

CLIMATE-RESILIENT BIODIVERSITY PROGRAMMING STOCKTAKING



Presented December 13, 2022 and Updated April 26, 2023

How to understand this slidedeck

The climate-resilient biodiversity programming stocktaking results were shared a number of times with key USAID audiences. This slidedeck incorporates the key stocktaking findings. The notes section on each slide provides speaker notes, and if relevant, additional details on the slide content.

Biodiversity is at great risk from climate change, whether it's because changing rainfall patterns are reducing the range of important species, or ocean acidification and sea level rise are changing where coral reefs will occur in the future. USAID biodiversity programs are often focused on reducing threats like clearing forests for agriculture, or reducing overfishing, but teams also need to think about what will happen to those forests when climate change means that the forest is not likely to persist in the same places, or will not be able to withstand more frequent fires. So teams need to think ahead about climate impacts to species and ecosystems, e.g., forests, coral reefs, etc., and make programming changes.

Outline

1 | Context

- Data Collection and Analysis Processes
- Climate Factors

2 | Descriptive Findings

3 | Relational Findings

4 | Interdependencies



Photo credit: Sajitha Alode on Unsplash

This slide deck presents the results of a stocktaking of 111 USAID biodiversity conservation activities over the last 10 years, and included most of the Agency's Biodiversity activities. The deck includes the context and methods of the stocktaking as well as the findings.

I | Context



Photo by Jason Houston for USAID

Why Take Stock?

- Develop resources to support climate-resilient biodiversity conservation at USAID.
- This climate and biodiversity stocktaking investigates how USAID teams working with MI and MI2 have incorporated climate and climate-change considerations into activity design.
- Stocktaking findings will inform upcoming guidance as well as the Biodiversity Policy refresh.

Measuring Impact II (MI2) activity works with the Biodiversity Division to support best practices in design, planning, implementing, and monitoring biodiversity and integrated programs at USAID. MI2 supports strategy development, project and activity design and start-up, Pause and Reflects, and monitoring, evaluation, and learning working with USAID staff and teams on the ground. MI2 also supports the Biodiversity Division to scale up learning across their whole portfolio and to address enabling conditions to make it possible for teams to do best-in-class programming. With the long history of biodiversity programs supporting climate change adaptation and mitigation, and with the new Agency climate strategy, MI2 and the Biodiversity Division are developing resources to support teams to ensure that their programming is resilient to climate impacts, through the *Conserving Biodiversity in a Changing Climate Supplemental Guide 5*. This stocktaking developed a baseline understanding of the biodiversity portfolio, or at least a sizeable piece of it, to understand and to highlight how biodiversity teams are already aligned with the strategy. This baseline will also illuminate gaps in understanding and practices that can be improved for greater impact.

Biodiversity Programming Should Consider Climate Change Impacts on Biodiversity and Ecosystems:



- Climate change directly impacts biodiversity focal interests (e.g., species ranges)
- Climate change reduces biodiversity resilience to conventional threats (e.g., stressed fisheries)
- Climate impacts vulnerable communities, leading to maladaptive responses (e.g, clearing land, shifting livelihoods)

→ Climate-resilient Biodiversity Conservation

The stocktaking was based on the premise that

- Climate change impacts biodiversity focal interests--the species and ecosystems which USAID seeks to protect. For example, changes in species distributions; declining natural coastal habitats, increasing coral bleaching events, etc. which can result in reduced ecosystem services, and impacts on nature-based livelihoods like tourism.
- Climate change also reduces the resilience of species and ecosystems to non-climate threats. For example increasing temperatures adds additional stress on marine fisheries which makes them more susceptible to overfishing.
- Climate change impacts communities and USAID teams need to consider the expected human responses that may be maladaptive. For example, in response to increased storms, people may decide to replace riparian or coastal habitat with flood walls.

Photo source:

<https://www.climatelinks.org/photo-gallery/documenting-rights-protect-forests-and-wildlife>

Research Questions

How have the teams with which MI and MI2 have worked incorporated and addressed climate impacts in activity design? Where are there gaps that guidance and technical assistance might fill?

- A. Which activities have incorporated climate change into problem analysis and situation models and how have they been represented?
- B. Which activities have addressed climate threats directly in strategic approaches and what approaches have they used?

The stocktaking sought to understand how teams incorporate climate impacts in activity design. In particular it examined two facets of that question:

- How teams incorporate climate change into the problem analysis phase, including into situation models and
- How climate threats are being addressed by specific strategic approaches.

Data Collection

MI2 coded over 900 results chains (RC) and situation models (SM) from 111 MI2-supported BD activities.

Categorized threats and approaches using the Conservation Measures Partnership Classifications.

| CMP Direct Threats Classification v 2.0 | |
|---|--|
| 1. Residential & Commercial Development | |
| 1.1 Housing & Urban Areas | |
| 1.2 Commercial & Industrial Areas | |
| 1.3 Tourism & Recreation Areas | |
| 2. Agriculture & Aquaculture | |
| 2.1 Annual & Perennial Non-Timber Crops | |
| 2.2 Wood & Pulp Plantations | |
| 2.3 Livestock Farming & Ranching | |
| 2.4 Marine & Freshwater Aquaculture | |
| 3. Energy Production & Mining | |
| 3.1 Oil & Gas Drilling | |
| 3.2 Mining & Quarrying | |
| 3.3 Renewable Energy | |
| 4. Transportation & Service Corridors | |
| 4.1 Roads & Railroads | |
| 4.2 Utility & Service Lines | |
| 4.3 Shipping Lanes | |
| 4.4 Flight Paths | |
| 5. Biological Resource Use | |
| 5.1 Hunting & Collecting Terrestrial Animals | |
| 5.2 Gathering Terrestrial Plants | |
| 5.3 Logging & Wood Harvesting | |
| 5.4 Fishing & Harvesting Aquatic Resources | |
| 6. Human Intrusions & Disturbance | |
| 6.1 Recreational Activities | |
| 6.2 War, Civil Unrest & Military Exercises | |
| 6.3 Work & Other Activities | |
| 7. Natural System Modifications | |
| 7.1 Fire & Fire Suppression | |
| 7.2 Dams & Water Management / Use | |
| 7.3 Other Ecosystem Modifications | |
| 7.4 Removing / Reducing Human Maintenance | |
| 8. Invasive & Problematic Species, Pathogens & Genes | |
| 8.1 Invasive Non-Native / Alien Plants & Animals | |
| 8.2 Problematic Native Plants & Animals | |
| 8.3 Introduced Genetic Material | |
| 8.4 Pathogens & Microbes | |
| 9. Pollution | |
| 9.1 Household Sewage & Urban Waste Water | |
| 9.2 Industrial & Military Effluents | |
| 9.3 Agricultural & Forestry Effluents | |
| 9.4 Garbage & Solid Waste | |
| 9.5 Air-Borne Pollutants | |
| 9.6 Excess Energy | |
| 10. Geological Events | |
| 10.1 Volcanoes | |
| 10.2 Earthquakes / Tsunamis | |
| 10.3 Avalanches / Landslides | |
| 11. Climate Change | |
| 11.1 Ecosystem Encroachment | |
| 11.2 Changes in Geochemical Regimes | |
| 11.3 Changes in Temperature Regimes | |
| 11.4 Changes in Precipitation & Hydrological Regimes | |
| 11.5 Severe / Extreme Weather Events | |

The team coded over 900 results chains and situation models representing 111 MI2-supported activities.

