level poverty line combines annual income with the proportion of income used for food consumption (the food share). It stands at 3,429 in 2010 Belizean dollars. While this strict targeting procedure will avoid unconscious forms of bias, it creates a complex procedure that requires a degree of technical knowledge which may not be easily accessible to all project staff or participants. Operating and monitoring such a process will also require resources that would be easy to forget because of the planning fallacy.

N. RISKY INVESTMENTS

Financial institutions and firms

In GCF projects that include a financing facility, banks and financial institutions usually distribute the funds. The financing for GCF projects is likely to be riskier than the institution’s typical activities. If the institution assigns loan officers or underwriters who also handle their usual business, that can create a behavioural challenge. Those employees will be trained and accustomed to minimizing risk for the organization. GCF financing is typically designed for the opposite purpose – to encourage inherently risky innovation. Further, the financial institution may have

standard application forms, documentation requirements and risk scoring models that do not work for this new purpose. The employees will be anchored to conducting business as usual, and all the other infrastructure will also be calibrated for lower risk lending. This issue is not one of conflicting incentives, as GCF funding offsets the extra risk financial institutions are asked to take on. This behavioural challenge is not easy to detect after the fact, as financing will be flowing successfully, albeit without pushing as much innovation as hoped.

Firms

Similar to the behavioural challenge described above, firms may struggle to make riskier investments than they typically do. GCF projects often encourage investments in a new business or activity such as renewable energy production or research and development. A firm's decision-making criteria for investments are likely too conservative for such investments. Managers making the decisions will need to be able to ignore the automatic, expert thinking they have trained in. Research finds that experts very quickly assess new situations using patterns acquired from years of experience (Klein, 2008).

An example of the challenges in making riskier investments is the GCF having to provide first-loss capital in FP078, the Acumen Resilient Agriculture Fund (ARAF), which makes small investments in agriculture in east and west Africa (see GCF/B.19/22/Add.20, Binet and others (2021) for a case study on this project). ARAF intends to raise USD 56 million over 12 years and make 18–20 investments. It also aims to create a USD 6 million technical assistance facility. The GCF has committed USD 23 million in equity financing and USD 3 million in grant financing. The GCF aims to provide catalytic first-loss capital that reduces other investors' risk. Senior equity has been provided by, *inter alia*, Acumen and the Netherlands Development Finance Company. ARAF investments are expected to last 5–7 years and provide early patient capital (which does not seek an immediate return on investment). ARAF aims to directly benefit 2.1 million people, mostly smallholder farmers and their families. As of January 2021, ARAF had invested in companies delivering a range of innovations: (i) solar irrigation bundled with bespoke meteorological and agronomic advice for smallholders; (ii) innovative contract farming schemes with strong forward linkages in processing; (iii) dairy through irrigation and a bundled range of goods and services. ARAF claimed to have a pipeline of at least 23 possible investments. Overall, ARAF illustrates how greater climatic variance is increasing the need for innovation, collaboration and learning across sectors and actors.

O. COMMUNITY-LED GOVERNANCE AND MAINTENANCE OF INFRASTRUCTURE OR NATURAL RESOURCES

Many GCF projects call on communities to take over the management of a natural resource. Many well-known challenges are associated with the management of natural common pool resources, many of which are discussed in the work of Ostrom (1990; 2000). These goods are:

- Rivalrous – if one person uses the good, there is less of it available for others
- Non-excludable – no person in the locality can be prevented from using the good

Such goods are subject to overuse as the costs of consuming or polluting common pool resources are not borne by the user, but the benefits are not shared – they are private (Hardin, 1968). In other words, the cost of consuming a common pool resource is not reflected in the price of the good. The cost is shifted from the individual consuming the good to others. Ostrom (1990) responds to this argument by asking whether users are always selfish and act selfishly. She claims there are many different types of actors (selfish, uncooperative, accommodating, altruistic) and highlights how the norms for managing common pool resources evolve depending on the roles these actors play. Under

community-led governance, the community has the right to exclude others and to preserve a duty to maintain resources for others in the group (see also Tiffen, Mortimore and Gichuki, 1994).

Recommended protocols for community-led governance for both natural resources and forms of infrastructure exist but will require community members to adopt new behaviours such as group decision-making, negotiation, enforcement and planning. Participatory development processes in rural areas, which are most commonly associated with the work of Robert Chambers (1995), can also raise a number of challenges. For example, group decision-making can lead to riskier choices as accountability for the decision is dispersed across different individuals. Moreover, dominant groups can exert an undue influence and create a form of elite capture. Projects often plan to use training as the solution. Unfortunately, the experience of behavioural experts and findings from research in other areas show that training somewhat increases knowledge but does not change behaviour (Fernandes, Lynch and Netemeyer, 2014).

