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A DECISION TREE FOR ADAPTATION RATIONALE
A STAP ADVISORY DOCUMENT
MAY 2022

A DECISION TREE FOR ADAPTATION RATIONALE

Executive summary

The Global Environment Facility (GEF) has invested more than $2 billion over the last 20 years in climate change adaptation through the Least Developed Countries Fund (LDCF) and the Special Climate Change Fund (SCCF).[1] A recent evaluation by the Independent Evaluation Office found that "LDCF support continues to be highly relevant to Conference of Parties (COP) guidance and decisions, the GEF adaptation programming strategy, and countries' broader development policies, plans, and programs."[2]

Well-designed projects are more likely to lead to effective project implementation. The Scientific and Technical Advisory Panel's (STAP's) paper on good project design[3] synthesizes our advice into eight enabling elements to help ensure the success of GEF investments. (See annex 1 for a short summary.)

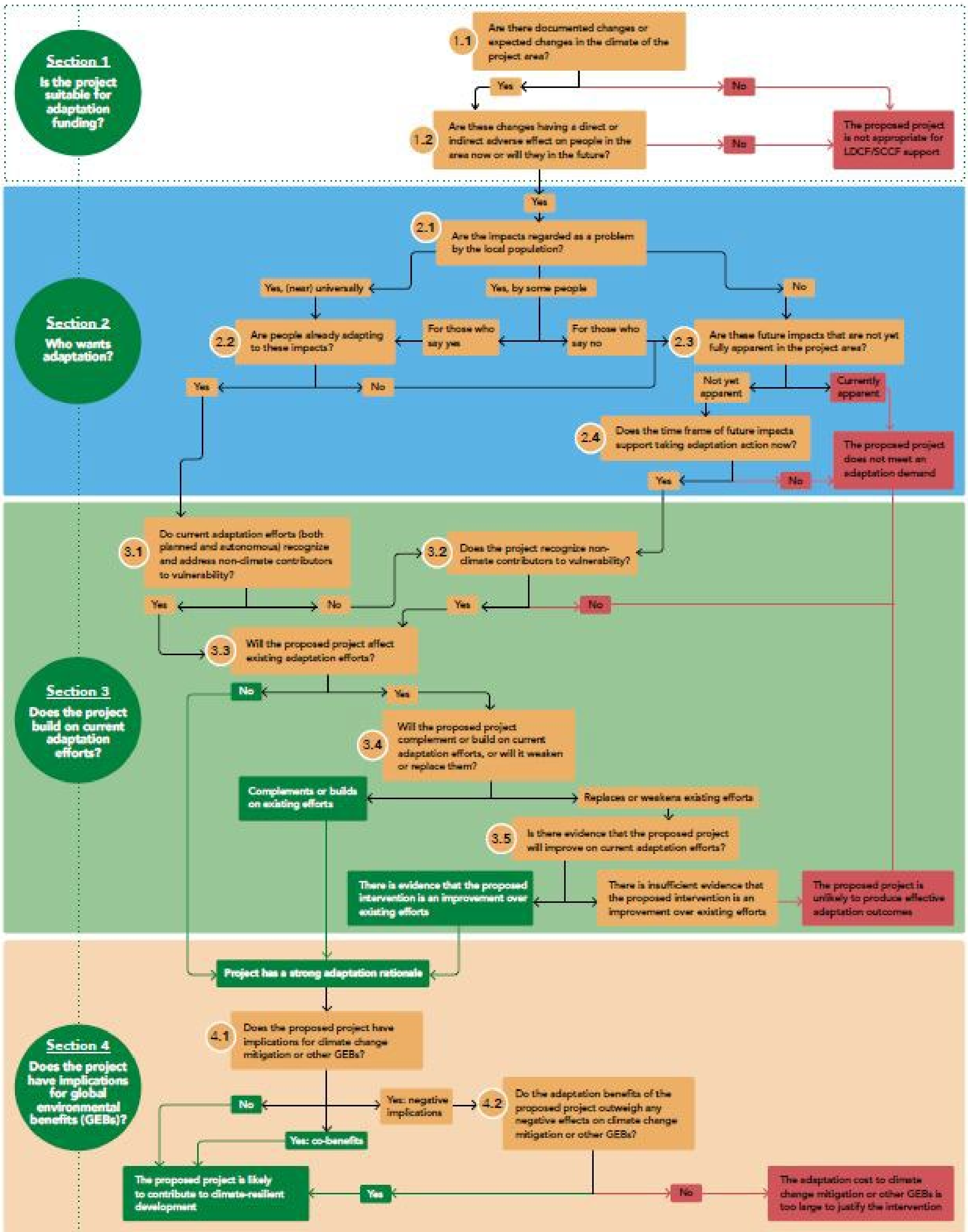
Adaptation projects specifically benefit from having a clear rationale,[4] with particular attention on four main elements: the presence of worsening climate hazards, either now or in the future; evidence for the diverse ways in which these hazards affect people and places; interventions that clearly address the impacts of climate change; and effective monitoring, evaluation, and learning.