The team coded using the Conservation Measures Partnership classifications.

The team tested for intercoder reliability across 13 products at two different times to ensure consistency in coding. The coding was generous, meaning if the coder could even infer a climate-relevant factor, they included it.



Activity Data Analysis

- Description of the portfolio's climate inclusion (RQ1)
- Relation between biodiversity focal interests and climate inclusion and between climate factors (RQ2)

The team analyzed the data in two ways:

First, they described biodiversity activities, understanding where they were across the world, what kinds of Biodiversity Focal Interests did they work on, what were the common threats they identified, targets they sought and approaches they used. The research focused on which activities include climate factors to address the first research question.

Second, the team examined the relationships between key climate data points. They checked for regional differences in whether and how activity teams incorporated climate change and for correlations between the different climate data points to answer the second research question.

Factor Descriptions



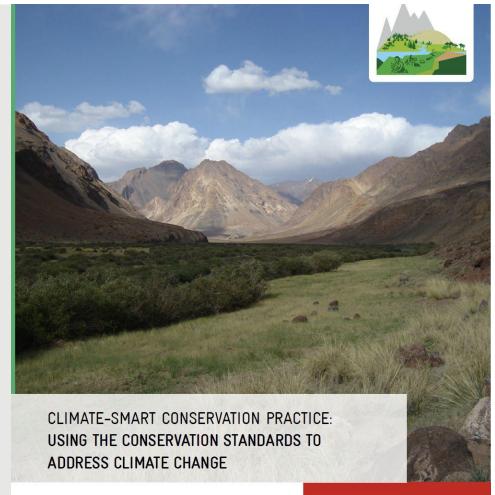
What factors were analyzed?

Climate Factors

Based on CMP Guide to Climate-Smart Conservation Practice

Three types of factors:

1. Climate Change **Targets**
2. Climate **Threats**
3. Climate-Resilient Strategic **Approaches**



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Targets--activities have a climate change related goal

Threats--activities note that climate factors are in some way threatening their focal interests. In new guidance, Conserving Biodiversity in a Changing Climate, these are called *climate stressors*.

Approaches--activities are taking actions to address climate change impacts

Climate Change Targets



Adaptation

Human and ecosystem adjustments to actual or expected climate changes and its impacts to help humans adapt

- Human communities able to cope with current and likely climate change impacts, e.g. droughts, sea level rise, and severe weather



Mitigation

Greenhouse gas (GHG) reduction

- Reducing GHG production, e.g., reducing charcoal use
- Taking up GHGs from the atmosphere, e.g., carbon storage in land and forests



Resilience*

Increasing the resilience of the biodiversity focal interests (species and ecosystems) to the impacts of climate change

- Not about human or community resilience

*Not a CMP classification

Targets include adaptation, mitigation, and resilience.

Adaptation is helping communities cope with current and likely climate impacts.

Mitigation is reducing or sequestering greenhouse gas emissions.

Adaptation and Mitigation were the same as in the USAID Policy and as they are defined within USAID. USAID staff are familiar with these.

The team defined a third kind of goal, Resilience. This term noted when activities had a goal that was specific to increasing the ability of species and ecosystems to respond to climate shocks. This is not part of the CMP classification, it was an emergent code to note the numerous references to resilience. This is focused on the resilience of the biodiversity focal interest not the resilience of humans. Human resilience was categorized in human well being targets.

Climate Change Threats*

A **climate threat** is a **natural phenomenon** altered by the mainly human-caused increase in global surface temperature and its projected continuation

E.g., increased spring precipitation, decreased precipitation as snow and increased rain in winter

Climate Threat Sub-categories

1. Ecosystem Encroachment
2. Changes in Geochemical Regimes
3. Changes in Temperature Regimes
4. Changes in Precipitation & Hydrological Regimes
5. Severe / Extreme Weather
6. Other (*phenology, seasonality, and general*)

*The factors called **climate threats** in this stocktaking are the same as those called **climate stressors** in USAID's Climate Risk Management processes and in *Conserving Biodiversity in a Changing Climate Supplemental Guide 5*.

Activities note that climate factors are in some way threatening the species and ecosystems they seek to protect. Threats* are focused on what is happening in the local system biophysically--with specific impacts. Thus a climate threat is not "global warming" but instead the droughts that global warming causes which lead to wildfires, or increasing severe storms that lead to coastal destruction.

Threats were disaggregated into five categories following the CMP classifications. A climate threat is a natural phenomenon that is altered by human-caused increase in global surface temperatures.

- Ecosystem encroachment: sea level rise (inundation of shoreline ecosystems, drowning of coral reefs), desertification (sand dune encroachment)
- Geochemical Regimes: ocean acidification, changes in atmospheric CO₂ affecting plant growth, loss of sediment leading to broad-scale subsidence
- Temperature Regimes: heat waves, cold spells, oceanic temperature changes, melting of glaciers/sea ice
- Hydrological Regimes: droughts, changes in timing of rains, loss of snow cover, increased severity of floods
- Extreme Weather events: thunderstorms, tropical storms, hurricanes, cyclones, tornadoes, hailstorms, ice storms or blizzards, dust storms, erosion of beaches during storms

Please Note: Climate threats in this stocktaking are the same factors that USAID calls climate stressors in climate risk management and in the guide *Conserving Biodiversity in a Changing Climate Supplemental Guide 5*.

Climate-Resilient Strategic Approaches

Threat Abatement

- 1a. Reduce climate-related biophysical effect(s) by reducing a conventional threat
- 1b. Protect climate refugia (occurrences of the BFI less exposed to climate change)

Viability Enhancement

- 2a. Strengthening the health of a species or ecosystem
- 2b. Restore ecosystems or populations

“Strictly Adaptation”

- 3a. Creating artificial habitats or conditions for biodiversity
- 3b. Preventing human mal-adaptation



MI2 identified three categories of high level climate resilient strategic approaches and 6 sub-strategic approaches, again from the CMP's classifications. It is important to note that the approaches are most often addressing the impacts on people and ecosystems of the climate threat, not the climate threat directly. These approaches do not inherently reduce the likelihood of sea level rise, or reduce the surface temperature increases caused by greenhouse gasses. Even mitigation activities would have to have be at a very large scale to be able to claim to reduce emissions enough to address these threats.

In the CMP classification system, these are:

- Threat Abatement
 - 14.1 Strategies to reduce climate-related stresses by reducing a conventional Threat: This type of strategy decreases vulnerability to climate-related stresses by reducing a conventional threat that exacerbates climate impacts or directly decreases the viability of a conservation target.
 - 14.2. Strategies to protect climate refugia (occurrences of the target not exposed to climate change): A special type of strategy is focused on protecting climate refugia (i.e., occurrences of targets that are not exposed to climate change) from conventional threats to allow components of biodiversity to persist or potentially expand under changing environmental conditions.