An example from the GCF portfolio, FP043, the “Saïss Water Conservation Project”, aims to strengthen the adaptive capacity of agricultural systems in Morocco’s Saïss Plain by establishing infrastructure and a public-private partnership to activate new irrigation networks for bulk water transfer between a river basin and the Plain (GCF/B.16/07/Add.06). The Saïss Plain is one of Morocco’s most productive agricultural zones. But a lack of water has caused farmers to reapportion their production from various fruits and vegetables to less water-dependent products such as nuts.

One component of the project is to improve awareness of climate resilience issues among the water services' end users and to strengthen water governance through effective community involvement, as a response to the consistent depletion of the Saïss aquifer. The proposal pairs community involvement with gender equality for irrigation governance because of concentrated decision-making power in the community resulting from social norms and limited education.

A public participation initiative is proposed along with improving tariff collection rates to incentivize sustainable management of water resources to increase awareness and promote community involvement. Community involvement is designed to support engagement with an advisory committee and to offer feedback from focus groups on the tariff, infrastructure maintenance, consumer complaints and relevant social issues. Feedback from end users, especially farmers and women, will be presented to local industry and authorities in focus groups meeting with consultants every three months. The consultants will connect with the advisory committee, which will then deliver the feedback to the Ministry of Agriculture and Maritime Fisheries, the Agency of the Hydraulic Basin and the media. The proposal expects this will enable the Ministry and Agency to explain regulatory and legislative changes to the community. Further examples of community-level involvement in irrigation systems include FP016 in Sri Lanka, which is strengthening the resilience of smallholder farmers to climate variability and extreme events through integrated water management (GCF/B.13/16/Add.08), as well as FP041 in Tanzania, which is safeguarding water supply and smallholder farming in Simiyu Region (GCF/B.16/07/Add.04).

P. BEHAVIOUR OF STAFF INTERACTING WITH INDIVIDUAL OR HOUSEHOLDS

Most GCF projects ultimately call for firms, households, farmers, or other individuals to adopt some new technology or practice, and front-line staff are an important channel for facilitating that adoption. Front-line staff could include extension workers, a field sales force, input sellers or retailers who are agents for financial institutions. Salespeople may need to push a new technology or farming input. Extension workers may need to change the technical advice they are giving farmers. We alluded to their role briefly in the section above on governments and firms having to facilitate the adoption of a new technology or practice. However, this is a common challenge that warrants

highlighting in a separate section. Project designs will likely include an implicit plan to train front-line staff during implementation. However, as mentioned earlier, training is helpful but insufficient for achieving behaviour change. Behavioural science offers other types of solutions that can be effective for countering the barriers to change, such as falling back on old habits or forgetting new protocols.

Here we return to FP172 “Mitigating GHG emission through modern, efficient and climate-friendly clean cooking solutions” managed by the Alternative Energy Promotion Centre in Nepal. For the distribution of clean cookstove solutions, this project is working with local government units to draw up eligible beneficiary lists to give to suppliers who have won competitive procurement processes in each district. The suppliers offer the subsidised cookstoves to potential beneficiaries who self-select into the programme. Eligible beneficiaries can purchase a substantially discounted, clean Tier+ 3 wood burning or electric cookstove from the supplier. The Alternative Energy Promotion Centre and the local government unit will share the cost and purchasers will be invited to training events. The assessment of uptake, adoption, use and integrity will be conducted by third party verifiers who will draw a random sample of beneficiaries (GCF/B.30/02/Add.04).

Q. DISCUSSION

While serving as President of the World Bank Group, Jim Yong Kim stated that development practitioners need to broaden the scope of designing interventions by not only considering the intervention but also the context. In addition, the ideas42 impact report has pointed out that “solving the world’s biggest problems starts with understanding the choices we make” (p. 2). The ideas42 report also noted that behavioural science creates pathways to better understand human intentions, decisions, and actions beyond ‘rational’ assumptions. Insights from behavioural science reveal underlying truths beyond the layers of constructing programmes or strategies that practitioners tend to lean toward. Solutions with promising results are scalable at low cost by simply not rushing to disregard what appears to be obvious, but instead digging into it. What might appear to be a subtle detail or a small decision could propel tremendous impact, and “the real measure of progress is impact” (ideas42, 2018, p. 9).

