Content

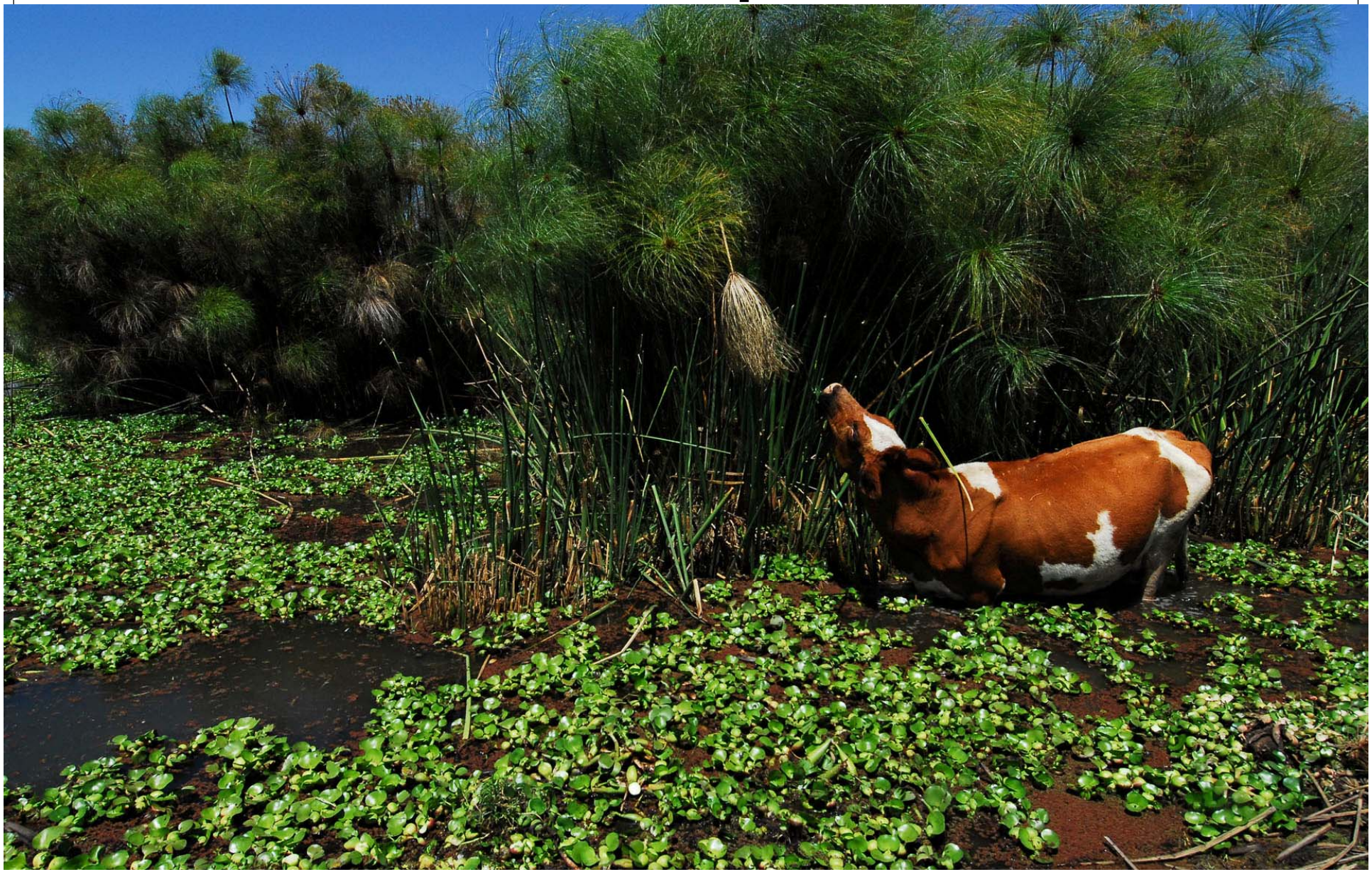
- Why ecosystems and EbA ?
- EbA definition and concept evolution and
- Making the case for EbA
  - Reviewing past and ongoing EbA to inform EbA implementation
  - Learning from current EbA implementation
- Conclusions

Why ecosystems matter?

- **1 billion** people in over 100 developing countries are locked in the cycle of poverty and environmental degradation made worse by the effects of climate change;
- **60%** (15 out of 24) of the ecosystem services are being degraded or used unsustainably…." (Millennium Ecosystem Assessment, 2005.)
- **Impacts of CC** being felt in different ecosystems
- **Healthy ecosystems** and their services provide opportunities for sustainable economic prosperity while at the same time providing defense against the negative effects of climate change.