- Viability Enhancement
 - 15.1 Strategies to maintain and enhance viability for adaptive capacity of a target (e.g. connectivity): Viability enhancement strategies directly improve the health of the conservation target. Generally, healthier targets are likely to have greater resilience (more capacity to adapt to changes in climate) than degraded targets
 - 15.2 Restoration strategies
- Adaptation
 - 16.1 Creating artificial habitats or conditional for biodiversity:
Sometimes, in the face of climate change, it is necessary to artificially support conditions for biodiversity
 - 16.2 Preventing human maladaptation: Once climate starts affecting people directly, they adapt to the new conditions. People can be especially affected by the degradation of ecosystem services.
Unfortunately, the adaptation responses can turn out to be maladaptive and negatively affect ecosystems within the scope. Maladaptation includes actions that, relative to alternatives:
 - exacerbate stresses on ecosystems and species
 - include taking actions that later prove to be ineffective under new climate conditions
 - push the problem downstream (e.g., engineered solutions to flooding that exacerbate stormwater runoff)

Biodiversity Focal Interests



Terrestrial



Freshwater



Marine

In addition to those three kinds of climate factors, the team identified the Biodiversity Focal Interests (BFIs) of each activity. Biodiversity Focal Interests are the ecosystems and species that USAID activities are trying to impact--such as coral reefs or endangered elephants. In this analysis, MI2 consolidated those specifics into three basic large-scale habitat-based or ecosystem-based categories:

- Terrestrial--land based species and ecosystems such as montane forests or elephants,
- Freshwater--usually in-land lake and river ecosystems and species such as a river basin or freshwater dolphins, and
- Marine--ocean saltwater ecosystems and species such as mangroves or pelagic fish.

2 | Descriptive Findings



Photo by Juan Carlos Isaza - Narino/WWF

Research Questions

How have the teams with which MI and MI2 have worked incorporated and addressed climate impacts in activity design? Where are there gaps that guidance and technical assistance might fill?

- A. Which activities have incorporated climate change into problem analysis and situation models and how have they been represented?**

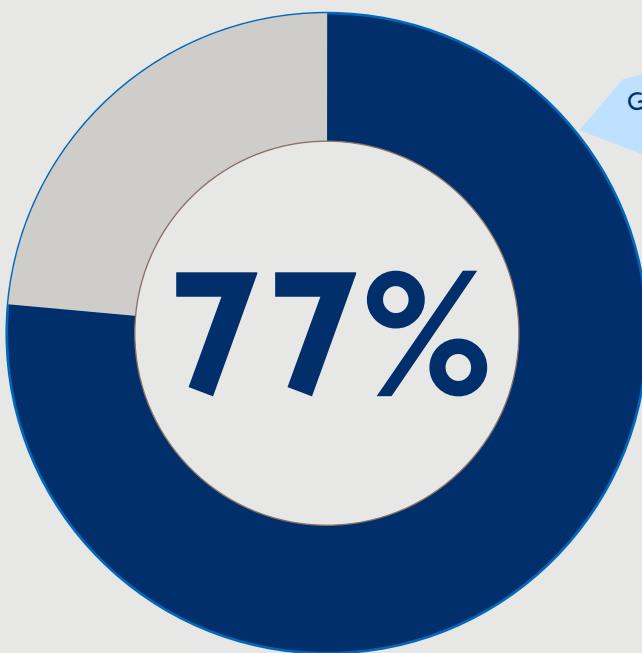
- B. Which activities have addressed climate threats directly in strategic approaches and what approaches have they used?

These findings respond to the first question of which activities incorporated climate change into planning and how.

111 MI2-supported activities in the Biodiversity Portfolio



Map of the geographical distribution of the 111 activities included in the study. The LAC and Africa portfolios were similar in size with the Asia portfolio being slightly smaller.

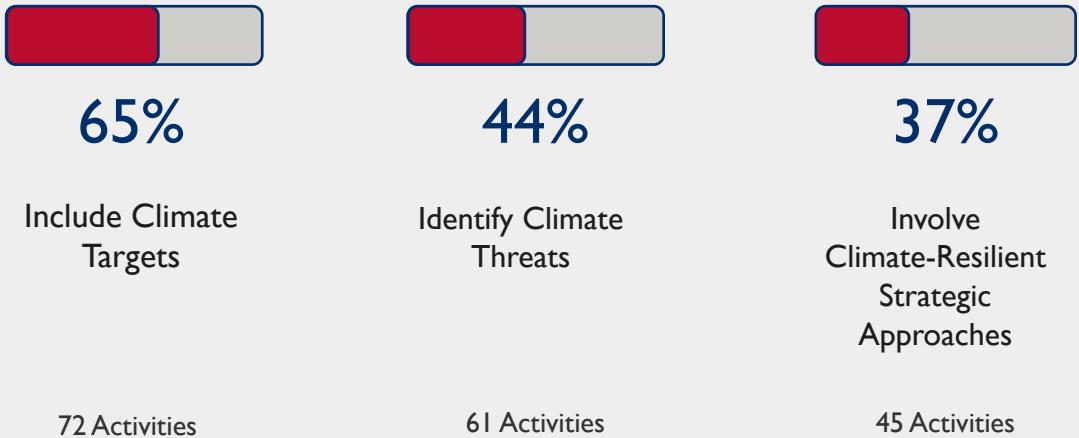


Generous application of
climate-related codes

86 out of 111 activities
in the MI & MI2 database
incorporate *at least one*
of the three types of
climate factors: *targets,*
threats, or *strategic*
approaches

Examining the different types of climate factors: targets, threats, and strategic approaches, 77% of the activities incorporated at least one of the three. It is worth noting that the team used a generous application of the codes--meaning if an analyst could infer a climate intention in the activity document, they were recorded as incorporating the climate factor. The level of incorporation varies across the three climate factors.