To strengthen shared understanding among the GEF Partnership of good practices for increasing adaptation impact and to help ensure that projects have a robust adaptation rationale, STAP has developed a decision tree for project developers to use at an early stage in project design.

The decision tree includes guiding questions to help project developers:

- Decide whether adaptation is required because the climate is changing in a way that results in a worsening climate hazard that will have a significant adverse impact on human well-being
- Identify projects that meet an adaptation need that is recognized as a problem by those experiencing the hazard
- Ensure that projects complement current efforts to manage climate variability and hazards
- Maximize the synergies and minimize the trade-offs between adaptation benefits and the achievement of global environmental benefits

Figure 1: Decision tree for adaptation rationale.



1. Is the project suitable for adaptation funding?

These two questions establish whether a proposed project has the basic elements of an adaptation rationale.

Question 1.1: Are there documented changes or expected changes in the climate of the project area?

Changes can manifest themselves in a number of ways. Are there trends, such as increasing temperatures or declining precipitation, or changes in climate variability? Climate variability is not itself a rationale for adaptation. However, where the character of variability (magnitude, degree, timing, etc.) is changing due to climate change, and where livelihoods are threatened, adaptation efforts may be required.

Without documented or expected changes to the climate there is nothing to adapt to, and adaptation would not be warranted.

(See annex 2 for some suggested sources of data to establish whether the climate is changing.)

Question 1.2: Are these changes having a direct or indirect adverse effect on people in the area now or will they in the future?

Climate change is affecting the local climate in most parts of the world, but not all changes are significant enough to justify adaptation funding.

For example, if climate models suggest that precipitation will decline by 20 mm by 2050 in an area that currently receives 2,000 mm a year, this very small change is unlikely to have a direct impact on human well-being (e.g. access to adequate water or food) or an indirect impact on biodiversity, which could also affect local diets.

For effective, durable outcomes, the design process should make the connection between the change in climate and the impacts on human well-being, both direct impacts (e.g. on livelihoods and the availability of food) and indirect impacts (e.g. a reduction in a population of birds, which allows a pest to flourish and decimate crop production). This aspect of project design requires a theory of change, in this case one that connects a projected climate impact to an effect on human well-being in the project area.[5]

If the impacts are negligible, adaptation would not be warranted.

2. Who wants adaptation?

After eliminating projects that lack a clear adaptation rationale, the next step is to consider whether the need for adaptation is recognized by those affected. Projects that address issues regarded as unimportant locally are unlikely to yield effective, durable adaptation outcomes. Understanding who wants the project helps identify who are the beneficiaries, who are not, and who might be adversely affected.

Question 2.1: Are the impacts regarded as a problem by the local population?

If the answer is no, this by itself does not rule out adaptation funding, but it is still important to identify who would benefit from the project. Understanding who benefits helps design projects that benefit the largest number of people with the maximum impact and durability of outcomes. Go to question 2.3.

If the answer is yes, go to question 2.2.

A divergence of opinion is likely about whether a problem requires adaptation. The decision tree can help in sorting out why there are differing opinions. When there is a difference of opinion, project designers should follow the decision tree in both directions.