Rivers running dry…drought

Invasive species

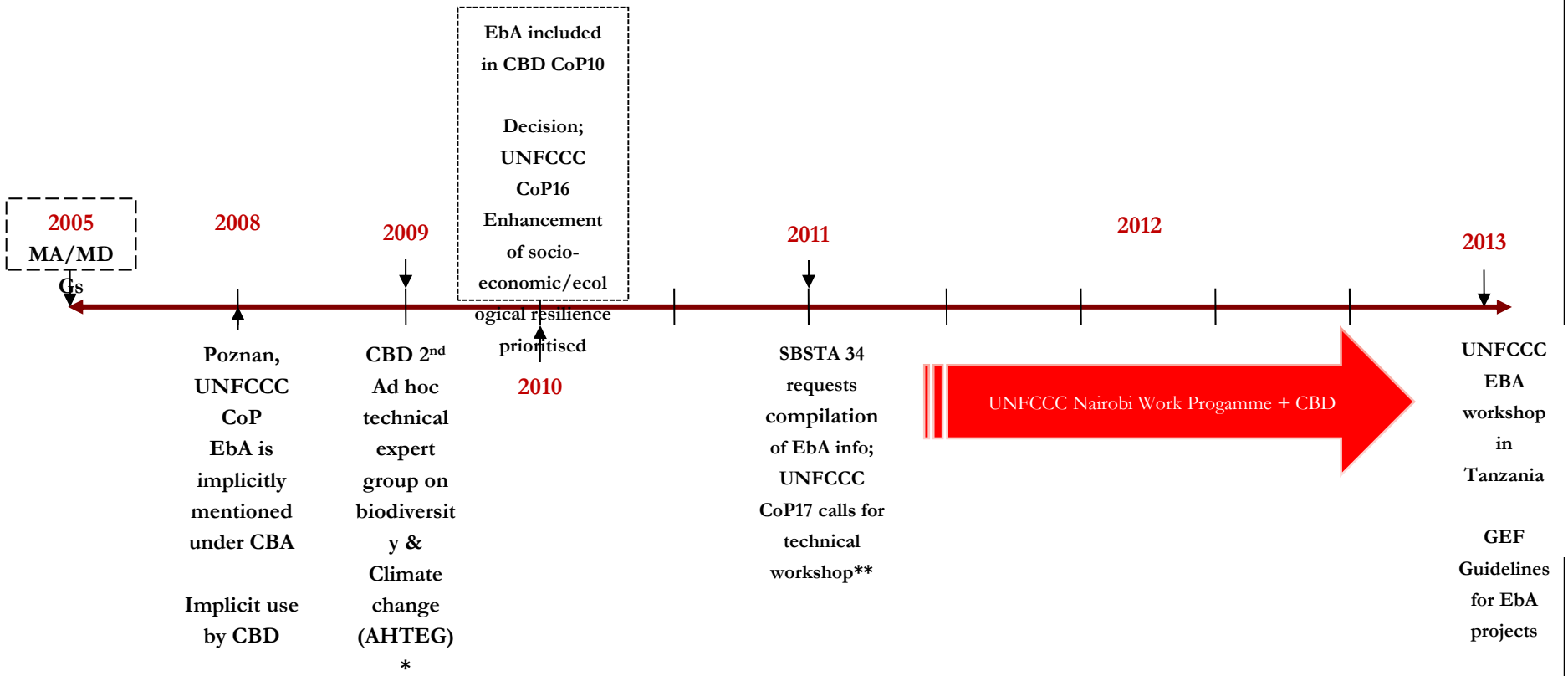


Degraded drylands

EbA definition and term

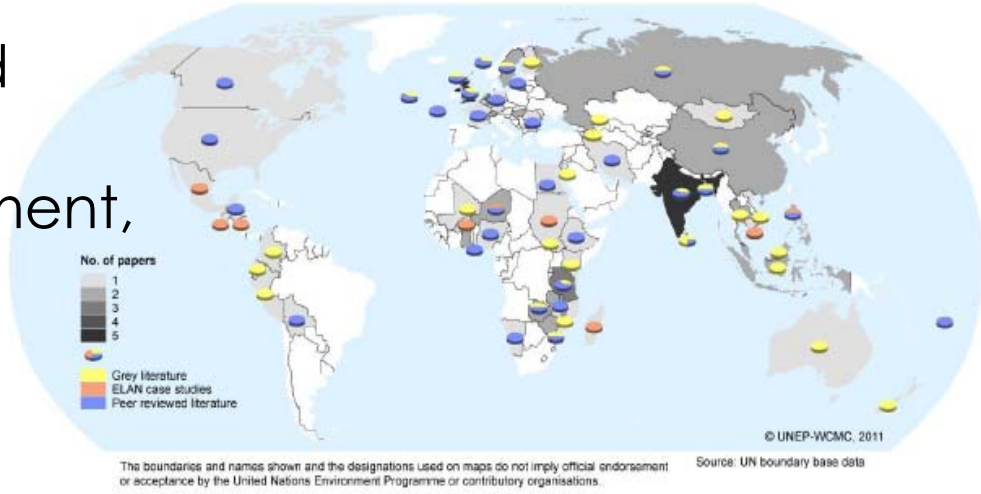
- **EbA** usually is defined as:
  - ***Ecosystems Management*** + ***Climate Risk*** or
  - ***Resilient ecosystem management***
- **CBD**: "the use of biodiversity and ecosystem services to help people adapt to the adverse effects of climate change"
- **UNEP** : "harnesses the natural climate resilience of ecosystems as part of an overall adaptation strategy to help people and communities minimize the negative impacts and benefit from the positive effects of climate variability and change"
- **IUCN** definition: 'the use of the biodiversity as part of the overall adaptation strategy to help people adapt to adverse impacts of climate change"