Activities incorporating climate considerations in design



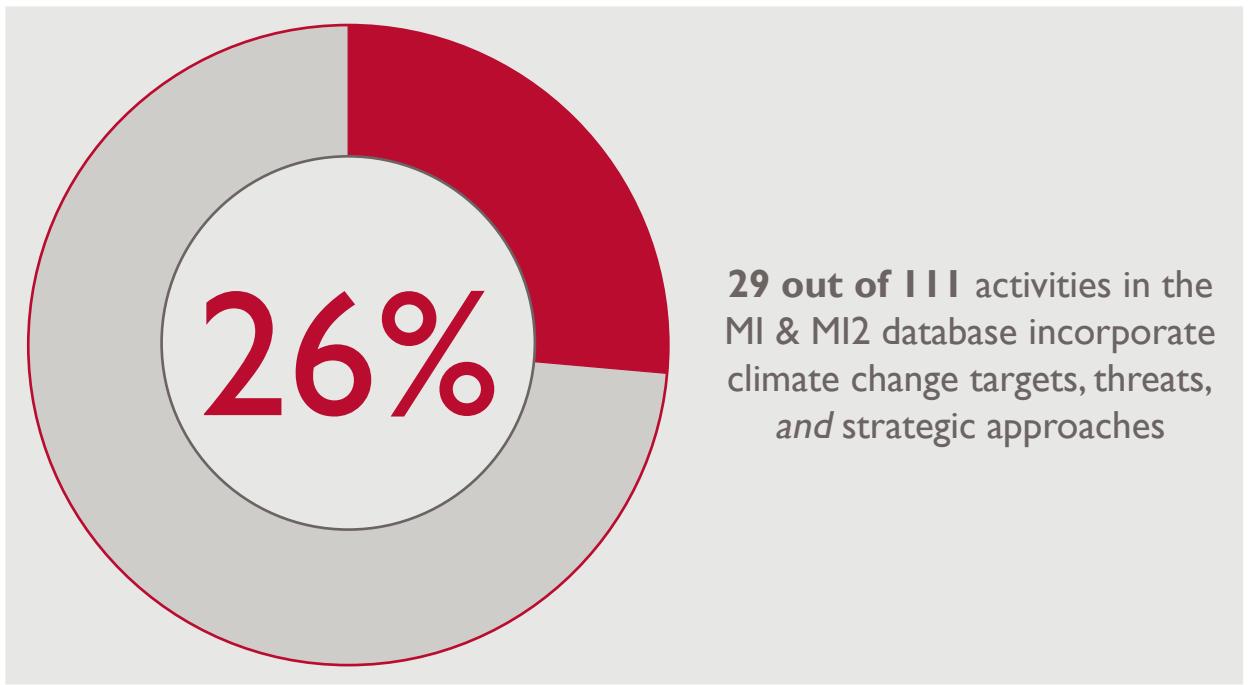
Source: [MI2 Learning Lab: Climate-Resilient Biodiversity Programming Stocktaking](#)

Including a climate-related target e.g., adaptation or mitigation, was most common with 65% of those 111 activities doing so. Climate change goals are related to the purpose of activities and one would expect to see climate goals in activities that integrate with climate funding or contribute to the Agency's climate change goals.

There is a sizeable decline to those activities that identify threats, only 61 activities, which suggests that fewer teams either understand or articulate whether their species or ecosystem are at risk from climate change. The data were not dated, but the team suspected that including climate impacts is becoming more common as the impacts of climate change are being felt more acutely in recent years.

Finally, quite a small percentage of activities identify strategic approaches to address climate change impacts or to achieve climate change goals.

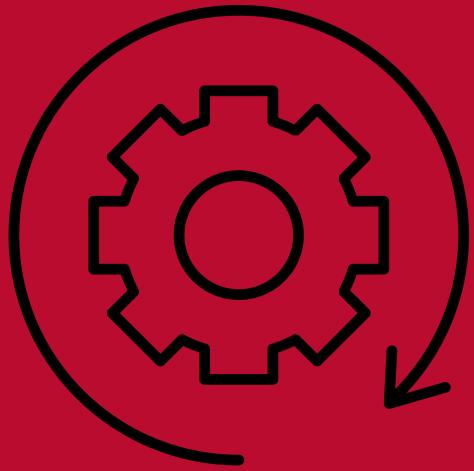
The data suggest that more activities need to incorporate climate strategies, currently only one-third do. With the pervasive and exacerbating effect of climate threats, the Agency should encourage more than the current 65% of activities to identify climate threats in their analysis and design.

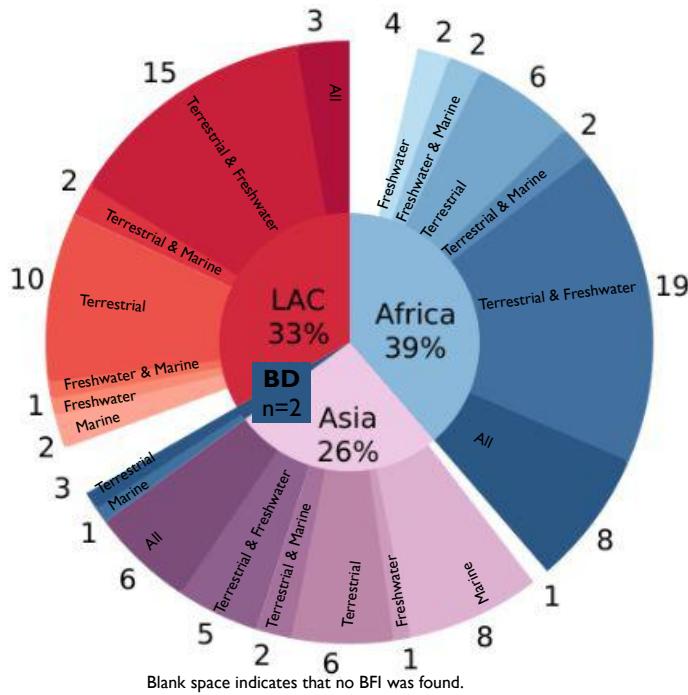


29 out of 111 activities in the MI & MI2 database incorporate climate change targets, threats, *and* strategic approaches

The last analysis identified activities that incorporated all three climate factors: This was 26%. While best practice would include all three, these 29 activities do provide strong examples to share across the Agency and portfolio.

Regional Breakdown





Biodiversity Focal Interests by Region

Terrestrial is the most common BFI represented in the portfolio in 84 activities.

Asia includes high proportion of Marine activities.

How to read this visual:

Inner Pie: Shows the entire portfolio of 111 activities regionally. The portfolio is fairly evenly distributed.

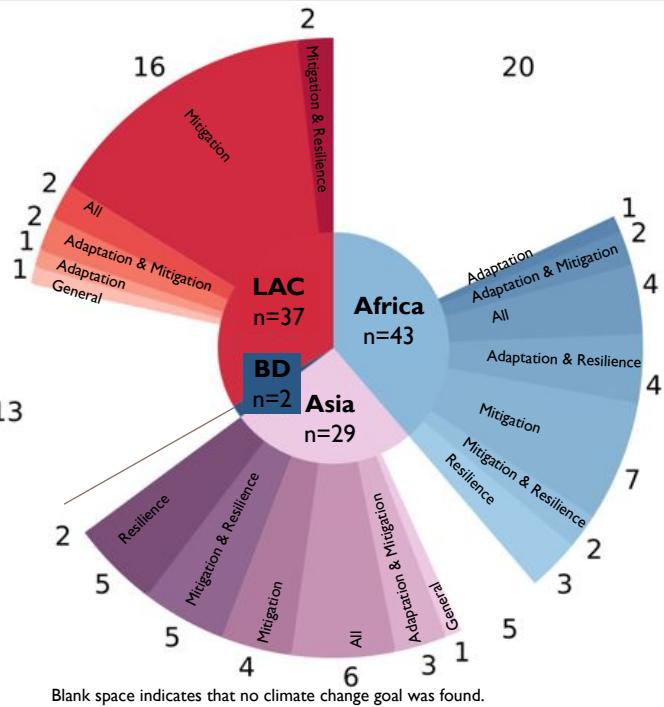
Outer Pie: Combinations of BFIs by region. Within each region there is a different spread of categories. Numbers around the outside refer to the count of activities that has that combination of BFIs. Blank spaces or white spaces represent the activities that do not include a BFI.