For example, in many parts of Sudanian West Africa, men are responsible for rain-fed staple grain cultivation while women manage irrigated gardening. Where precipitation is projected to decline or become more variable, men are more likely than women to see this as a problem. This *does not* mean that the project should not be funded, because it would still benefit some of the population. Whether it should be funded depends very much on the context and the project's goals. For example, if the objective is to boost staple crop production, the project could go ahead, provided this is not at the expense of others (i.e. women). However, if the objective is to build women's adaptive capacity, a focus on managing the risks associated with variable seasonal precipitation would be unlikely to succeed.

Project designers need to decide what project outcomes are appropriate and acceptable. Such decisions will generally benefit from multi-stakeholder dialogues.[6]

<u>Question 2.2: Are people already adapting to these impacts?</u>

Project designers will often encounter situations where the population is already (formally or informally) adapting to impacts. For example, farmers in coastal Ghana manage the uncertain precipitation regime patterns by planting farm plots on the tops, sides, and bottoms of hills to ensure that under any seasonal precipitation outcome at least some of their farm will produce. (The tops of hills do well in unusually heavy precipitation because they drain well, while bottoms of hills do well in dry years because they collect what little precipitation there might be.) That people are already adapting suggests there is an adaptation demand – go to question 3.1.

There may be circumstances where people describe impacts to which they are not currently adapting, for example because the change is recent and sudden or because of a lack of resources. There is still an adaptation demand – go to question 2.3.

<u>Question 2.3: Are these future impacts that are not yet fully apparent in the project area?</u>

Understanding why a climate impact is not perceived as a problem is important for identifying an appropriate adaptation project. For example, some changes in the climate may be currently quite small, or well within existing variability, and hence may not yet be identified as a problem by local people. However, such changes could lead to significant future problems that would be best addressed early.

If scenarios indicate future changes in climate impacts that are beyond current variability and current means of coping, it is important to continue planning an adaptation project – go to question 2.4.

<u>Question 2.4: Does the time frame of future impacts support taking adaptation action now?</u>

If an impact is projected to occur in 20 years and current adaptation efforts will not produce greater benefits than taking action in 10 years' time, resources are better directed to a project where the need is more immediate.

For example, asking rural farmers in sub-Saharan Africa to take on new, more costly seeds to address climate impacts on yields that are not expected to be apparent for a decade: (a) does not make future adaptation more effective, (b) does not align with farmers' decision horizons (typically one or two seasons), and (c) would require farmers to incur costs now but see no benefit for a decade.

Waiting provides time to gather more evidence about changes in climate and t impacts, which can help in designing more effective projects. In these circumstances, waiting is also a better use of current resources.

3. Does the project build on current adaptation efforts?

Projects with a robust adaptation rationale that address a need for adaptation may still not produce effective outcomes, and may possibly produce unintended or even maladaptive outcomes, unless careful consideration is given to the context in which they are implemented.

<u>Question 3.1: Do current adaptation efforts (both planned and autonomous) recognize and address non-climate contributors to vulnerability?</u>

<u>Question 3.2: Does the proposed project recognize and address non-climate contributors to vulnerability?</u>

Non-climate factors, such as social and economic inequality and policy decisions in land use, agriculture, health, and market conditions, can also be sources of vulnerability. For example, increasing precipitation may contribute to a greater incidence of flash flooding. However, flash flooding is often associated with changes in land use that have compromised drainage. If the proposed adaptation project only addresses precipitation, it is unlikely to be effective, because the changes in land use might continue to cause more flash flooding.

Effective adaptation action requires an understanding of these other sources of vulnerability and how they intersect with climate change to exacerbate or ameliorate that vulnerability. Projects should be designed to address the combined effect of these vulnerabilities. This is true for locally defined and implemented action (autonomous adaptation) as well as for action through formal governmental processes and institutions (planned adaptation). A project is unlikely to address all non-climate contributors to vulnerability, but it is important to (a) consider whether the project will reduce vulnerability, given non-climate contributors; (b) avoid exacerbating these non-climate contributors to vulnerability; and (c) wherever possible, link the project with ongoing efforts to address non-climate drivers of vulnerability like inequality and poverty. Projects that do not do so are unlikely to produce durable, effective adaptation benefits.