- **EbA term**: Ecosystem-based Adaptation/ Ecosystem based Approaches for Adaptation /Ecosystem Approaches to Adaptation / Ecosystem Based Approaches

Evolution of EbA concept



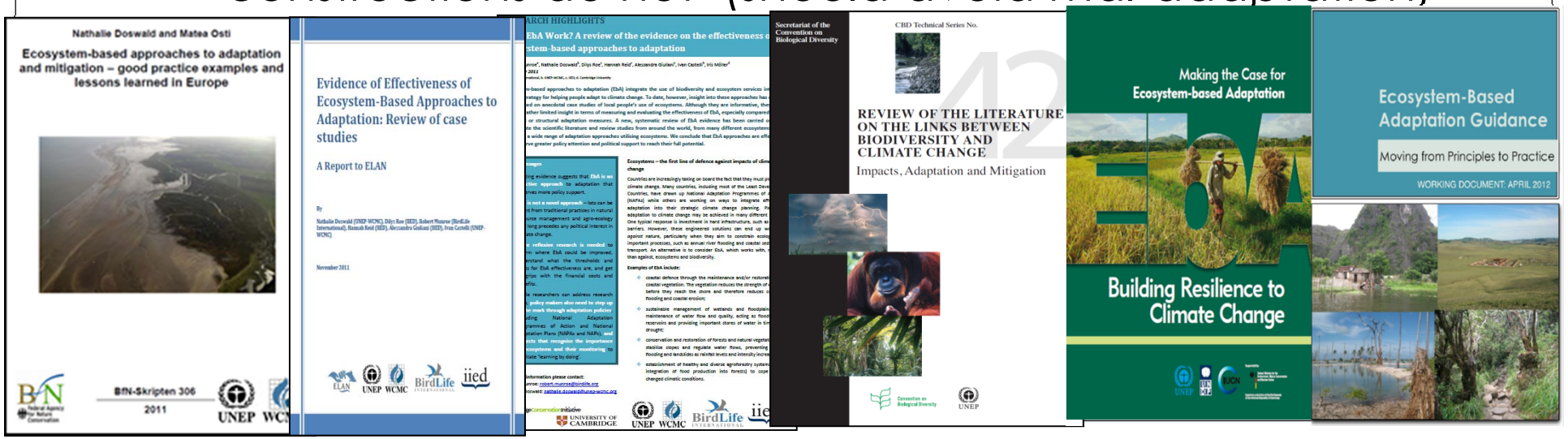
Progress on the ground

- A large range of adaptation activities using EBA approaches being implemented in various ecosystems.
  - Wealth of knowledge for EBA exists though dedicated 'EBA' projects are few.
    - Communities have been using ecosystems (Mangroves and wetlands) for disaster mitigation over decades.
- Using past/on-going work to inform implementation of EBA
  - Tools, methods are being developed
  - Evidence is emerging
- EbA has been implemented by a wide range of actors from conservation, environment, development and disaster management communities



