Overview of Adaptation Benefits and co-benefits

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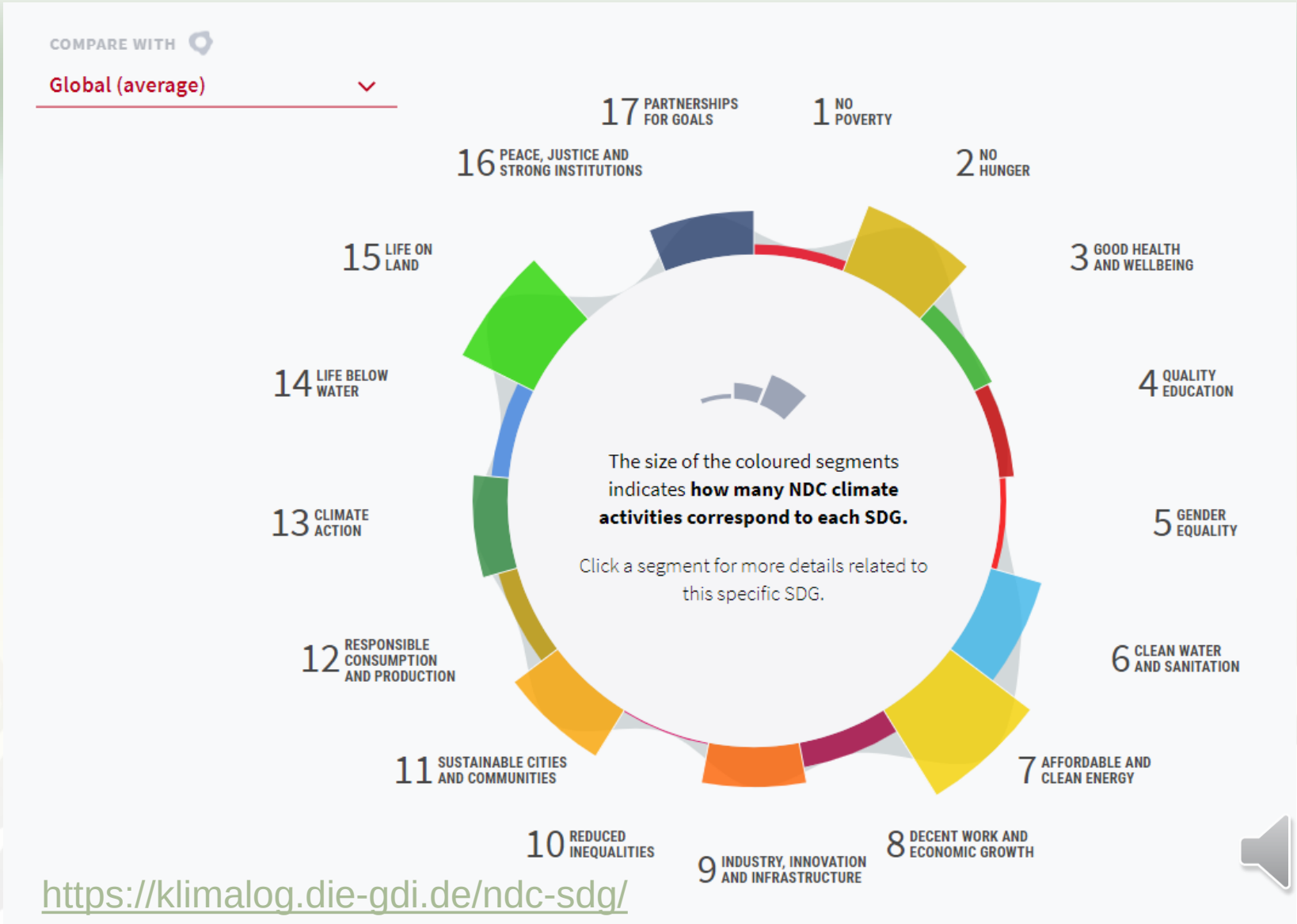
All SDGs are interwoven, and climate adaptation central



https://klimalog.die-gdi.de/ndc-sdg/

Global goal on Adaptation

- The Paris Agreement (Dec 2015) reinforced the international framework for adaptation action by **establishing** a **Global Adaptation Goal** *of enhancing adaptive capacity, strengthening resilience and reducing vulnerability to climate change, with a view to contributing to sustainable development and ensuring an adequate adaptation response in the context of the temperature goal referred to in Article 2."*
- All Parties are now **requested, but not required**, to monitor and evaluate adaptation activities at the national level (UNFCCC, 2015a) and to **periodically take stock** of the collective progress made towards achieving this global goal, through the "global stocktake" process.

