MEET ITAP

Ecosystem Based Adaptation

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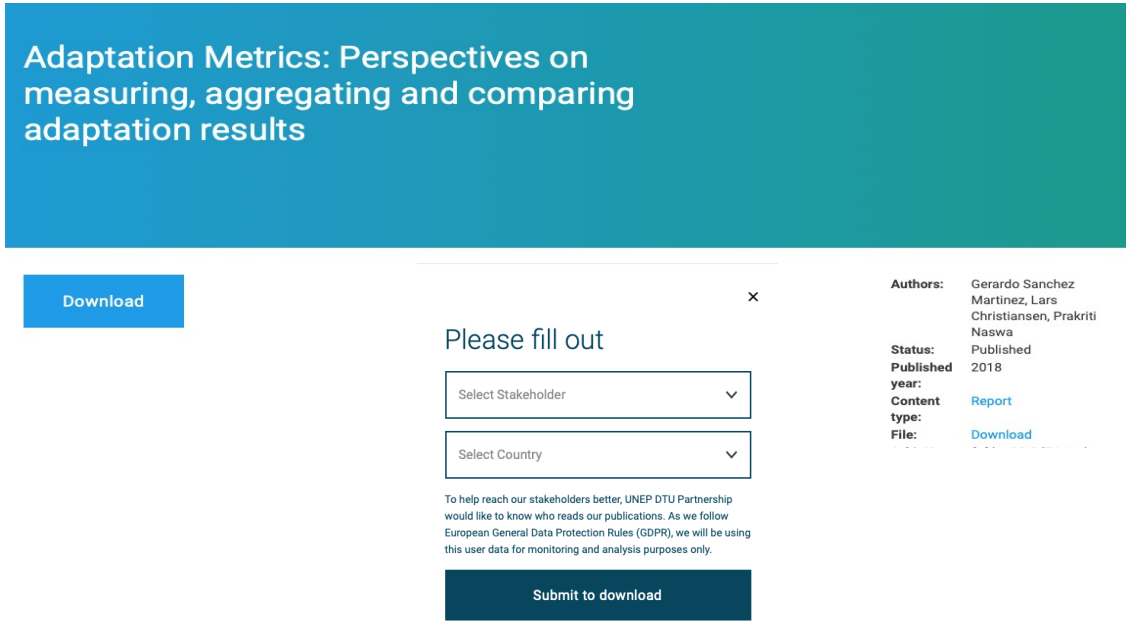
16 March 2022

Additional Resources on Monitoring EBA Interventions

Key UNEP-DTU Resource on Adaptation Metrics



https://unepdtu.org/publications/adaptation-metrics-perspectives-on-measuring-aggregating-and-comparing-adaptation-results/

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General Challenges in Measuring Adaptation vs Mitigation

Characteristic	Mitigation	Adaptation
Ultimate objective	'Stabilization of greenhouse gas concentrations in the atmosphere at a level that would prevent dangerous anthropogenic interference with the climate system' (UNFCCC, 1992, Article 2)	Sustainable development achieved amidst climatic change; avoided negative impacts of climate change; reduced climate vulnerability and risk, and increased climate resilience
Global target	Quantitative: keeping 'the global average temperature to well below 2 °C above pre-industrial levels' (Paris Agreement)	Qualitative: 'enhancing adaptive capacity, strengthening resilience and reducing vulnerability' (Paris Agreement)
Subject of measurement	Mainly physical or chemical conditions: GHG emissions, CO_2 concentrations in the atmosphere, climate parameters, including temperature[a]	Combinations of socio-economic and bio-physical conditions: changes in human or natural systems; the relationship between such changes with current and future projected climate impacts
Type of measurement	Direct: emission reductions, anthropogenic GHG emissions expressed in CO_2 equivalents, GHG concentration and composition in the atmosphere, essential climate variables including temperature.	Indirect, because direct measurement of avoided climate change impacts is plagued with conceptual and methodological challenges (Bours et al., 2014b; Dinshaw et al., 2014). Therefore, adaptation is often assessed through concepts such as risk, vulnerability and resilience, or through proxies that are expected to lead to adaptation, such as adaptive capacity.
Place dependence of definition of measurement unit?	No, there is universal applicability because the subject of measurement can be measured on objective scales like degrees Celsius, metric tons or parts per million.	Yes, vulnerability, risk and resilience are context-specific. There is no universal way to construct and measure them. As value judgements are involved, there is no single objective ranking of vulnerability (Klein, 2009).
Causality between intervention and outcome	Direct attribution of emissions reductions is possible for some interventions (e.g. installation of renewable energy), more difficult for higher-level policy interventions.	Attribution difficult to establish due to a host of other influencing factors and longer time horizons (Bours et al., 2014b; Dinshaw et al., 2014). Instead, it is common to measure contribution.
Additionality	Less conceptual, but practical challenges in demonstrating additional emissions reductions (Schneider, 2009).	Conceptual and practical challenges in separating adaptation from development: different framings of adaptation are used (Sherman et al., 2016)
Baseline	Absolute anthropogenic emissions in a particular year (e.g. 1990) or estimated future emissions (e.g. business as usual scenarios); GHG concentration and composition in a particular year.	No agreed baseline. Since climate impacts are increasing and fluctuate over time, the level of adaptation in the past may not be a meaningful reference point.