Learning from EbA implementation

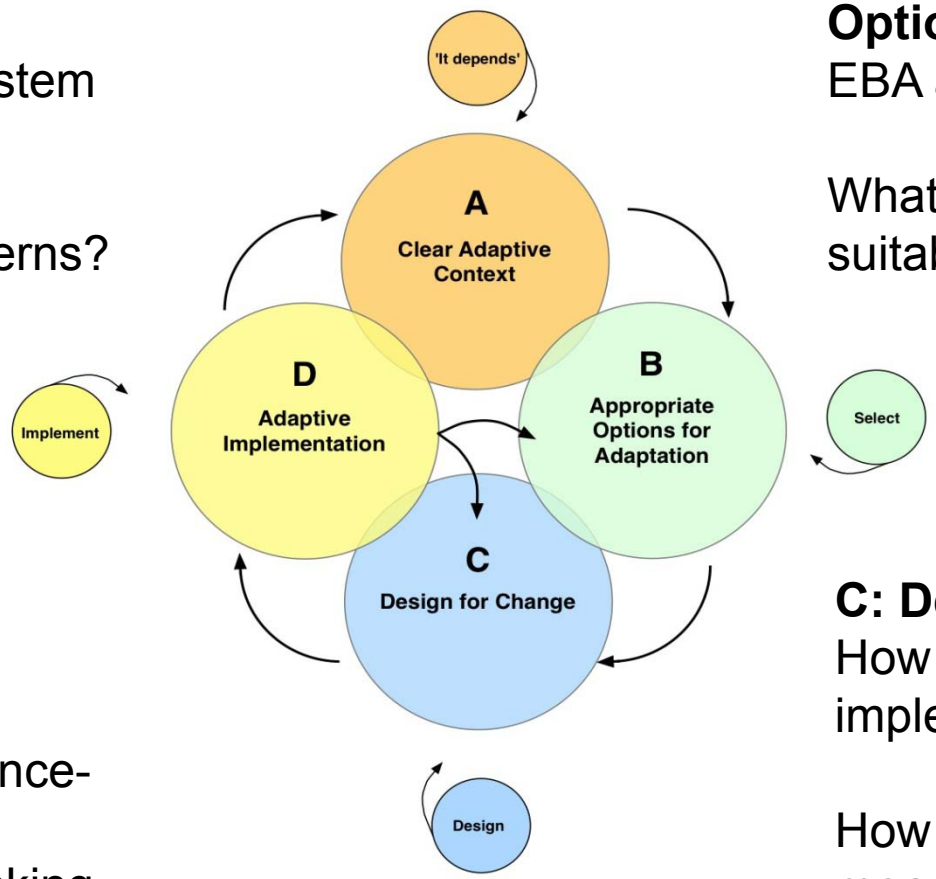
- **EbA has lower cost** and more **effective** than alternatives in some cases,
  - especially in the long term, and local communities can do this themselves;
- EbA has **multiple benefits** – livelihoods, aesthetics/spiritual, biodiversity; climate change mitigation benefits.
- Ecosystems can **adapt naturally** whereas engineering constructions do not (should avoid mal-adaptation)



UNEP's EbA Flagship: Decision Support Framework - An Planning Tool

A: Setting the Adaptive Context

What does your system look like?
How is it used?
Management concerns?
Adaptation goals?



B: Selecting Appropriate Options for Adaptation

EBA approaches available?

What approaches are suitable for your context?