Adaptation M&E

Almost half of the Parties who included adaptation within their NDCs, reference the importance of M&E indicating ongoing or planned efforts, for:

- ***Learning*****:** improving effectiveness and efficiency of the adaptation process
- ***Accountability*****:** demonstrating that actions have led to a result.

Relatively few countries, however, have designed and implemented a national system for adaptation M&E (rather than e.g program or project level)

- Approaches to date combine **qualitative and quantitative indicators,** ranging between 3 (Mexico) and over a 100 (France, Germany, Kenya, the Philippines) with **qualitative analysis.**
- Indicators can monitor trends in climate **exposure and vulnerability**, realised **impacts of climate events**, and/or assess either **adaptation processes** or **outcomes**.

Challenges of national-level M&E

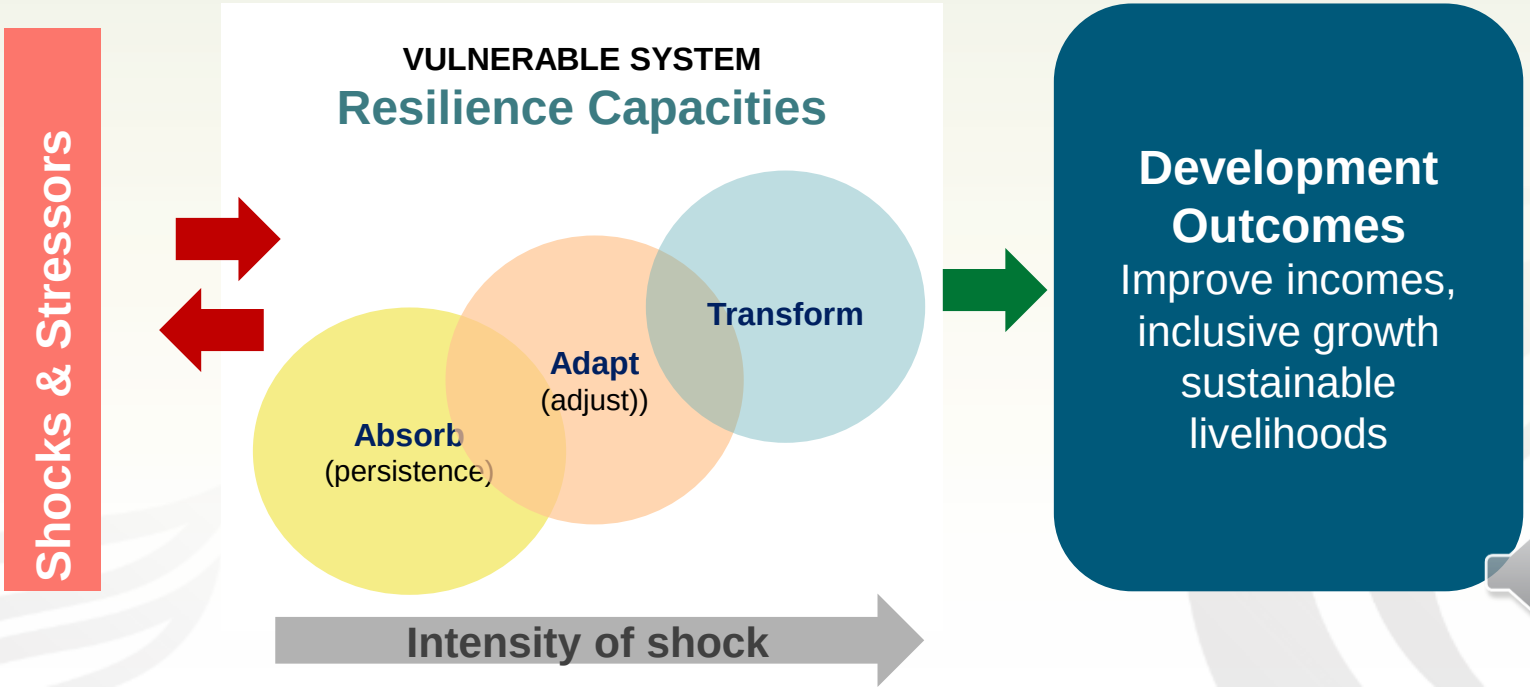
Challenges for M&E that addresses **adaptation co-benefits and resilience**:

- Nature of climate adaptation (e.g. long timescales for impacts and outcomes)
- Multi-dimensional (economic, financial, social) nature of resilience
- Multi-scale: need for aggregating information horizontally across climate-sensitive sectors, and vertically across different levels of government
- Lack of an “off the shelf” methodology and single metric to assess related outcomes
- Difficulty to identify, combine and interpret the types and relevant indicators
- Country capacity and resource constraints.
- uncertainty inherent to our understanding of the climate system

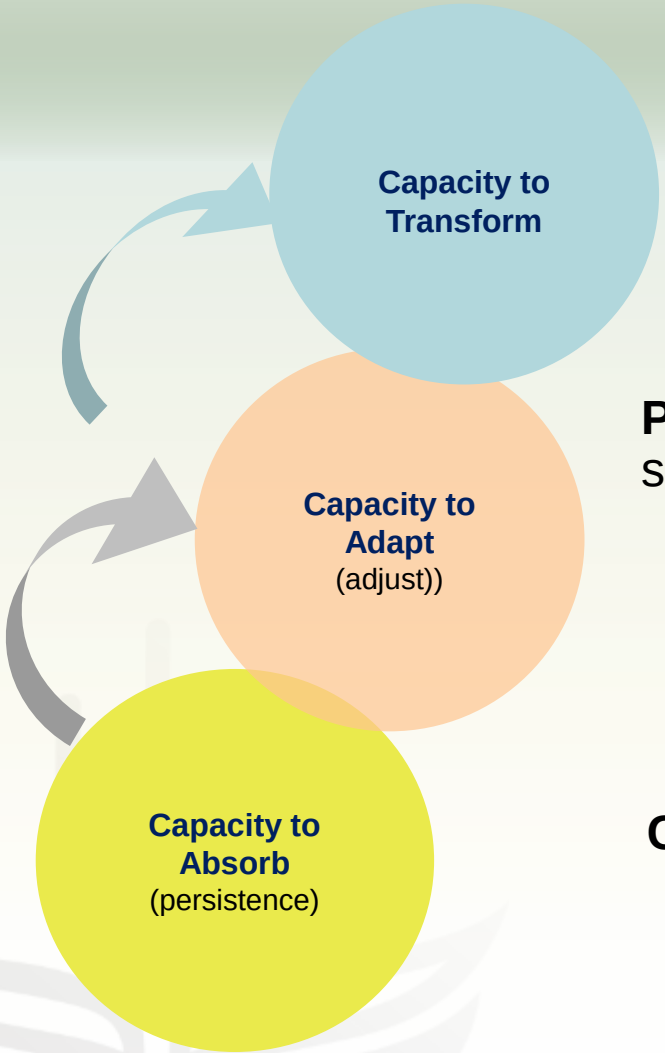
How to operationalize adaptation and resilience building in agricultural systems?

Adaptation (UNFCCC): **adjustments** in ecological, social or economic systems **in response** to actual/expected climatic stimuli/effects; **changes in processes, practices and structures** to moderate potential damages or to benefit from opportunities.

Climate resilience: dynamic capacity of a system **to absorb** the impacts of climate-related shocks and stressors (e.g floods, droughts, land degradation, heat, and water stress) to **adapt to**, **change** and to potentially **transform**, in a manner that enables the achievement of development outcomes



Conceptualizing resilience building interventions



Transform the enabling environment (longer term) by enhancing governance and conditions for resilience, through investing in

- Governance, trading relationships, formal safety nets
- Access to Infrastructure/services
- Social protection mechanisms
- Policies, regulations

Proactively respond to changes in external drivers, sustaining/improving productivity and continue operating:

- Livelihood diversification
- Adoption of improved-climate proofed technologies and practices
- Access and use of climate information
- Access to market and financial services

Cope through Risk management strategies

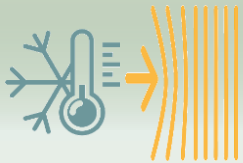
- Changes or adjustments in varieties/breeds
- Crop/livestock insurances
- Use cash saving

How to track progress towards the Adaptation Goal?

- Proliferation of initiatives and frameworks on developing systems for adaptation M&E at all levels.
- Literature focused on providing guidance to develop national level systems for M&E (GIZ and IISD, 2016), or information and insights from a set of existing systems (OECD, 2015b; EEA, 2015; GIZ and IISD 2013).

Multiples tools, indicators and reporting requirement that need to be aligned!