Christiansen, L., Martinez, G. and Naswa, P. (eds.)
Adaptation metrics: perspectives on measuring, aggregating and comparing adaptation results. UNEP DTU Partnership, Copenhagen

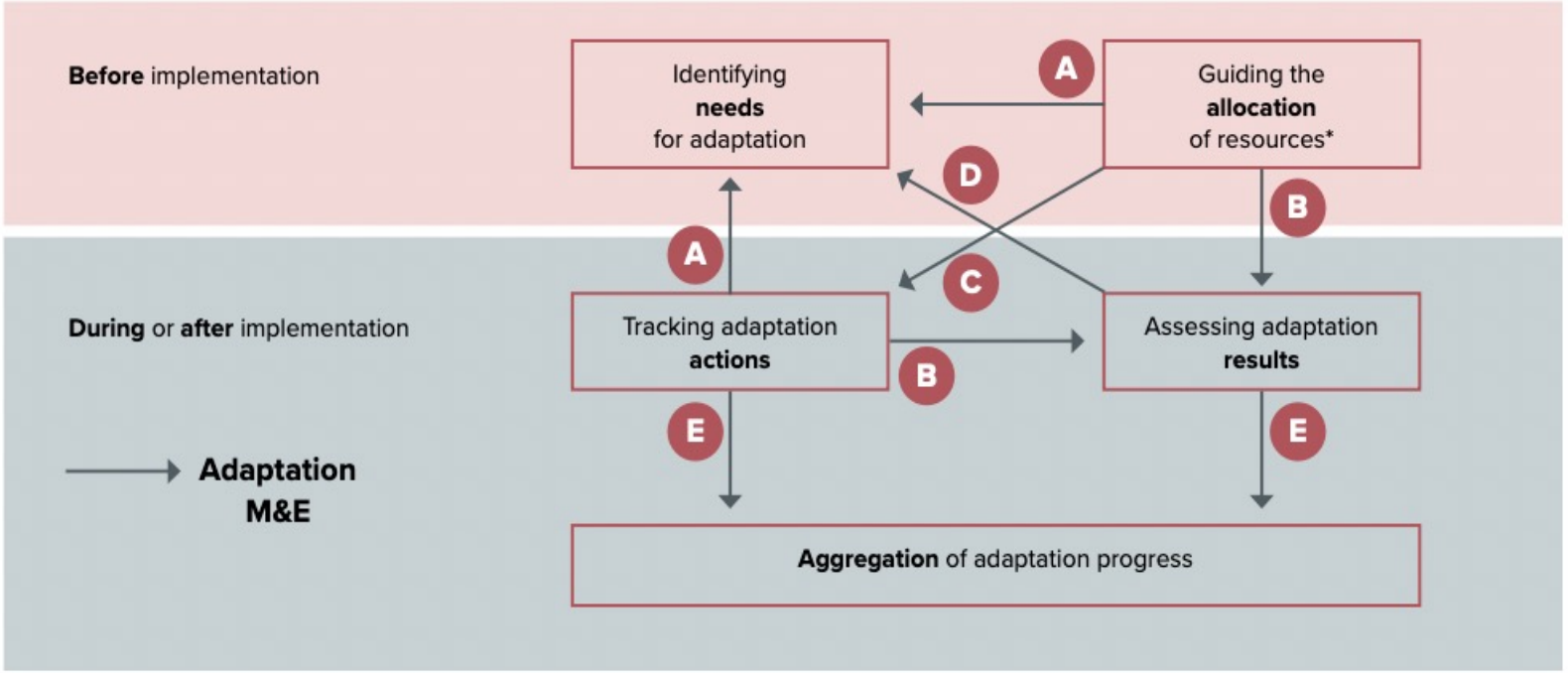
Different Ways to Use Adaptation Metrics