Key takeaways: Not surprisingly almost all activities have a BFI.

Terrestrial: 84 activities

Freshwater: 63 activities

Marine: 36 activities



Climate Change Targets by Region

Activities with Climate Change Goals are well represented across regions, with Asia having a slightly higher percentage of target inclusion.

Mitigation is most common.

25 activities include an adaptation goal

65%

How to read this graphic:

Inner Pie: Shows the entire portfolio of 111 activities regionally. The portfolio is fairly evenly dispersed, with slightly fewer Asia activities (26%) compared to LAC at 33% and Africa at 39%.

Outer Pie: Combinations of climate change targets by region. This shows the number of activities by which of the three categories of climate change targets and their combination. For example, in Asia, 5 activities included resilience targets, but 5 other activities included resilience and mitigation targets. Blank spaces or white spaces represent the activities that do not include a climate change target, so again in Asia five activities did not include any climate change target.

“General” climate change targets primarily includes maintaining or restoring ecosystem services, often times (not always) explicitly relating to climate change threats.

Key takeaways:

1. Activities that had climate goals were pretty evenly spread across the three regions, with Asia having a slightly higher percentage of activities that include a climate change goal.
2. A slight difference in activity goals across the regions. For LAC and Africa, activities that included only mitigation goals were more common than any other. However, in Asia, the goals are dispersed across the activities and

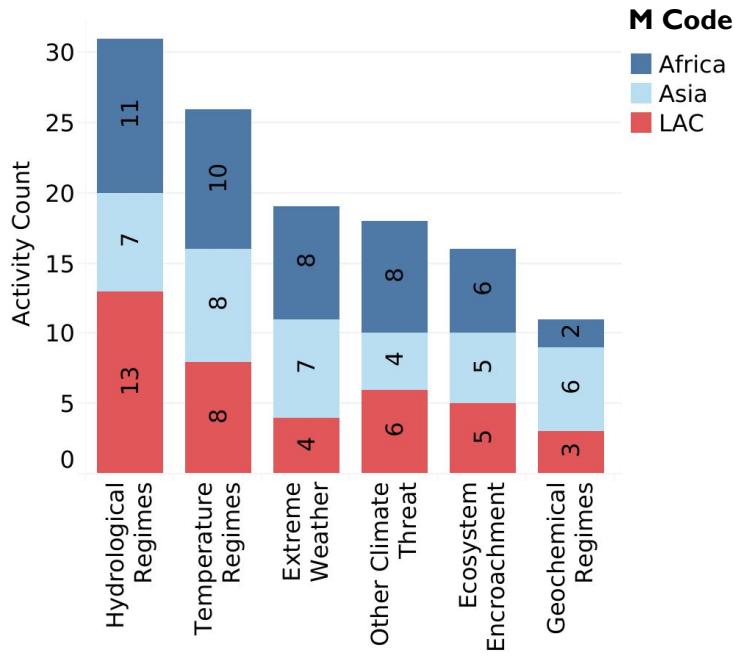
- I. resilience is quite prevalent both as a single goal and in combination with the other goals.

Notes: Other CC goals are excluded from this graph for ease of understanding. Only two activities (CINCA & HEARTH Co-creation) have an “other” CC goal.

Climate Threats by Region

There does not appear to be a significant regional difference in identified threats.

44%



How to read: This bar graph shows the regional breakdown of each climate threat. The number represents count of activities. **These threats are *not exclusive*, meaning that one activity may have identified multiple threats.** As discussed earlier, the category “other climate threats” include seasonality & phenology and “climate change” generally.

Key takeaway: Hydrological regimes, e.g., increasing droughts or floods, and temperature regimes, e.g., heat waves or cold spells, are the most commonly cited climate threats. There does not appear to be a huge regional difference.

Notes: *Temperature Regimes: heat waves, cold spells, oceanic temperature changes, melting of glaciers/sea ice*

Hydrological Regimes: droughts, changes in timing of rains, loss of snow cover, increased severity of floods

In the CMP Threats Classification, there are five categories of these kinds of threats:

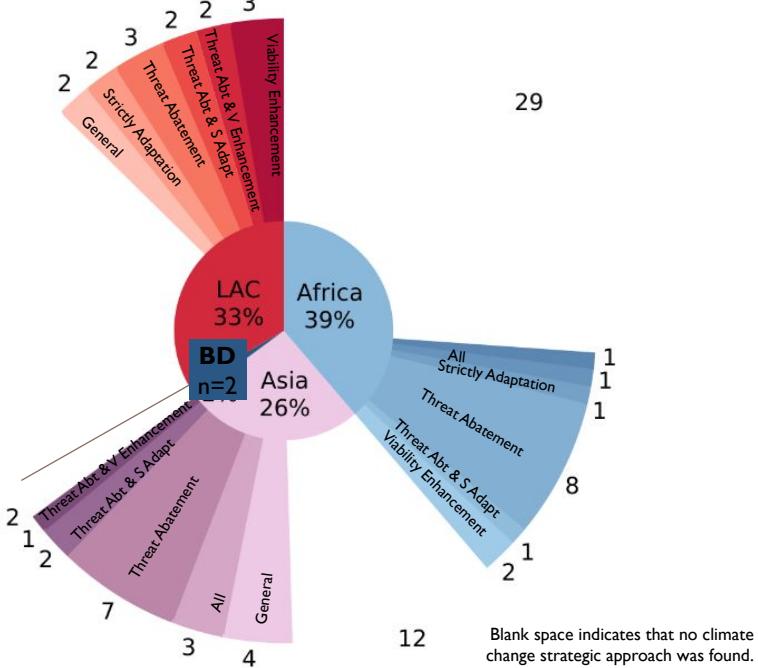
1. Ecosystem encroachment: sea level rise (inundation of shoreline ecosystems, drowning of coral reefs), desertification (sand dune encroachment)
2. Geochemical Regimes: ocean acidification, changes in atmospheric CO₂ affecting plant growth, loss of sediment leading to broad-scale subsidence
3. Temperature Regimes: heat waves, cold spells, oceanic temperature changes, melting of glaciers/sea ice

1. Hydrological Regimes: droughts, changes in timing of rains, loss of snowcover, increased severity of floods
2. Extreme Weather events: thunderstorms, tropical storms, hurricanes, cyclones, tornadoes, hailstorms, ice storms or blizzards, dust storms, erosion of beaches during storms

Climate-Resilient Strategic Approaches by Region

23

29



37%

51% of activities primarily focus on reducing the conventional threats

How to read this graphic:

Inner Pie: Shows the entire portfolio of 111 activities regionally. The portfolio is fairly evenly dispersed across regions.