Logframe for M&E of adaptation/resilience building actions



Inputs → Activities (implementation of strategies, pans, policy financial allocation) → Result (Absorptive capacity) → Outcomes (Adaptive capacity- decreased vulnerability, changes in enabling environt)

Indicators types
Examples

Climate impacts	Readiness	Process	Output	Outcome
% of total livestock killed by drought in a given year	# of mechanisms identified which could potentially fund adaptation	Proportion of national and local government officers received trainings on climate change adaptation over the last 5 years	Proportion of agricultural land under irrigation	Average income of small-scale food producers (SDG)
# Ha of productive land lost to soil erosion		Provision of services CIS/ financial services to farmers(%)	Extent of climate resilient practices/technologies (Ha, % operations, % supply)	Global food loss index (SDG)

So what are co-benefits might we think about?

At the top: **Sustainable Development**

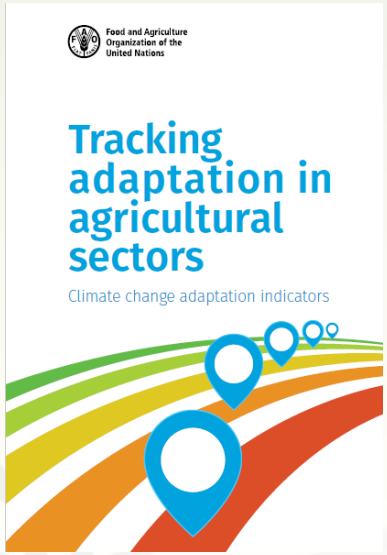
Through agricultural adaptation efforts that contribute to:

- Poverty reduction
- Improved food security, including improved nutrition
- Reduced gender gap
- Empowerment of youth
- Biodiversity conservation
- Improved ecosystem services (water resources, pollinators, nutrient cycling etc.)
- Strengthened institutions (from community to national level)
- Improved governance
- Climate mitigation
- …and the list goes on…

Whirlwind through some resources

FAO's Tracking Adaptation in Agricultural Sectors

- Need for inclusion of standard indicators of (sustainable) development performance to track progress towards reduced vulnerability and enhanced adaptive capacity (FAO 2017)



- Post Paris Agreement: Framework and methodology for Tracking Adaptation in Agricultural Sectors & list of Indicators (FAO 2017)
- Takes account of ongoing national efforts for reporting to major international mechanisms (including the UN's SDGs and Sendai Framework for Disaster Risk Reduction)

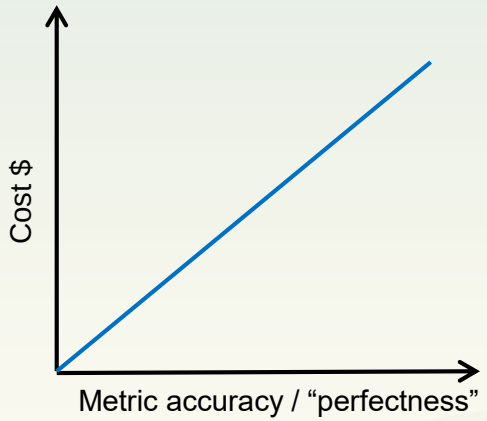
FAO's framework and methodology for Tracking Adaptation in Agricultural Sectors

MAIN AND SUBCATEGORIES OF INDICATORS TO TRACK ADAPTATION IN AGRICULTURE

Main categories		Subcategories
Natural resources and ecosystems	1	Availability of, and access to, quality water resources for agriculture
	2	Availability of, and access to, quality agricultural land and forests
	3	Status of ecosystems and their functioning
	4	Status of the diversity of genetic resources in agriculture
Agricultural production systems	1	Agricultural production and productivity
	2	Sustainable management of agricultural production systems
	3	Impact of extreme weather and climate events on agricultural production and livelihoods
	4	Projected impact of climate change on crops, livestock, fisheries, aquaculture and forestry
Socio-economics	1	Food security and nutrition (vulnerability)
	2	Access to basic services
	3	Access to credit, insurance, social protection in rural areas
	4	Agricultural value addition, incomes and livelihood diversification
Institutions and policy making	1	Institutional and technical support services
	2	Institutional capacity and stakeholder awareness
	3	Mainstreaming of climate change adaptation priorities in agricultural policies, and vice versa
	4	Financing for adaptation and risk management

(FAO 2017)

Revision, additions and edits led to a selection of 28 Indicators to monitor adaptive capacity/resilience