IPCC 5th Assessment Report – metrics for:

1. Identifying adaptation needs
2. Tracking implementation of adaptation actions (*outputs / process*)
3. Assessing the achieved results of adaptation actions (*outcomes*)

Also:

1. Guiding allocation of resources (*inputs*)



A Do allocation and actions **respond to needs?**
B Are allocation and actions **results-oriented?**
C Does **implementation** take place, i.e. does the allocation translate into actions?
D Are actions (represented by their results) **effective** in addressing the needs?
E What **collective progress** is being made through actions and their results?

Source: the authors

* Resources include human resources (know-how, time) and financial resources.

Christiansen, L., Martinez, G. and Naswa, P. (eds.) *Adaptation metrics: perspectives on measuring, aggregating and comparing adaptation results*. UNEP DTU Partnership, Copenhagen

Development of SMART Indicators for Measuring Progress

Definitions

Specific. The indicator is clear and captures, without ambiguity, the essence of the desired result.
Measurable. The indicator is reliable and provides a clear measure of results. It describes how achieving the result would be measured. Each variable mentioned in the indicator statement should be measurable with reasonable cost and effort, and the indicator should be capable of being disaggregated according to gender.
Attainable. The indicator provides a clear direction of the anticipated change, and a baseline (current) value could be provided for each and every variable in the indicator statement (apart from Yes/No indicators).
Relevant. The indicator captures the essence of the desired result and is formulated to take into account the target groups' needs and expectations.
Time-bound. A target with a specified timeframe can be set for each variable in the indicator statement (apart from Yes/No indicators).

Christiansen, L., Martinez, G. and Naswa, P. (eds.)
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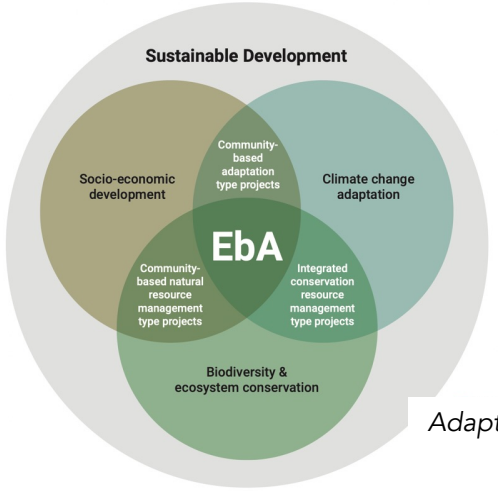
Tracking change over time…

- Indicators are measured prior to the implementation of an adaptation intervention, setting a baseline
- Targets can be set for points in time at which the indicator will be measured again, e.g. every year by a government agency, or at mid- and endpoint of a project
- Later measurements on the same indicator can be compared to the intended targets, to evaluate if adaptation has occurred