For example, such low-cost and easily scalable behavioural approaches were integrated in Costa Rica to address issues of population growth straining local water resources. The Belén community municipality saw no effect of raising water prices and transitioned to accessing social norms as a behaviour change mechanism. Simply affixing coloured stickers to water bills showing residents how their consumption ranked among neighbours resulted in decreases between 3.7 to 5.6 per cent, equating to an estimated 6,720m³ of water conservation in just one community.

In a comparable case, the western cape province in South Africa found favourable results by incorporating behavioural interventions to reduce household energy use. While households are incentivized to see monthly bills, office employees lack this connection between seemingly small behaviours, such as turning devices off, and their effects on conservation. Through a randomized controlled trial using reminders, energy usage during the workday was reduced by 14 per cent (reflecting greater conservation after office hours).

Even with mounting evidence that behavioural science is critical for intervention design, as shown in the examples above, it is not widely used early enough in the project cycle. More often, behavioural experts are brought in after implementation to correct take up and other such challenges. This is not surprising because spotting behavioural opportunities *a priori* is not straightforward. Applying behavioural science to climate change has not yet provided tools to assist practitioners. Instead, they tend to explain behavioural science theory and provide examples of applications in the field (see e.g. Aibana, Kimmel and Welch, 2017 and Bujold, Williamson and

Thulin, 2020). This paper addresses that gap by presenting a tool for practitioners derived from behavioural principles. Throughout the appraisal and review process which all funding proposals move through, there are opportunities for GCF Secretariat staff to utilize the checklist. For example, technical and financial specialists in the Division of Mitigation and Adaptation and Private Sector Facility can refer to the checklist when assessing concept notes and project proposals when engaging with teams from accredited entities and prior to investment committee meetings. Indeed, further divisions can also use the checklist and project types outlined in Table 2. For example, technical specialists in the Division of Portfolio Management who offer early guidance on indicators for measuring project results, outcomes and impacts can consider how the checklist can supplement their review process. Secretariat colleagues can use the resources in this paper through identifying stakeholder groups and organizations who will interact with the project, learn from the project areas summarised in Table 2 (from the adoption of new farming practices to the activities of front-line staff), and adjust the proposal to reduce the likelihood of behavioural barriers in project implementation.

R. CONCLUSION

In addressing mitigation and adaptation, the human decisions and actions must be changed. One of the investment criteria of GCF projects and programmes is the potential for paradigm shifts beyond a one-off project or programme investment through replicability and scalability. As evidenced by the COVID-19 pandemic, paradigm shifts depend on changes in behaviour.

The checklist above is a simple way to pre-determine the elements of a strategy that may trigger behavioural challenges and the opportunities to overcome them. Further, by defining the intermediate outcomes related to the stakeholders' concrete behaviours, the checklist is useful in guiding a programme's monitoring and evaluation. Its role as an "advance warning system" is particularly valuable, as the extent of behaviour change tends to be underestimated. In contrast, the effectiveness of education and incentives tends to be overestimated. Traditional economics and political science often assume all humans are rational thinkers. In contrast, behavioural evidence repeatedly demonstrates that humans much prefer accessing shortcuts to making decisions, regardless of the state of urgency or dire need for a specific decision pathway. The knowledge-deficit model assumes that filling the knowledge gap will increase people's trust in the science, thus also their willingness to act. However, studies have repeatedly found that efforts to inform people results in viewing the information as not trustworthy or credible. As Krüger and Puri (2020) state, "awareness creation alone is not enough to generate societal change" (p. 2). Scheufele (2006) notes that overloading people with information may well not motivate change because people will ultimately opt for faster, easier and more timely decisions. The IEU has found that awareness-raising campaigns are among the preferred approaches for driving behaviour change in GCF projects. Krüger and Puri (2020) report that, as of 2020, 82 per cent of GCF projects approved at that time recognized the need for behaviour change at either the individual or governance level. Almost all projects identifying the need for individual behaviour change have designed activities around raising awareness.

We suggest that the GCF Secretariat utilize a pre-evaluation process using such a checklist to identify, in advance, possible behavioural opportunities and uptake barriers to all funded projects. For example, the checklist could be utilized by interdivisional review teams, including staff from the Division of Mitigation and Adaptation and the Private Sector Facility, when assessing project proposals against all 10 appraisal areas.⁴ Table 2 summarizes the behavioural barriers in the 13 areas highlighted in this paper. The findings could be used to design project elements to avoid future

⁴ See <https://www.greenclimate.fund/sites/default/files/document/gcf-appraisal-guidance-annexes.pdf>.

behavioural challenges. Behavioural experts can also be incorporated into the team if a large number of areas require redesign. That small investment upfront can greatly accelerate the impact of GCF projects and, through them, adaptation and mitigation success in developing countries.