"Less is More" Principle Tracking:

- Climate impacts
- Resilience processes
- Outcomes

Country-level measuring systems

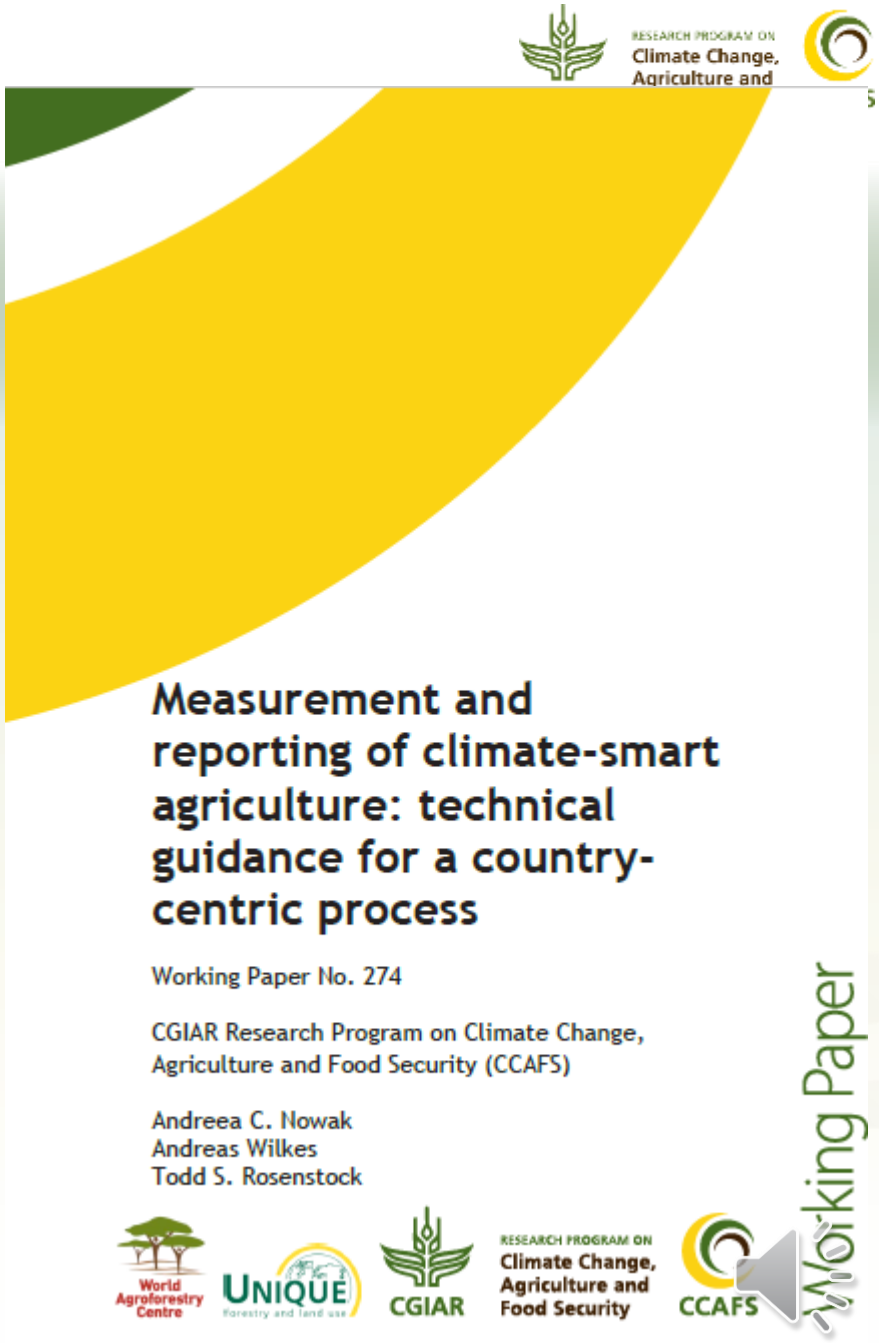
- https://cgspace.cgiar.org/bitstream/handle/10568/99474/Infonote%20CSA%20MRV%20Profile_final_Dec_EN.pdf

Info Note

Measurement, reporting and verification of climate-smart agriculture: Change of perspective, change of possibilities?