<u>Question 3.3: Will the proposed project affect existing adaptation efforts?</u>

Occasionally, a proposed project would have no direct effect on existing adaptation efforts. Such a scenario provides an opportunity to manage climate impacts without requiring existing efforts to be removed – a low-regrets approach to adaptation programming.

However, not all projects can avoid affecting existing adaptation efforts; if the project under consideration will affect existing efforts, go to question 3.4.

<u>Question 3.4: Will the proposed project complement or build on current adaptation efforts, or will it weaken or replace them?</u>

Current adaptation efforts may become ineffective as the climate changes, which may affect livelihoods; current efforts may also impose costs that limit the development potential of individuals and communities. For example, the hedging behaviour of Ghanaian farmers described under question 2.2 costs them approximately 20% of their production in an average year because they have planted on a range of topographies instead of concentrating on the most productive plots of land.

In general, projects that build on or complement existing adaptation efforts are likely to have a greater uptake, while reducing the risk of undermining the current efforts. Project monitoring and evaluation should carefully consider whose interests are being furthered or protected by specific adaptation interventions. For example, projects may pose a risk by preserving social structures, such as gender inequality, that might compromise longer-term development goals. Careful monitoring and evaluation can help ensure that adaptation projects do not inadvertently deepen inequality, increase vulnerability for certain groups (e.g. women), or otherwise limit the opportunities for development necessary to foster successful adaptation in the future.

In some circumstances, proposed projects may weaken or replace existing adaptation efforts; if this is the case for the project under consideration, go to question 3.5.

Question 3.5: Is there evidence that the proposed project will improve on current adaptation efforts?

There may be circumstances where a proposed project compromises current adaptation efforts but, overall, results in more effective management of climate stresses and shocks. There are also situations where current adaptation efforts might be imposing costs that could be addressed through a new approach.

For example, returning to the case of the Ghanaian farmers (see question 2.2), a rigorous index insurance program[1] might allow the farmers to stop hedging their production, allowing them to maximize incomes in good precipitation years. This could improve local adaptive capacity and improve local development.

Outcomes should be monitored and evaluated carefully to consider whose interests are affected by the project. Livelihoods, identity, roles, and responsibilities in society are deeply intertwined. Projects that affect any of these elements may introduce unintended social and economic impacts that could affect uptake, long-term efficacy, and outcomes.

If there is limited or ambiguous evidence that the proposed project will improve adaptation outcomes compared with the current local efforts it is replacing (or weakening), there is a risk of maladaptive outcomes that reduce the well-being of the target population.

4. Does the project have implications for global environmental benefits?

Projects should be designed to contribute to global environmental benefits (GEBs) and to avoid undermining climate mitigation and other GEBs, such as biodiversity conservation and land restoration. The following two questions are designed to help projects with a strong adaptation rationale maximize synergies and minimize trade-offs with GEBs.

Question 4.1: Does the proposed project have implications for climate change mitigation or other GEBs?

Nearly all adaptation projects will have implications for the achievement of climate mitigation or other GEBs. These implications may be indirect and systemic and therefore not obvious at first sight. For example, to improve agricultural productivity (because of increasing temperature and decreasing seasonal rainfall) drought-tolerant seeds could be introduced and better access to markets developed. However, if the project leads to more intensive farming of fewer crops with greater inputs and pesticides, it could result in increased land degradation, a loss of agrobiodiversity, and damage to the soil's ability to sequester carbon. Alternatively, regenerative agricultural practices could be more resilient to a changing climate by improving soil moisture in dry periods, improving flood control in heavy rainfall (a land degradation benefit), and increasing the carbon sequestration of soils (a climate mitigation benefit).

[1] Index insurance programs pay out based on a predetermined index, such as an amount of rainfall, which stands as a proxy for a loss of assets or income.

If the proposed project is likely to have negative implications for climate change mitigation or other GEBs, go to question 4.2.