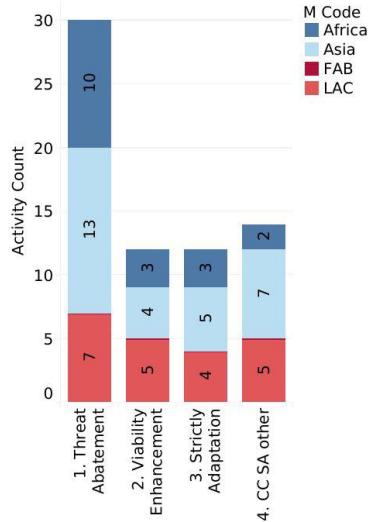
Outer Pie: Combinations of climate-resilient strategic approaches by region. Within each region there is a different spread of categories. Numbers around the outside refer to the count of activities that has that combination of climate-resilient strategic approaches. Blank spaces or white spaces represent the activities that do not include a climate-resilient strategic approach.

General strategic approaches include policy initiatives to improve climate change mitigation and adaptation, financing initiatives like REDD+, and knowledge brokering for communities around climate.

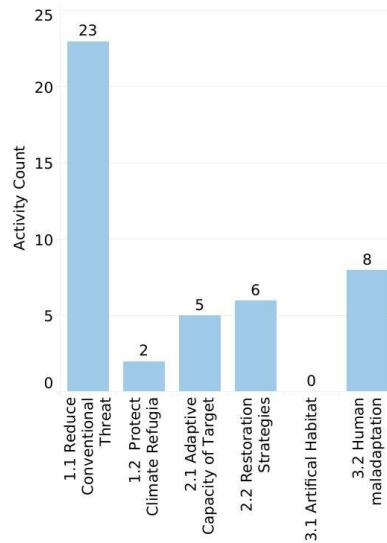
Key takeaway: 45 activities include approaches that seek to address climate. In AFR and ASIA, the most common approach is to directly try to address or abate the threats that are impacted by climate. However, in LAC, the focus is more evenly spread across the possible SAs. Asia is including slightly more climate-resilient approaches proportionally than the other regions.

Across the portfolio, over 50% of the activities are focusing on threat abatement, so the team examined more closely.

Climate-Resilient Strategic Approaches by Region



Climate-Resilient Strategic Approaches Sub-Categories



Left: a bar chart showing the breakdown between categories for the climate-resilience strategic approaches.

Right: the sub-categories of climate-resilient strategic approaches.

Key takeaways: Within the 45 activities that include strategic approaches to address climate change:

- Threat abatement is more than twice as common as the other strategic approaches (left graph);
- USAID activities primarily focus on reducing the conventional threats--23 of the 45 activities--51% (right graph). In many cases, this is *business as usual* to address the threats USAID usually addresses. This suggests that USAID teams may be taking a reactive approach to reducing the climate threat. However, there are a variety of other approaches USAID may want to explore, such as artificial habitats and protecting climate refugia which might be more proactive approaches.

Conclusion #1 - Standardization

- Inclusion of climate change is often vague or high level
 - “GHG emissions” with an arrow direct to a BFI
 - “Climate resilience” as a human wellbeing target
 - “Natural disasters” without specifying whether geological (earthquakes and volcanoes) or meteorological (hurricanes, droughts)
- Climate factors are inconsistently included in planning models as threats, stressors, drivers, ecosystem services, and even as BFIs
 - Even when climate threats are identified, rarely are their impacts noted clearly



**Climate-resilient Biodiversity
Conservation Guidance Is Needed!**

Synthesis of Findings for Question 1

1. Climate factors are often vague
 - a. This is also true in general, often things like “agriculture” are termed a threat but without detail as to what kinds of agriculture, what practices, what people were actually doing that was the threat.
2. Climate threats are inconsistently included in planning
 - a. They are sometimes seen as threats, stressors, drivers, ecosystem services, and even as goals
 - b. Even when climate threats are identified, rarely are their impacts noted clearly or how they interact with other threats

Teams need guidance to standardize how to include climate threats and their specific biophysical impacts on biodiversity focal interests and human wellbeing.

3 | Relational Findings



Photo by Lexine Hansen, Environmental Initiatives

Research Questions

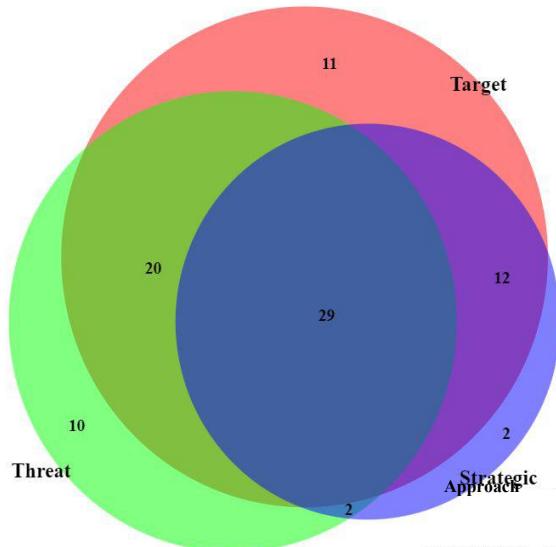
How have the teams with which MI and MI2 have worked incorporated and addressed climate impacts in activity design? Where are there gaps that guidance and technical assistance might fill?

- A. Which activities have incorporated climate change into problem analysis and situation models and how have they been represented?
- B. **Which activities have addressed climate threats directly in strategic approaches and what approaches have they used?**

The team examined the relationships between factors--their co-occurrence in an activity, to answer research question 2.

There is substantial overlap between climate factors

Activities with Identified Climate Factors



(C) 2007-2022 Tim Hulsen

This Venn Diagram is a snapshot of all 86 activities that include any of the three climate factors and shows which include 1, 2, or all 3 factors.

The following slides discuss the specific co-occurrences.

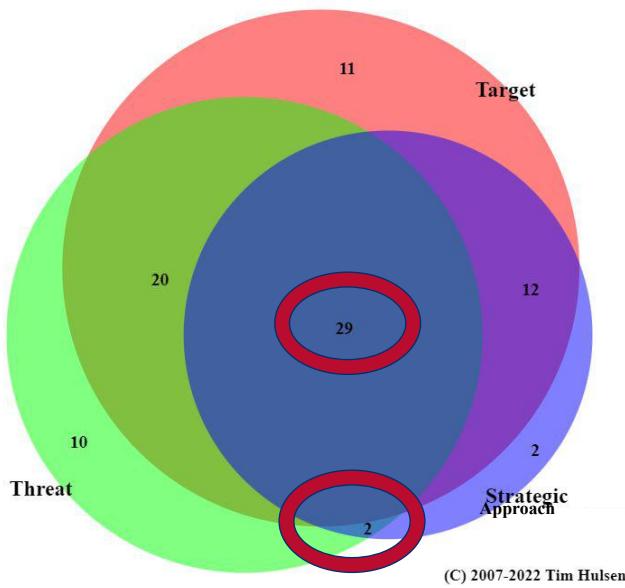
[BioVenn - a web application for the comparison and visualization of biological lists using area-proportional Venn diagrams](#)

[T. Hulsen, J. de Vlieg and W. Alkema, BMC Genomics 2008, 9 \(1\): 488](#)

<https://www.biovenn.nl/index.php>

https://enviroincentives-my.sharepoint.com/:x/p/ksafford/EbWk_rFMg-9AvHJg5XZSoPgB90EmTqoyP780_5SPe5IBQ?e=WLJv2y

Activities that Address Climate Change



Threats and Approaches

31 activities include threats and approaches

- 29 with targets
- 2 without targets

The analysis focused on whether and how activities that included a threat (which were 72 activities) identified a related strategic approaches. However, the data show that just under half of the activities, 30, identify a climate-related threat without a climate-resilient strategic approach. This is a gap that USAID should seek to fill.