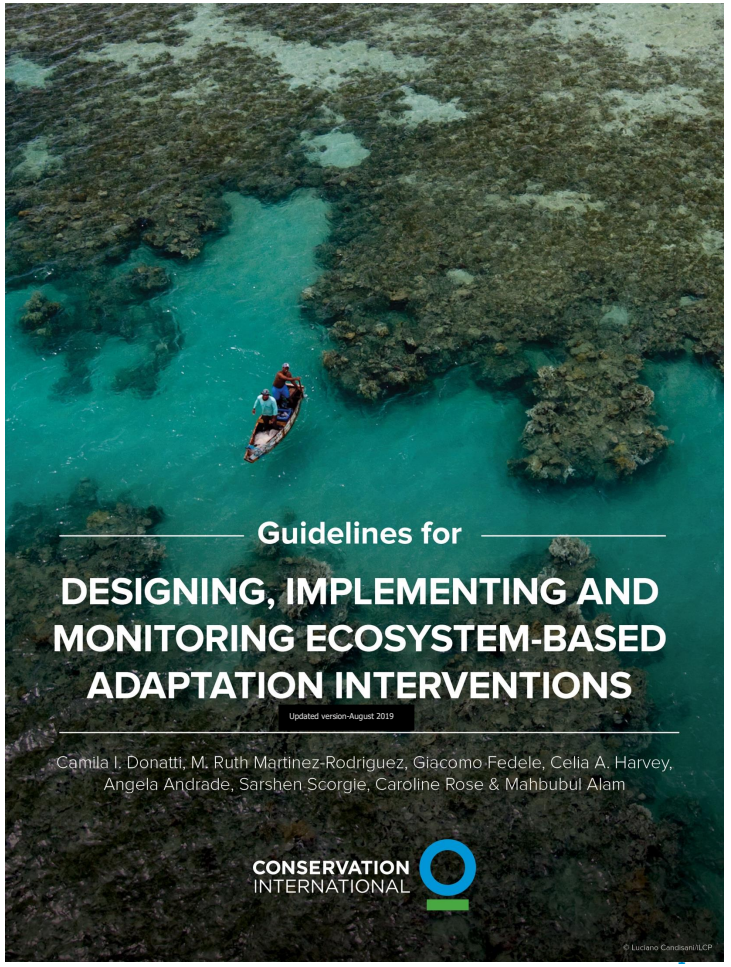
Measurement, Reporting and Verification of EBA Measures

Ecosystem-based Adaptation (EbA) is the use of biodiversity and ecosystem services as part of an overall adaptation strategy to help people to adapt to the adverse effects of climate change

CBD, 2009



Adapted from SANBI, 2014



https://www.conservation.org/docs/default-source/publication-pdfs/guidelines-for-designing-implementing-and-monitoring-eba.pdf?Status=Master&sfvrsn=bccddc79_3

Example EBA Indicators - Part 1

Adaptation outcomes from EbA interventions	Suggested 'gold standard' indicators for measuring adaptation outcomes	Extreme events and long-term changes addressed by the interventions	Suggestion on how to take the measurements	Suggestion on where and when to take the measurements/ collect data	Mid-term, process-based indicators
Reduced loss of assets of coastal communities and infrastructure due to extreme weather events Reduced loss of assets of urban and non-urban communities and infrastructure due to extreme weather events	1.**% of infrastructure damaged after extreme events.** (e.g. hospitals schools (% of facilities damaged), homes (% of houses damaged), roads (% of km of roads damaged), protected areas (% of area damaged), agricultural land (% of hectares of agriculture damaged), cultural and recreation sites (% of area damaged).	Extreme events: such hurricanes, typhons, and storms[1], flooding[2], landslides[3], heatwaves[4] and fires[5]	1.Use of satellite images to take stock of existing infrastructure, agricultural land and extent of ecosystems (see UNISDR 2017); information on damages collected during emergency responses measures.	•after an extreme event, when the intervention was not yet implemented (baseline) •after an extreme event, when the intervention was implemented	1a. Decreased erosion (costal or hillside) before and after the EbA implementation
Reduced impacts of climate change on ecosystems that maintain livestock production, marine and freshwater fisheries, and natural products for household consumption Reduced negative (and direct) impacts of climate change on livestock and crop production (mainly through physical damage) for household consumption Reduced impacts of climate change on ecological interactions (pest, diseases, pollination) that affect crop and livestock production for household consumption	2. **Prevalence of moderate or severe food insecurity in the population after extreme weather events or through time.**	Extreme events: flooding[6], droughts[7], storms[8], fires[9], heatwaves[10], sea level rise[11] Long-term changes: terrestrial and oceanic temperature[12] that can affect crop, livestock and fish production	2. Questionnaire with communities to get information on % of the population that is food insecure. (Food Insecurity Experience Scale from FAO provides a set of questions to ask communities on that matter); surveys with communities to gather information on income from crop and/or livestock production, sustainable marine and freshwater fisheries, and/or tourism; Census data held by local administration	•after an extreme event or through time (yearly basis) when the intervention was not yet implemented (baseline) •after an extreme event or through time (yearly basis), when the intervention was implemented	2a. Crop, livestock and fish production for household consumption in the growing/production season before and after the implementation of the EbA intervention.