Question 4.2: Do the adaptation benefits of the proposed project outweigh any negative effects on climate change mitigation or other GEBs?

If so, alternative designs should be considered. If negative effects are unavoidable, a decision is needed on whether the loss of GEBs is justified by the adaptation benefits.

Glossary

adaptation benefits (within the context of GEBs): Positive adaptation impacts are quantified in the GEF's LDCF/SCCF core indicators. There is a section in the Project Identification Form template for a qualitative narrative.

climate change adaptation: In human systems, the process of adjustment to actual or expected changes in climate and their effects intended to moderate harm or exploit beneficial opportunities. In natural systems, the process of adjustment to actual climate and its effects; human intervention may facilitate adjustment to expected climate change and its effects.

climate change trends: A change in the state of the climate that can be identified (e.g. by using statistical tests) by changes in the mean and/or the variability of its properties (temperature, amount and timing of precipitation, etc.) and that persists for an extended period, typically decades or longer. The United Nations Framework Convention on Climate Change (UNFCCC), in article 1, defines climate change as "a change of climate which is attributed directly or indirectly to human activity that alters the composition of the global atmosphere and which is in addition to natural climate variability observed over comparable time periods". The UNFCCC thus makes a distinction between climate change attributable to human activities altering the atmospheric composition and climate variability attributable to natural causes.

climate hazard: The potential occurrence of a natural or human-induced physical event, trend, and/or variability that may cause loss of life, injury, or other health impacts, as well as damage and loss to property, infrastructure, livelihoods, service provision, ecosystems, and environmental resources.

climate variability: Variations in the mean state and other statistics (e.g. standard deviations, occurrence of extremes) of the climate on all spatial and temporal scales beyond that of individual weather events. Variability may be due to natural internal processes within the climate system (internal variability) or to variations in natural or anthropogenic external forcing (external variability).

impacts (consequences and outcomes of climate-related hazards): The consequences of realized risks on natural and human systems, where risks result from the interactions of climate-related hazards (including extreme weather and climate events), exposure, and vulnerability. Impacts generally refer to effects on people; livelihoods; health and well-being; ecosystems and species; economic, social and cultural assets; services (including ecosystem services); and infrastructure. Impacts may be referred to as consequences or outcomes and can be adverse or beneficial.

maladaptation: Actions that may lead to increased risk of adverse climate-related outcomes, including via increased greenhouse gas emissions, increased vulnerability to climate change, or diminished welfare, now or in the future. Maladaptation is usually an unintended consequence.

resilience: The capacity of social, economic, and environmental systems to cope with a hazardous event, trend, or disturbance by responding or reorganizing in ways that maintain the system's essential function, identity, and structure while also maintaining its capacity for adaptation, learning, and transformation.

scenario: A plausible description of how the future may develop based on a coherent and internally consistent set of assumptions about key driving forces (e.g. rate of technological change, prices) and relationships, as well as anticipated impacts from the specific climate hazards. Scenarios are neither predictions nor forecasts but are used to provide a view of the implications of developments and actions.

vulnerability: The propensity or predisposition to be adversely affected. Vulnerability encompasses a variety of concepts and elements, including sensitivity or susceptibility to harm and (lack of) adaptive capacity. Vulnerability is widely understood to have three components:

- **adaptive capacity:** Limitations in access to and mobilization of the resources of human beings and their institutions, and lack of capacity to anticipate, adapt to, and respond to socioecological and economic impacts.
- **exposure:** Presence of people; livelihoods; species or ecosystems; environmental functions, services, and resources; infrastructure; or economic, social, or cultural assets in places and settings that could be adversely affected.
- **sensitivity:** Physical predisposition of human beings, infrastructure, and environment to be affected by a dangerous phenomenon due to lack of resistance, and predisposition of society and ecosystems to suffer harm as a consequence of intrinsic and context conditions making it plausible that such systems, once impacted, will collapse or experience major harm and damage due to the influence of a hazard event.