Climate Approaches / Threats

Consider viability enhancement

Climate Strategic Approaches

| <u>Climate Threats</u> | Threat Abatement (21) | Viability Enhancement (9) | Strictly Adaptation (10) | CC SA other (7) |
|-----------------------------|-----------------------|---------------------------|--------------------------|-----------------|
| Ecosystem Encroachment (10) | 7 | 3 | 4 | 3 |
| Geochemical Regimes (8) | 7 | 2 | 2 | 2 |
| Temperature Regimes (11) | 9 | 3 | 5 | 4 |
| Hydrological Regimes (14) | 11 | 5 | 5 | 3 |
| Extreme Weather (9) | 6 | 3 | 4 | 5 |
| Other Climate Threat* (8) | 6 | 2 | 3 | 2 |

*includes changes in seasons (phenology), natural disasters, and vague climate stressors

How to read this Heat Map Table: This heat map shows the number of times climate threats and climate-resilient strategic approaches were identified in the same activity. The color in each box correlates to the percentage of the climate threats within each climate strategic approach. A darker navy represents a higher number of activities. As a reminder, “Other CC SA” includes policy initiatives to improve climate change mitigation and adaptation, financing initiatives like REDD+, and knowledge brokering for communities around climate.

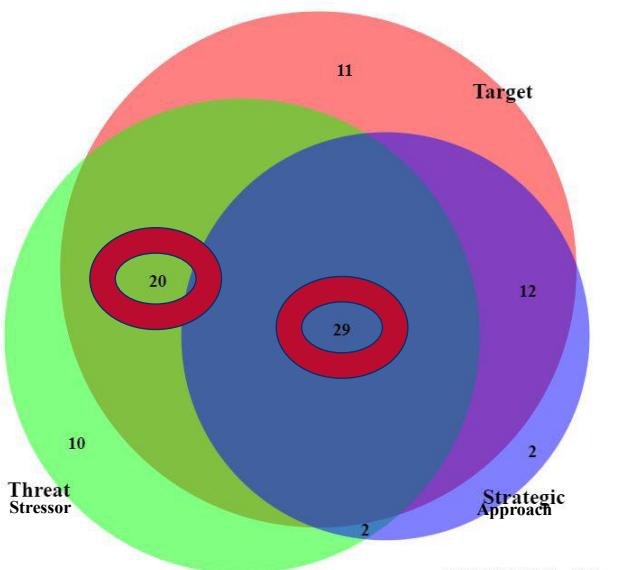
Key Takeaways:

Reducing a conventional threat is the most common approach for all the climate threats; these data does not show whether or not that is a useful strategy. Moreover, the data do not show whether the teams are intentionally selecting this approach as a *response to the climate threats* or if they are addressing what they deem the most important threat regardless of the climate threat. Note, the team may not have prioritized the climate threat as highly as the conventional threat or they may not be aware of other approaches to address the threat directly. Only by deeper discussions with teams about how they might address climate threats would USAID be able to understand these links.

Adaptation is somewhat commonly used in conjunction with most of the climate threats, but that viability enhancement is only common with hydrological regimes

(which means droughts, floods, changing precipitation patterns, etc.). This suggests that teams may need to learn more about viability enhancement and when it is appropriate to address climate threats and that there may be similar gaps in understanding around when adaptation is feasible as well.

Activities that Address Climate Change



Threats and Targets

49 activities include threats and targets

- 29 with approaches
- 20 without approaches

49 activities have threats and a target---meaning that they identify climate threats to their biodiversity focal interests and have a climate-related goal.

Climate Targets / Threats

Climate targets and threats appear linked

Climate Change Targets

| <u>Climate Threats</u> | Mitigation (35) | Adaptation (22) | Resilience (27) | Other (4) | No target (12) |
|-----------------------------|-----------------|-----------------|-----------------|------------|----------------|
| Ecosystem Encroachment (14) | 10 | 10 | 10 | 1 | 2 |
| Geochemical Regimes (10) | 8 | 6 | 8 | 1 | 1 |
| Temperature Regimes (23) | 17 | 11 | 13 | 2 | 3 |
| Hydrological Regimes (27) | 21 | 13 | 15 | 2 | 4 |
| Extreme Weather (17) | 11 | 10 | 9 | 3 | 2 |
| Other Climate Threat (14) | 11 | 7 | 9 | 1 | 4 |
| Total | 74% | 54% | 61% | 10% | 15% |

How to read this Heat Map Table: This heat map shows the number of activities that identify both climate threats and climate change targets. The number in each box represents the number of activities that use that threat and target together. The color in each box correlates to the number of activities. A darker navy represents a higher number of activities, where white represents 0 activities that uses that combination of threat and target. The total percentage in the bottom indicates how often the target was selected for the threats--for example if mitigation had been a target every time any climate threat was identified, it would be 100%. Instead, we see that mitigation was a target 74% of the time that a climate threat was identified.

Key takeaways:

1--The inclusion of climate targets seems linked to identification of climate threats, since those activities that did not include climate targets were much less likely to include climate threats than those with targets.

2--However, just because the activity had a climate target does not mean that the target was logically linked to the climate threat, nor that the climate threats are necessarily related to that target. The analysis and coding did not answer that level of detail.

Climate Targets / Approaches

Climate targets and approaches do not appear to be linked

Climate Strategic Approaches

Climate Change Targets

| | Threat Abatement (26) | Viability Enhancement (12) | Strictly Adaptation (12) | CC SA other (13) | No CC SA (31) |
|-----------------|-----------------------|----------------------------|--------------------------|------------------|---------------|
| Mitigation (33) | 23 | 10 | 8 | 11 | 7 |
| Adaptation (18) | 12 | 6 | 8 | 4 | 30 |
| Resilience (21) | 16 | 9 | 7 | 3 | 12 |
| Other (7) | 1 | 1 | 0 | 5 | 0 |
| Total | 58% | 23% | 23% | 27% | 27% |

How to read this Heat Map Table: This is a heat map showing when activities identify climate change targets and climate-resilient strategic approaches. The number in each box represents the number of activities that use that target and approach together. The color in each box correlates to the number of activities. A darker navy represents a higher number of activities, where white represents 0 activities that use that combination of target and approach.