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Example EBA Indicators - Part 2

Adaptation outcomes from EbA interventions	Suggested 'gold standard' indicators for measuring adaptation outcomes	Extreme events and long-term changes addressed by the interventions	Suggestion on how to take the measurements	Suggestion on where and when to take the measurements/ collect data	Mid-term, process-based indicators
Reduced impacts of climate change on ecosystems that maintain livestock production, marine and freshwater fisheries, and tourism for profit	3.**Average income from sustainable crop and/or livestock production, sustainable marine and freshwater fisheries, and/or eco-tourism of small-scale per household after extreme weather events, or through time**.	Extreme events: flooding[6], droughts[7], storms[8], fires[9], heatwaves[10], sea level rise[11] Long-term changes: terrestrial and oceanic temperature[12] that can affect crop, livestock and fish production	3.Surveys with communities to get information on income from crop and/or livestock production, sustainable marine and freshwater fisheries, and/or tourism of small-scale, producers /fisherman/ businessman per household	•after an extreme event or through time (yearly basis) when the intervention was not yet implemented (baseline) •after an extreme event or through time (yearly basis), when the intervention was implemented	3a. Crop, livestock and fish production for profit in the/production season before and after the implementation of the EbA intervention
Reduced negative (and direct) impacts of climate change on livestock and crop production (mainly through physical damage) for profit					
Reduced negative impacts of climate change on ecological interactions (pest, diseases) that affect crop and livestock production for profit					
Reduced impacts of climate change on water quality and quantity for human use	4.**% of population with access to enough and clean drinking water under extreme events, or through time.**	Extreme events: droughts[13], flooding[14], heatwaves[15] Long term changes: precipitation[16]	4. Use census information to get data on the number of people in a location that have access to water year-round and during extreme events	•after an extreme event or through time (yearly basis) when the intervention was not yet implemented (baseline) •after an extreme event or through time (yearly basis), when the intervention was implemented	4a. Water provision for human consumption before and after the implementation of the EbA intervention.
Reduced loss of lives in urban and non-urban communities due to extreme weather events	5.**Percentage of deaths and missing persons in various demographic groups after extreme events.**	Extreme events: hurricanes, typhons and storms[17] and the associated flooding[18], landslides[19], extreme heat[20], fires[21]	5.Use local or national statistics to get the number of people that have died from extreme weather events (see UNISDR 2017)		5a. not available
Reduced loss of lives in coastal communities due to extreme weather events					

https://www.conservation.org/docs/default-source/publication-pdfs/guidelines-for-designing-implementing-and-monitoring-eba.pdf?Status=Master&sfvrsn=bccddc79_3

Example EBA Indicators - Part 3

Reduced impacts of climate change on the incidence of vector borne diseases Reduced negative health effects (respiratory distress and heat stroke) due to temperature extremes and fires	6.**People's years lost or deaths due to vector borne diseases of various demographic groups within the population.** 7. **People's years lost or deaths due to vector borne diseases related to climate change, respiratory distress and heat stroke, during extreme events, of various demographic groups within the population.**	Extreme events: flooding events[22] and drought[23] Extreme events: extreme heat[24] and fire[25]	6 and 7. Use national or regional statistics to calculate the Disability-adjusted life year (DALY) from WHO, a measure of overall disease burden, expressed as the number of years lost due to ill-health, disability or early death; use local or national statistics to get the number of people that have died from extreme weather events (see UNISDR 2017)	•after an extreme event, when the intervention was not yet implemented (baseline) •after an extreme event, when the intervention was implemented	6a. Prevalence of vector species before and after the implementation of the EbA intervention. 7a. Levels of pollution in the air before and after the implementation of the EbA intervention. 7a. Local air temperature before and after the implementation of the EbA intervention.