Table 2. Illustrative behavioural barriers within a typology of climate interventions

	ILLUSTRATIVE BEHAVIOURAL BARRIERS
Adoption of new farming practices	<ul style="list-style-type: none"> • Trusting existing practices • Following what other farmers do • Difficulties in changing habits
Response to climate forecasts by farmers and communities	<ul style="list-style-type: none"> • Accustomed to forecasts from existing sources • Attention span is limited • Sole focus on information being looked for, so new information may not be noticed • Overoptimism that a negative event will not affect them • Overconfidence in one's ability to handle a negative event
Take up of different livelihood strategies by people and communities	<ul style="list-style-type: none"> • An uncertain and potentially distant benefit with an immediate cost • Lack of familiarity with taking such infrequent and important decisions • Complexity of choices
Use of new technology (including different fuel sources)	<ul style="list-style-type: none"> • Adoption of new technology is slower than people think • It can feel like a hassle due to the disruption • Early failure may erode trust in the technology • Following what others do
Adopt and use a new financial product (firms, households)	<ul style="list-style-type: none"> • People dislike losses roughly twice as much as the equivalent gain • Cumbersome paperwork and application processes limit adoption • People discount future costs
Reliance on Government or Firms for:	<ul style="list-style-type: none"> • Overall, GCF projects are complex initiatives, as listed in the sub-items in the next four rows
Infrastructure and built environment	<ul style="list-style-type: none"> • People underestimate time and resources • People make errors and fail to follow protocols
Setting up and managing financing facilities	<ul style="list-style-type: none"> • Investment and planning decisions underestimate time and resources • Complexity of accepting applications at scale • Loss aversion as client base is riskier
Facilitating the adoption of new practices or products or products by firms and/or households	<ul style="list-style-type: none"> • Implementers may overestimate compliance among firms or households as they are not versed in behavioural research • Planning decisions underestimate time and resources
Allocation or distribution of resources	<ul style="list-style-type: none"> • Complex application procedures deter people • Decision makers can be unconsciously biased, including in terms of gender and ethnicity
Risky investments by financial institutions or firms	<ul style="list-style-type: none"> • Automatic responses can sway managers and employees as they have been trained to reduce risk • Conventional <i>pro formas</i> and procedures aim to reduce risk
Community-led governance and maintenance of infrastructure or natural resources	<ul style="list-style-type: none"> • Failure to follow all recommended protocols • Risky shift – as accountability is dispersed, it is easier to make very risky decisions • Elite capture – dominant individuals or groups sway decision

	ILLUSTRATIVE BEHAVIOURAL BARRIERS
	making
Front-line staff behaviour	<ul style="list-style-type: none">• Training is helpful but insufficient to ensure front-line staff act according to protocols and procedures

Source: Authors

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- GCF/B.13/16/Add.05: Consideration of funding proposals – Addendum: Funding proposal package for FP013, 8 June 2016.
- GCF/B.13/16/Add.08: Consideration of funding proposals – Addendum: Funding proposal package for FP016, 8 June 2016.
- GCF/B.15/13/Add.07: Consideration of funding proposals – Addendum VII: Funding proposal package for FP034, 24 November 2016.
- GCF/B.16/07/Add.04: Consideration of funding proposals – Addendum IV: Funding proposal package for FP041, 14 March 2017.
- GCF/B.16/07/Add.06: Consideration of funding proposals – Addendum VI: Funding proposal package for FP043, 14 March 2017.
- GCF/B.19/22/Add.14: Consideration of funding proposals – Addendum XIV: Funding proposal package for FP072, 6 February 2018.
- GCF/B.19/22/Add.20: Consideration of funding proposals – Addendum XX: Funding proposal package for FP078, 6 February 2018.
- GCF/B.21/10/Add.19: Consideration of funding proposals – Addendum XIX: Funding proposal package for FP097, 26 September 2018.
- GCF/B.21/10/Add.37: proposals – Addendum XXXVII: Funding proposal package for SAP004, 26 September 2018.
- GCF/B.22/10/Add.03: Consideration of funding proposals - Addendum III: Funding proposal package for FP101, 1 February 2019.
- GCF/B.24/02/Add.12: Consideration of funding proposals - Addendum XII: Funding proposal package for SAP008, 22 October 2019.
- GCF/B.28/02/Add.15: Consideration of funding proposals - Addendum XV: Funding proposal package for SAP023, 23 February 2021.
- GCF/B.30/02/Add.04: Consideration of funding proposals - Addendum IV: Funding proposal package for FP172, 14 September 2021.

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