Key takeaways:

1--Unlike with targets and threats, having a climate target does not correlate with having a strategic approach, meaning that activities are likely aiming for climate change mitigation, adaptation, or resilience from traditional biodiversity approaches, rather than from approaches aimed directly at climate resilience. This is not surprising as that is the typical model for activities that either intentionally integrate climate change and biodiversity conservation or for biodiversity activities that attribute benefits to climate change, especially mitigation. It is also not surprising that mitigation and threat abatement are often used together, as addressing threats to biodiverse ecosystems, such as deforestation, often would also reduce the greenhouse gas emissions associated with the threat.

2--Threat Abatement is mostly USAID's business as usual, further analysis is needed to determine when that approach achieves the desired targets. If the threat is

deforestation then reducing deforestation *should* achieve some mitigation. But adaptation approaches might not achieve mitigation goals even if they are somewhat frequently found together.

Conclusion #2 - Addressing Climate Threats

- Lacking direct links from climate change threats in situation models to climate change approaches in results chains
- Logical connections are not always apparent between threats and the approaches that are selected
- Possible overreliance on “business as usual” conventional threat abatement
- Approaches can address the impacts of climate threats, but most often cannot address the climate threat itself

**Climate-resilient Biodiversity
Conservation Guidance Is Needed!**

Takeaways related to addressing climate threats

1. Activities rarely articulate direct links from climate change threats in situation models to the approaches they choose to address them in their results chains
2. Moreover, even implicit logical connections are not always apparent between threats and the approaches that are selected
3. Possible overreliance on “business as usual” conventional threat abatement--meaning the activities continue to address conventional threats, but it is not clear if these will be effective given the climate threats, nor whether this approach actually addressing the impacts of climate threats.

All of this is complicated by the fact that

4. Activities may be able to address the biophysical impacts of climate threats, but most often cannot address the climate threat itself--remember individual activities will rarely have a large enough impact to significantly reduce GHG emissions at the global scale to reduce climate change itself.

Thus, teams need guidance to identify and implement strategic approaches that can address climate threats.

The Guidance Should

- ✓ Help teams incorporate climate change threats, targets and approaches in a standard way across the portfolio.
- ✓ Include best practices and specific examples.
- ✓ Clearly define climate related terms and references.
- ✓ Demonstrate where to find evidence about climate threats that is relevant to design and planning decisions.
- ✓ Encourage teams to develop strategic approaches to address climate threats and impacts.
- ✓ Include easy-to-use facilitation tools, checklists, and discussion points.
- ✓ Provide examples of well-conceived theories of change.
- ✓ Demonstrate where to find evidence about which approaches can address different climate threats.

4 | Inter-dependencies



Photo by USAID Biodiversity Team

The team noted that it was possible that differences in the regions identified in section 2 could be related to the kinds of BFIs. This section presents the brief analysis of that possible interdependency.

Does region affect selection of Biodiversity Focal Interests?

| BFI | Region | | | | | | | | Total | Percent Total |
|-------------|-------------|-----|-----------|-----|----------|-----|---------|-----|--------|---------------|
| | Africa (43) | | Asia (29) | | LAC (37) | | FAB (2) | | | |
| Terrestrial | 35/43 | 81% | 19/29 | 66% | 30/37 | 81% | 1/2 | 50% | 85/111 | 77% |
| Freshwater | 31/43 | 72% | 12/29 | 41% | 20/37 | 54% | 0 | 0% | 63/111 | 57% |
| Marine | 12/43 | 28% | 16/29 | 55% | 9/37 | 24% | 1/2 | 50% | 38/111 | 34% |

All three regions have all three BFIs.

Asia leans more heavily to marine than the other two regions, which have more terrestrial focused activities.

*Activities might have more than one BFI; thus, totals exceed the total of 111 activities.

The team examined how multiple factors might be related.

Question: Are there regional differences for the selection of BFIs?

How to read this table: For each region there are 2 columns. The first column is the count of activities with the BFI over the total number of activities in that region. The second column is the percentage of activities out of the regional portfolio with that BFI. There is a total column at the end that provides totals for the portfolio.

Key Takeaways: Africa and LAC have even representation of terrestrial in their portfolio. Africa has a higher representation of freshwater activities. LAC has the lowest marine representation with Asia having the highest.

Does region affect selection of Biodiversity Focal Interests?

| Region | Biodiversity Focal Interests | | | | | |
|--------|------------------------------|------|------------|------|--------|------|
| | Terrestrial | | Freshwater | | Marine | |
| Africa | 35 | 41% | 31 | 49% | 12 | 32% |
| Asia | 19 | 22% | 12 | 19% | 16 | 42% |
| LAC | 30 | 35% | 20 | 32% | 9 | 24% |
| FAB | 1 | 1% | 0 | 0% | 1 | 3% |
| Total | 85 | 100% | 63 | 100% | 38 | 100% |

There are small regional differences in BFIs.

Africa has the highest proportion of activities that focus on terrestrial and freshwater.

Asia has the highest proportion of activities that focus on marine.

*Note the BFIs are not exclusive. Activities might have more than one BFI thus the totals exceed 111.

Same graph as previous with switched axis.

How to read this table: For each BFI there are 2 columns. The first column is the count of activities with the BFI within that region. The second column is the percentage of activities in that region out of the total number of activities with that particular BFI.

Key takeaway: There are small regional differences in BFIs. Same takeaways as previous slide.

Does climate inclusion relate to biodiversity focal interests?

| Climate Inclusion | Biodiversity Focal Interests | | | | | |
|---------------------|------------------------------|------|------------|------|--------|------|
| | Terrestrial | | Freshwater | | Marine | |
| Climate Included | 69/85 | 81% | 56/69 | 81% | 20/23 | 87% |
| No Climate Included | 16/85 | 19% | 13/69 | 19% | 3/23 | 13% |
| Total | 85 | 100% | 69 | 100% | 23 | 100% |

Biodiversity focal interest does not appear to affect climate inclusion.

*Activities might have more than one BFI; thus, totals exceed the total of 111 activities

Question: Does inclusion of climate factors relate to selected BFIs?

How to read this graph: This shows those activities that include and do not include a climate factor filtered by BFI. the percentage is the percent of the activities with a BFI that include climate.

Key takeaway: There does not appear to be a relation between BFI and climate inclusion.

Does region affect climate inclusion?

| Climate Inclusion | Region | | | | | | | |
|---------------------|-----------|-------------|-----------|-------------|-----------|-------------|----------|-------------|
| | Africa | | Asia | | LAC | | FAB | |
| Climate Included | 32/43 | 74% | 27/39 | 93% | 27/37 | 73% | 0/2 | 0 |
| No Climate Included | 11/43 | 26% | 2/29 | 7% | 10/37 | 27% | 2/2 | 100% |
| Total | 43 | 100% | 29 | 100% | 37 | 100% | 2 | 100% |

Proportionally, Asia activities include climate more often than the other regions; but this does not seem dependent on their focus on Marine ecosystems

Question: Are there regional differences in the inclusion of climate factors?

How to read this graph: This table shows those activities that include and do not include a climate factor filtered by region. The percentage is the percent of the activities in the region that include climate.

Key takeaway: Asia has a higher percentage of activities that include at least one climate factor, but since there was no difference in climate inclusion by region (see previous slide), this does not appear to be dependent on Asia's focus on Marine ecosystems.



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