D: Adaptive implementation

Monitor
Reflect and adapt
Contribute to evidence-base
Sound decision-making

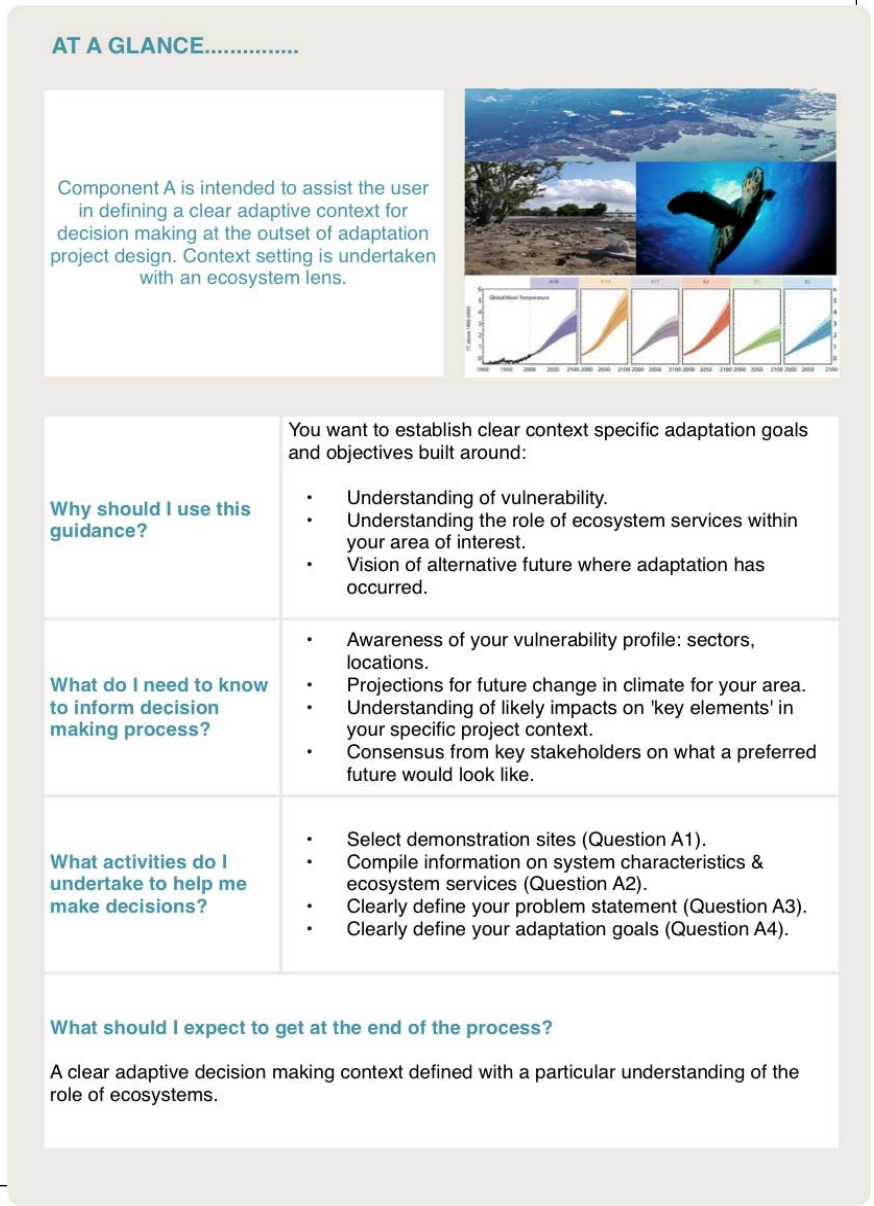
C: Design for Change

How will the measure be implemented?

How will you know if the measures are effective?

UNEP's EbA Flagship: DSF - Next steps

- Pilot testing in variety of contexts – synthesis of practical learning
  - UNEP-EC ENRTP 'Building Capacity for Coastal Ecosystem-based Adaptation in SIDS';
  - GEF 'Enhancing Capacity, Knowledge and Technology Support to Build Climate Resilience of Vulnerable Developing Countries' and
  - many other UNEP LDCF/ SCCF projects.
- Adapted to support NAPs
- Developing CbA-EbA module
- Develop practical M&E module
- Develop practical cost-benefit analysis
- Adapted for specific ecosystems (coastal, mountain, etc.)
- Training modules



AT A GLANCE.....

Component A is intended to assist the user in defining a clear adaptive context for decision making at the outset of adaptation project design. Context setting is undertaken with an ecosystem lens.

Why should I use this guidance?	You want to establish clear context specific adaptation goals and objectives built around: • Understanding of vulnerability. • Understanding the role of ecosystem services within your area of interest. • Vision of alternative future where adaptation has occurred.
What do I need to know to inform decision making process?	• Awareness of your vulnerability profile: sectors, locations. • Projections for future change in climate for your area. • Understanding of likely impacts on 'key elements' in your specific project context. • Consensus from key stakeholders on what a preferred future would look like.
What activities do I undertake to help me make decisions?	• Select demonstration sites (Question A1). • Compile information on system characteristics & ecosystem services (Question A2). • Clearly define your problem statement (Question A3). • Clearly define your adaptation goals (Question A4).

What should I expect to get at the end of the process?

A clear adaptive decision making context defined with a particular understanding of the role of ecosystems.