https://www.conservation.org/docs/default-source/publication-pdfs/guidelines-for-designing-implementing-and-monitoring-eba.pdf?Status=Master&sfvrsn=bccddc79_3

New GCF integrated results management framework

- applies to projects submitted from B.32

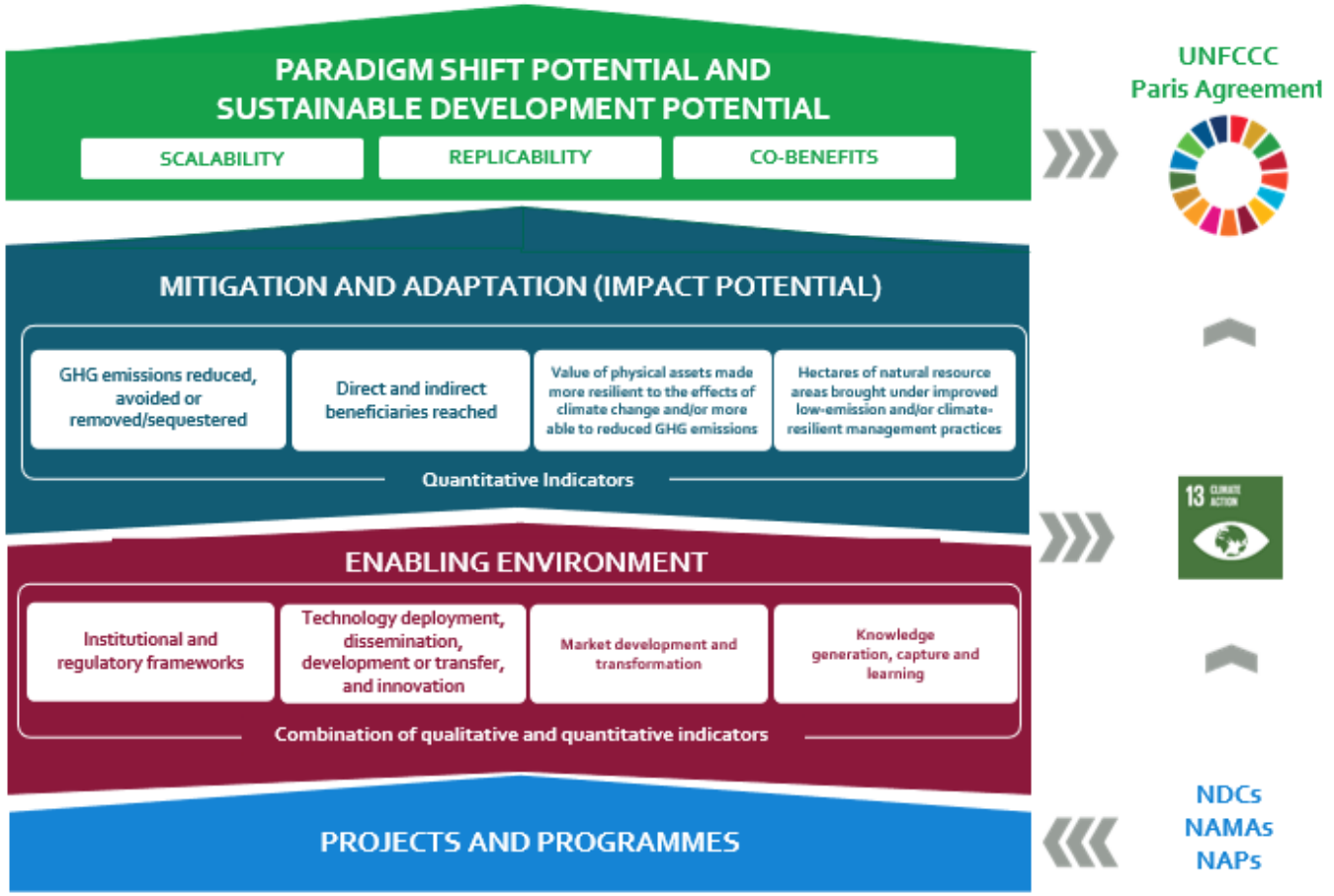
Mitigation results areas (MRA)