Findings from a country-driven assessment of needs, systems & opportunities

Todd Rosenstock, Andreas Wilkes, Andreea Nowak, Vincent M. Akamandisa, Austin Bondo, Anthony A. Kimaro, Irene Lucas, Kondwani Makoko, Patricia Masikati, Mponda Malozo, Sepa Morongwe, Gomezyani Ngwira, Joyce Njoloma, Isaac Nyoka, Tarisayi Pedzisa, Aikande Shoo, Emmanuel Temu, and John Fay



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Measurement and reporting of climate-smart agriculture: technical guidance for a country-centric process

Working Paper No. 274

CGIAR Research Program on Climate Change, Agriculture and Food Security (CCAFS)

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UNIQUE forestry and land use

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Working Paper

On gender and adaptation

- https://ccafs.cgiar.org/publications/national-level-indicators-gender-poverty-food-security-nutrition-and-health-climate#.XQWMgxZKiUk

Measuring Co-Benefits: Lessons from Ecosystem-Based Adaptation

TOPIC AREA/PURPOSE	INDICATOR EXAMPLE (SOURCE)
For monitoring and evaluating changes in ecosystem services	**River base flow** (UNFCCC, 2013)
	Changes in groundwater & surface water quality (UNFCCC, 2013)
Monitoring/evaluating changes in adaptive capacities and ecosystem resilience	**Measuring any improvement in water use efficiency to maintain ecosystem integrity**, i.e.: - amount of surface water extracted for irrigation in project sites; - number of monitored wells increasing groundwater efficiency in project sites) (UNFCCC, 2013)
	Measuring improvement in land-use practices and climate change resilience. i.e.: - total hectares of riparian and wetland habitat restored with native vegetation within project sites; - total number of hectares with ecosystem-based approaches (UNFCCC, 2013)
	Measuring the decrease in average rural poverty rate within project area i.e. the targeted watersheds (UNFCCC, 2013).
	Measure increase and diversification of income (UNFCCC, 2013).
	Assess community support for ecosystem-based approaches for adaptation (UNFCCC, 2013)
	Monitoring ongoing governance and legal provisions allocating environmental flows (UNFCCC, 2013)
	Level of climate preparedness (Spearman & Dave, 2012).
	Assess ecosystem services and natural assets maintained or improved under climate change and variability-induced stress (outcome based). e.g.: - ***Measure changes in hectares*** (i.e. hectares improved through soil & water conservation methods such as reduced deforestation, improved integrity of ecosystems, reduced erosion and degradation, improved water retention, etc.). - ***Technical studies*** by government or specialized agencies, satellite maps, and before-and-after photographic evidence to estimate the area of improved land. - ***Measure through changes in species population numbers*** (dynamics, structure, etc.) (AF, 2011:91-92)
	Number & type of natural resource assets created, maintained or improved to withstand conditions resulting from climate variability and change (by type of assets): e.g.: - ***Number of interventions by type of natural asset and intervention***(AF,2011:95).