UNEP's EbA Flagship: VIA tools

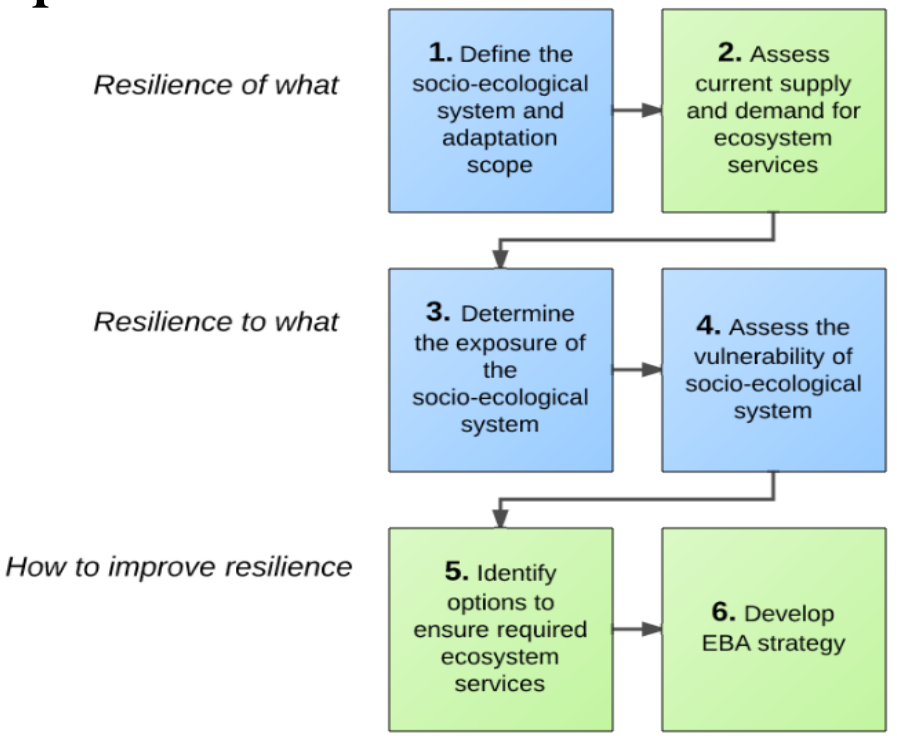
- 'EbA – Adapting to climate change in mountain ecosystems' UNEP, UNDP, IUCN, supported by BMU

- **Guidance for Vulnerability Impact Assessment – *in development***

- **Purpose**

Guide process for integration of ecosystem resilience in climate change vulnerability assessments

Support pilot EbA activities in Nepal, Peru, Uganda



Examples of UNEP-LDCF adaptation projects

	Country	EBA interventions	Non - EBA
1.	**Djibouti - LDCF**	- Mangrove restoration with salt tolerant species in the north of Djibouti to reduce coastal erosion -Degraded watersheds and wadi shores rehabilitated in 2 project areas to reduce sea water intrusion and intense rains	- Borehole restoration / relocation - Alternative livelihoods to
2.	**Nepal - LDCF**	- Multi-beneficial, biodiversity-rich forests established in landscapes that were initially highly degraded - ecosystem restoration that increase infiltration of rainwater into topsoil undertaken in degraded forest and rangeland watersheds - Alternative livelihoods based on the benefits of fully-functioning ecosystems developed (Tourism - protection of highly endangered species: tigers and snow leopards in forest ecosystems and high hill rangelands respectively.	
3.	**Comoros - LDCF**	-Reforestation of 95 ha in Grande Comoros and 90 ha Anjouan . -Undertake research into reforestation in the Comoros using the data generated by small-scale weather stations. -Raise awareness of community members of the benefits associated with reforestation activities (and conversely, the costs associated with deforestation).	- Water network rehabilitation to resist to climate change risks -Borehole rehabilitation
4.	**Cambodia - LDCF**	-Tree planting (14 ha) in Krasaora beach to stabilize sand and reduce erosion. -Replanting 60 ha of mangroves -Plant "Teap Tus " trees (15 ha) to stabilise dyke soils by preventing the dykes situated near mangrove forests from sinking into the soft mud and thus protect agricultural fields from increased flooding as result of climate change.	- 0.5 m dyke rehabilitation (Ouk Gha Heng and Toul Tokoeng) to protect agricultural fields from increased SLR, flooding and storm surges as a result of climate change