Annex 1: Enabling elements for good project design: A synthesis of STAP guidance for GEF project investment

The Global Environment Facility (GEF) seeks to maximize the achievement of durable global environmental benefits from its investments, scaling outcomes to achieve transformational change. With these objectives in mind, the Scientific and Technical Advisory Panel's (STAP's) thinking about design approaches has evolved, drawing on the scientific community and in partnership with the GEF Secretariat and Agencies. The outcome is a set of STAP advisory documents to help the GEF design good-quality projects. Some documents explore important emerging *topics*, while others are more about the *process* of delivering effective outcomes (figure 2). This paper[7] synthesizes the main elements of STAP's process-oriented advice. Taken together, this advice provides eight enabling elements to help ensure the success of GEF investments. The advice is based on design components in the GEF project templates and includes some features that are not necessarily addressed within the current GEF policy guidelines but that are important for the GEF-8 replenishment. This paper highlights the eight enabling elements and illustrates how adopting them will "de-risk" project and program design and increase the likelihood of delivering durable outcomes that contribute to transformational change.

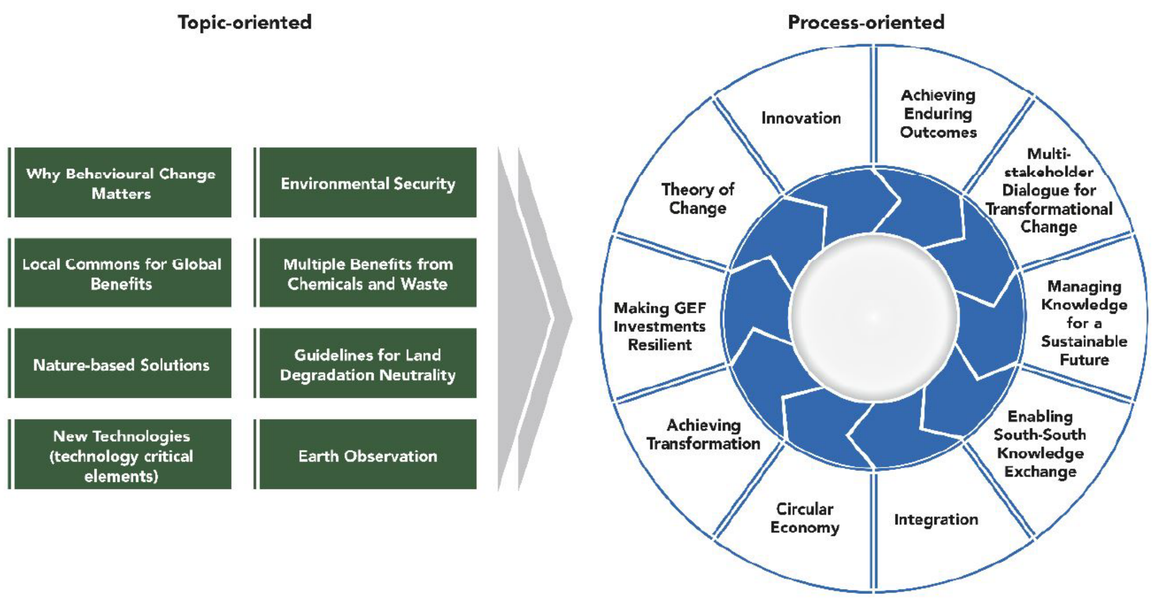


Figure 2: Summary of STAP's recent advisory documents, as of 2021, showing those that are *topic*- versus *process*-oriented; this document focuses on the latter *(titles slightly abbreviated)*. The individual advisory documents can be found on the STAP website.

Annex 2: Examples of accessible sources of climate information

Context

To access meaningful climate and socioeconomic information to design a Global Environment Facility project, it is important that project designers use the best available climate information on climate hazards, scenarios, and their impacts, as well as socioeconomic information on the costs, benefits, and ecosystem service values of proposed projects. Additionally, when relevant climate data are available, projects will benefit from using climate information from data sets and manipulating them. The latitude–longitude coordinates of the project area can be used in interfaces like the World Meteorological Organization (WMO) Climate Explorer website. The website charts data into several visualizations automatically, and it is easy to download time series data for custom visualization creation as needed.