MRA 1	MRA 2	MRA 3	MRA 4
Energy generation and access	Low-emission transport	Buildings, cities, industries and appliances	Forestry and land use

Adaptation results areas (ARA)

ARA 1	ARA 2	ARA 3	ARA 4
Most vulnerable people and communities	Health, well-being, food and water security	Infrastructure and built environment	Ecosystems and ecosystem services

Figure 2: integrated results management framework results architecture



https://www.greenclimate.fund/document/integrated-results-management-framework

GCF Core Indicators for Adaptation

Core Indicator 2:

Direct and indirect beneficiaries reached

Core indicator 2	**Direct and indirect beneficiaries reached** (Unit: number of individuals)[19] (Disaggregation: sex; and results area) **Suggested results areas** ARA 1: Most vulnerable people and communities ARA 2: Health, well-being, food and water security ARA 3: Infrastructure and built environment ARA 4: Ecosystems and ecosystem services		**Initial RMF**
Supplementary indicator 2.1	**Beneficiaries (female/male) adopting improved and/or new climate-resilient livelihood options** (Unit: number of individuals)		PMFs/ LDCF/SCCF
Supplementary indicator 2.2	**Beneficiaries (female/male) with improved food security** (Unit: number of individuals)		Initial RMF
Supplementary indicator 2.3	**Beneficiaries (female/male) with more climate-resilient water security** (Unit: number of individuals)		UNICEF/Global Water Partnership
Supplementary indicator 2.4	**Beneficiaries (female/male) covered by new or improved early warning systems** (Unit: number of individuals)		PMFs
Supplementary indicator 2.5	**Beneficiaries (female/male) adopting innovations that strengthen climate change resilience** (Unit: number of individuals)		Recommended by the COP[20] Aligned with LDCF/SCCF
Supplementary indicator 2.6	**Beneficiaries (female/male) living in buildings that have increased resilience against climate hazards** (Unit: number of individuals)		New indicator
Supplementary indicator 2.7	**Change in expected losses of lives due to the impact of extreme climate-related disasters in the geographic area of the GCF intervention** (Unit: number of individuals)		PMF

GCF Core Indicators for Adaptation

Core Indicator 3:

Value of physical assets made more resilient to effects of climate change

Core Indicator 3	**Value of physical assets made more resilient to the effects of climate change and/or more able to reduce GHG emissions** (Unit: value of physical assets in USD) (Disaggregation: type of physical assets; and results area) _____ **Suggested results area** All eight results areas		**LDCF/SCCF/AF**
Supplementary indicator 3.1	**Change in expected losses of economic assets due to the impact of extreme climate-related disasters in the geographic area of the GCF intervention** (Unit: value in USD)		PMF

GCF Core Indicators for Adaptation

Core Indicator 4:

Hectares of natural resource areas brought under climate-resilient management practices

Core Indicator 4	**Hectares of natural resource areas brought under improved low-emission and/or climate-resilient management practices**[21] (Unit: hectares) (Disaggregation: type of natural resource areas; and results area) **Suggested results areas** MRA 4: Forestry and land use ARA 1: Most vulnerable people and communities ARA 2: Health, well-being, food and water security		**GEF/CIF/AF**
Supplementary indicator 4.1	**Hectares of terrestrial forest, terrestrial non-forest, freshwater and coastal marine areas brought under restoration and/or improved ecosystems** (Unit: hectares)		GEF
Supplementary indicator 4.2	**Number of livestock brought under sustainable management practices** (Unit: number of livestock)		New indicator
Supplementary indicator 4.3	**Tonnes of fish stock brought under sustainable management practices** (Unit: tonnes)		New indicator