IUCN

IUCN EbA Knowledge Series – Working Paper

ECOSYSTEM BASED ADAPTATION MONITORING & EVALUATION – INDICATORS

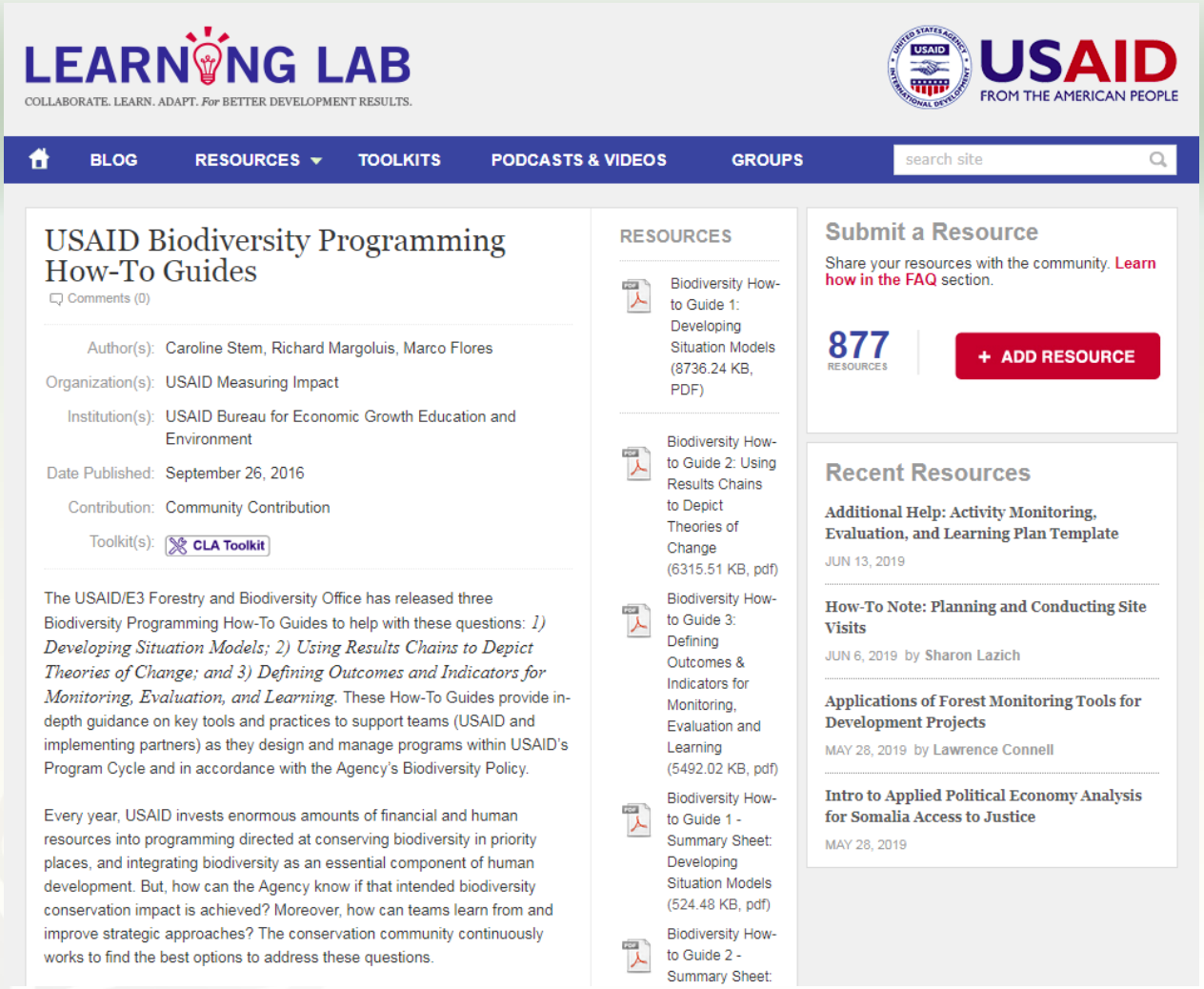
A COMPILATION AND REVIEW OF LITERATURE

Ali Raza Rizvi, Kirstin van Riel & Emily Zakowski

Measuring Co-Benefits: Lessons from Ecosystem-Based Adaptation

Structural flood protection, resettlement, and environment management	**Flood control level** (OECD, 2009)
	Satisfaction level of relocated persons restored to pre-resettlement levels in terms of income and livelihood (OECD, 2009).
	Percentage of environment management plan monitoring targets achieved (OECD, 2009).
	Warning time against potential floods in project area (OECD, 2009).
Water supply (source: Cabell & Oelofse, 2012)	**Number and type of wells installed** (output indicator)
	The number and proportion of population with sustained availability of clean water for proper domestic use (outcome indicator)
	Reduction in ill health and mortality (impact based)
Environment (source: Cabell & Oelofse, 2012)	**Number of species planted properly and surviving** (output indicator)
	New areas reforested and sustainable agricultural practices applied (outcome based)
	Better economic opportunities for local or marginalised communities (outcome based)
	Retention or increase in forest areas (impact based)
Human rights (source: Cabell & Oelofse, 2012)	**Number and category of people given training or other types of support** (output based)
	More active censure of politicians and law-enforcing agencies(outcome based)
	Greater financial allocation by government to monitor and address human rights abuse (outcome based)
	More transparent, accountable state behaviour (impact based)

Measuring biodiversity co-benefits



https://usaidlearninglab.org/library/usaid-biodiversity-programming-how-guides

METRICS FOR MONITORING MITIGATION

- Total emissions (CO_2e)
- Avoided losses or sequestration of C (or CO_2)

- Total emissions and carbon sequestration (CO_2e) per unit of production (emissions intensity)
- Emissions per unit of value added (SDG indicator 9.4.1)

(Vermeulen & Frid-Nelson 2017)

Compared to a historical baseline (2010)