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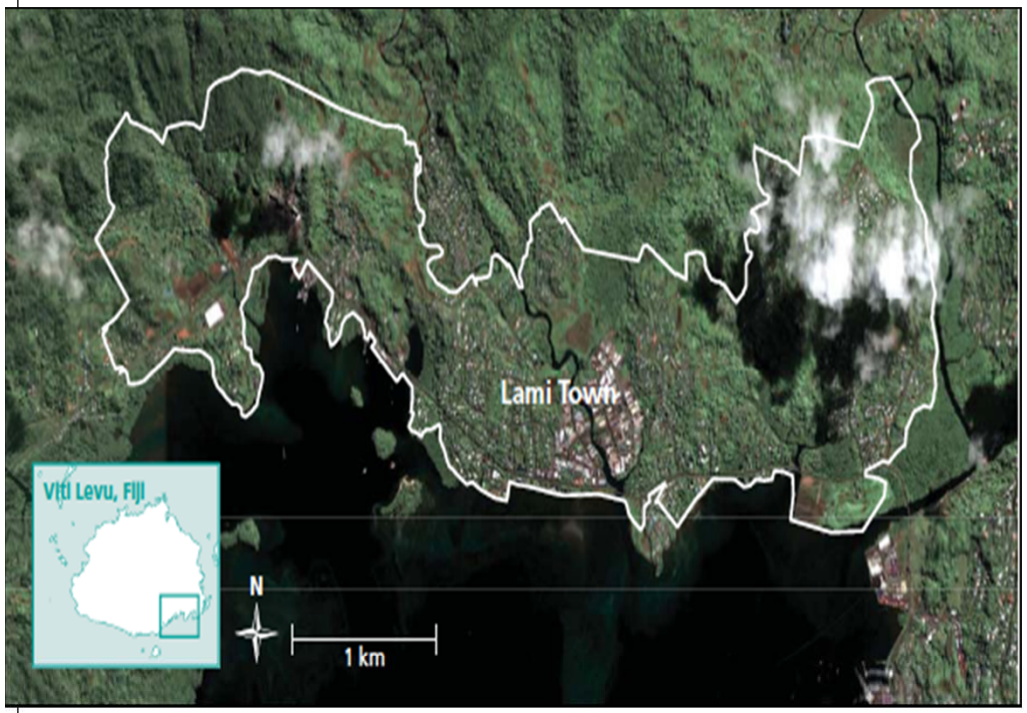
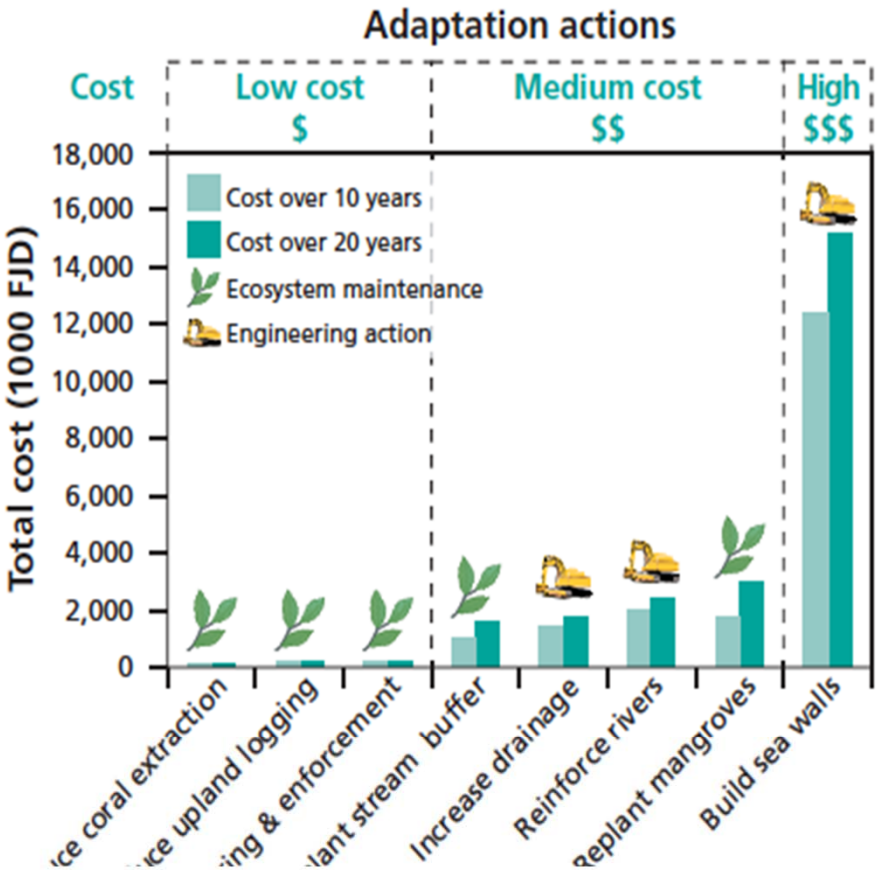
Evidence has started emerging: Lami town project –cost of adaptation actions





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LAMI TOWN COUNCIL

CONSERVATION INTERNATIONAL

UN HABITAT FOR A BETTER URBAN FUTURE

Lami town project – cost of damage avoided per (FJD) spent

Cost of damage avoided per dollar spent (FJD)