While the climate data on sites like the WMO Climate Data Catalogue are relatively easy to manipulate, incorporating further climate science expertise is also a good practice to ensure projects draw on appropriate data sets in an appropriate manner. To the extent possible, project designers should seek to draw from localized data whenever such data are available. Country- and/or regional-level climate information is also relevant, especially when more localized data are not available. Several open-source websites provide extensive climate information, including the World Bank Climate Change Knowledge Portal. While these sites often present very accessible data and narratives, the data they produce typically represent the averages of what can be very diverse situations within a country; therefore, these data are most relevant for project design when complemented by more localized climate information.

Examples of useful sources of information for climate adaptation design:

- **WMO Climate Data Catalogue**
  https://climatedata-catalogue.wmo.int/assessed-datasets
  Access to several excellent data sets. They are relatively easy to manipulate for specific points on the globe and produce immediate visualizations or allow for the download of time series data. This website probably has the best trade-off between ease of use and spatial resolution of data, making it very useful for project designers.

- **IRI/LDEO Climate Data Library**
  http://iridl.ldeo.columbia.edu/
  Over 400 climate-related data sets. The user can analyse the data online, make graphics, and refer easily back to those graphics and data through the URLs. The data can be saved in different formats, including GIS, and read directly into software such as MATLAB. There is a learning curve to using these data, but lots of tutorials are available. This site has the most, and probably the best, data of any site, but it can be very difficult to navigate without climate data training.

- **Copernicus Climate Data Store**
  https://cds.climate.copernicus.eu/cdsapp#!/home
  A wealth of searchable data sets, applications, and tools on the Earth's past, present, and future climate. The service is constantly being improved and new data sets added. All the information is easily searchable and free to access.

- **World Bank Climate Change Knowledge Portal**
  https://climateknowledgeportal.worldbank.org/
  Easy-to-use site, but limited variables and data manipulation. The data are organized at the country and regional scale, which should be considered carefully when working with a country with significant differences in regional climate, because these differences will be lost in national averages.

- **Climate Scenarios**
  https://climatescenarios.org/
  Good resource for how to think about and build climate scenarios. More of a how-to than a data source.

- **Shared Socioeconomic Pathways Database**
  https://tntcat.iiasa.ac.at/SspDb/dsd?Action=htmlpage&page=20
  Useful for basic modelling of likely futures and their impacts on, for example, emissions or agricultural output. These pathways are also key components of the modelling that undergirds the Intergovernmental Panel on Climate Change. Using these pathways requires background reading.

- **Costing Nature**
  http://www1.policysupport.org/cgi-bin/ecoengine/start.cgi?project=costingnature
  Web-based tool for assessing ecosystem services under different scenarios.

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[1] GEF, 2022. *GEF Programming Strategy on Adaptation to Climate Change for the Least Developed Countries Fund and the Special Climate Change Fund and Operational Improvements*. GEF/LDCF.SCCF/SM.02/01, Annex I. Global Environment Facility, Washington, D.C.
[2] GEF IEO, 2020. *Program Evaluation of the Least Developed Countries Fund (LDCF) 2020.* Global Environment Facility Independent Evaluation Office, Washington, D.C.
[3] STAP, 2021. *Enabling Elements of Good Project Design: A Synthesis of STAP Guidance for GEF Project Investment.* Scientific and Technical Advisory Panel to the Global Environment Facility, Washington, D.C.
[4] The elements of an adaptation rationale were discussed with GEF Agencies at the GEF Technical Dialogue on Enhancing Adaptation Impact, 28 April 2021. See https://www.thegef.org/newsroom/news/learning-shared-experience-impactful-climate-adaptation.
[5] Stafford Smith, M., 2020. *Theory of Change Primer.* A STAP Advisory Document.
[6] Ratner, B.D., and Stafford Smith, M., 2020. *Multi-Stakeholder Dialogue for Transformational Change.* A STAP Advisory Document.
[7] STAP, 2021. *Enabling Elements of Good Project Design: A Synthesis of STAP Guidance for GEF Project Investment.* Scientific and Technical Advisory Panel to the Global Environment Facility, Washington, D.C.