IPCC Guidelines for GHG inventories

IPCC 2006 Guidelines

www.ipcc-nggip.iges.or.jp/public/2006gl

Energy

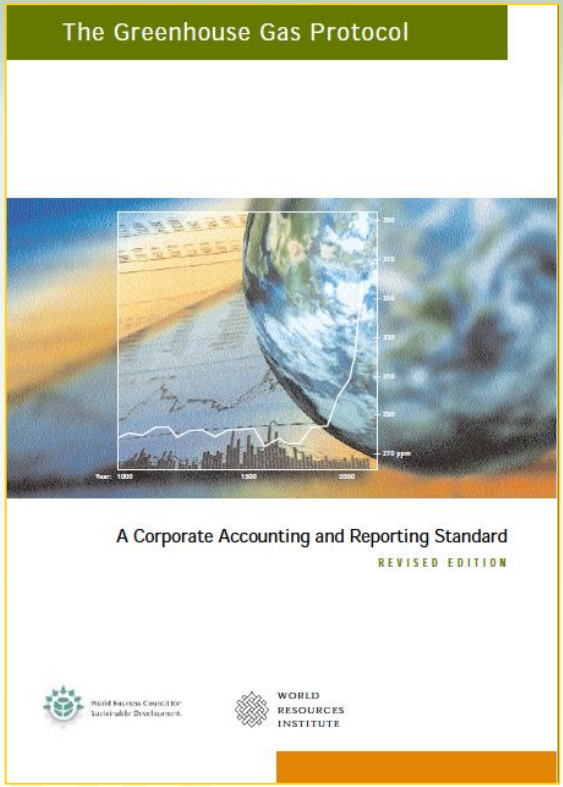
Industrial processes

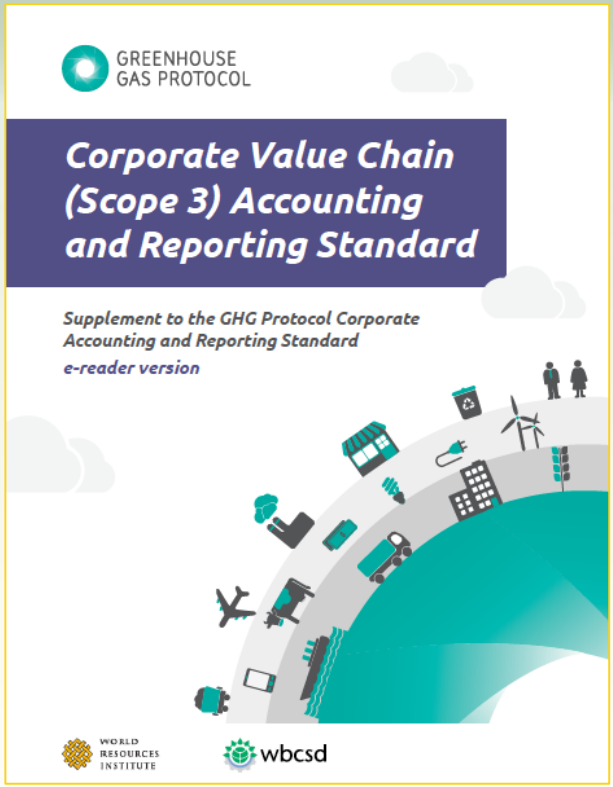
Agriculture, forestry, and other land use

Waste

Emissions = activity data x emission factor

GHG Protocol and Agricultural Guidance





Conclusions

- Adaptation itself is hard enough to measure
- Adaptation co-benefits are endless and intertwined to almost all of the SDGs
- Plenty of resources already exist – no need to re-invent the wheel
- Need for pragmatism in what is worth measuring (cost/benefit)

Useful resources

- FAO 2017. Tracking adaptation in agricultural sectors: Climate change adaptation indicators:
- Lola Vallejo, OEDC 2017. Insights from national adaptation monitoring and evaluation systems. Climate Change Expert Group Paper No 2017(3)
- UNFCCC Adaptation committee 2016. Agenda item 5 (b) Inventory of ongoing work on monitoring and evaluation of adaptation
- INSIDER: Designing the Global Stocktake under the Paris Agreement: The Catalyst for Climate Action (WRI)
- InfoNote 2016. Measures for climate change adaptation in agriculture: Opportunities for climate action in agricultural systems
- Working paper: 10 best bet innovations for adaptation in agriculture: A supplement to the UNFCCC NAP Technical Guidelines
- Working paper: Agricultural practices and technologies to enhance food security, resilience and productivity in a sustainable manner: Messages to the SBSTA 44 agriculture workshops