Adaptation action	Assumed % damage avoided 50%	25%	10%
Replant mangroves	$77	$38	$15
Replant stream buffer	$146	$73	$29
Monitoring & enforcement	$1,498	$749	$300
Reduce upland logging	$2,035	$1,018	$407
Reduce coral extraction	$2,988	$1,494	$598
Build sea walls	$15	$8	$3
Reinforce rivers	$96	$48	$19
Increase drainage	$140	$70	$28

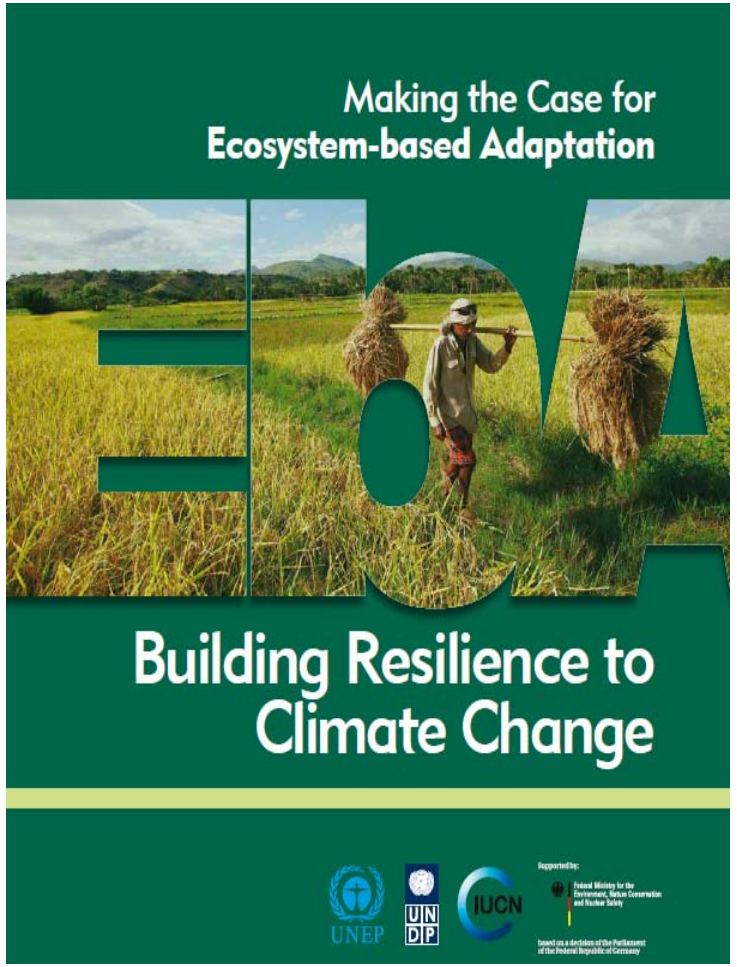
Lami town - Cost of scenarios

Adaptation action	Percentage implementation of adaptation actions			
	Ecosytem maintenance	Emphasis on ecosystem maintenance	Emphasis on engineering actions	Engineering actions
Replant mangroves	100%	75%	25%	0%
Replant stream buffer	100%	75%	25%	0%
Monitoring & enforcement	100%	40%	20%	0%
Reduce upland logging	100%	50%	20%	0%
Reduce coral extraction	100%	50%	20%	0%
Build sea walls	0%	25%	75%	100%
Reinforce rivers	0%	25%	75%	100%
Increase drainage	0%	25%	75%	100%

Scenario	Benefit to cost ratio (FJD)	Assumed damage avoidance
Ecosystem maintenance	$19.50	10–25%
Emphasis on ecosystem maintenance	$15	25%
Emphasis on engineering actions	$8	25%
Engineering actions	$9	25–50%

Conclusions from EbA implementation

- EbA provides numerous **opportunities** for natural solutions to manage the impacts of climate change
- EbA provides social, economic, environmental **co-benefits**
- Requires c**omparatively small investment** relative to long term benefits
- Key **challenges** restrain implementation (lack of information, lack of financial resources institutional resistance, temporal limitations),
- Incorporates best science and local knowledge and fosters **knowledge** generation and diffusion and **strategic monitoring**.
- Is **participatory,** transparent, and culturally appropriate while embracing gender and equity appropriately.



Thank you!

With thanks to:
Musonda Mumba (UNEP)
Rober Monroe (UNEP WCMC)
Ole Vestergaard (UNEP)
Nathalie Doswald (UNEP-WCMC