

A photograph of several baobab trees in silhouette against a bright orange sunset sky. The trees are reflected in a body of water in the foreground. The text "Vulnerable Ecosystems results in Vulnerable Communities" is overlaid in white.

Vulnerable Ecosystems results in Vulnerable Communities

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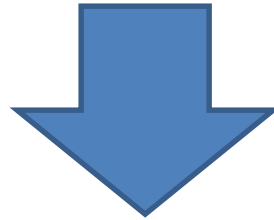
Key elements

- Which are the Climate vulnerable ecosystems & why?
- Which are vulnerable for different reasons?
- How do we know? (tools, methods)
- How can we help vulnerable ecosystems adapt to climate change
- How can we safeguard ecosystems to help vulnerable communities
- What are some key challenges for us?

Which Ecosystems – vulnerable & Why?

Which Ecosystems – vulnerable & Why?

- Due to climate change (temp increase)
- Due to more frequent & severe events (floods, droughts, hurricanes)

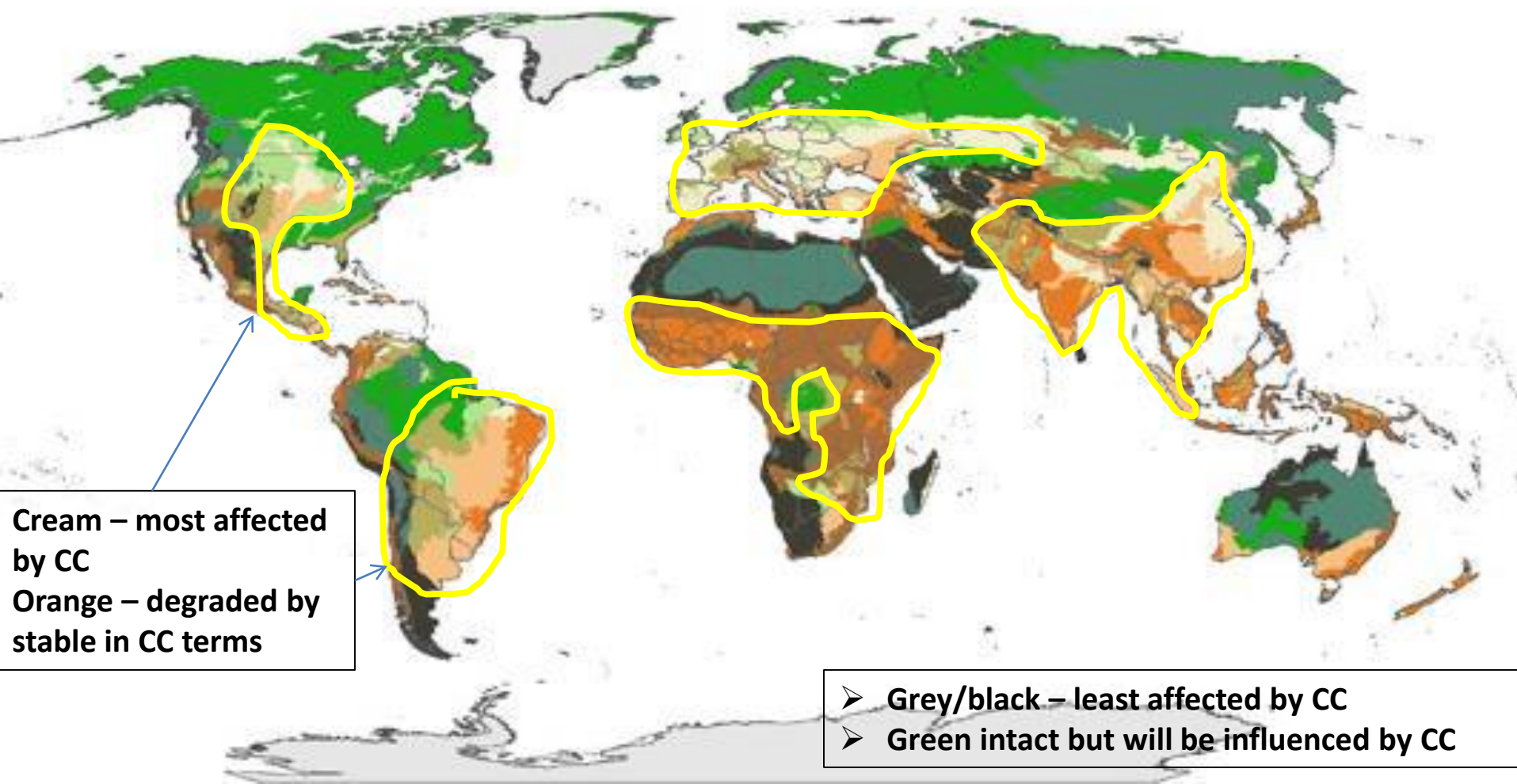


These exacerbate & in turn exacerbated by

- Due to human influence – degradation, conversion, invasives

As a result often hard to separate

Vulnerable Ecosystems of the World



Source: James E. M. Watson, Takuya Iwamura & Nathalie Butt. (2013) Mapping vulnerability & conservation adaptation strategies under climate change. Nature Climate Change. doi:10.1038/nclimate2007

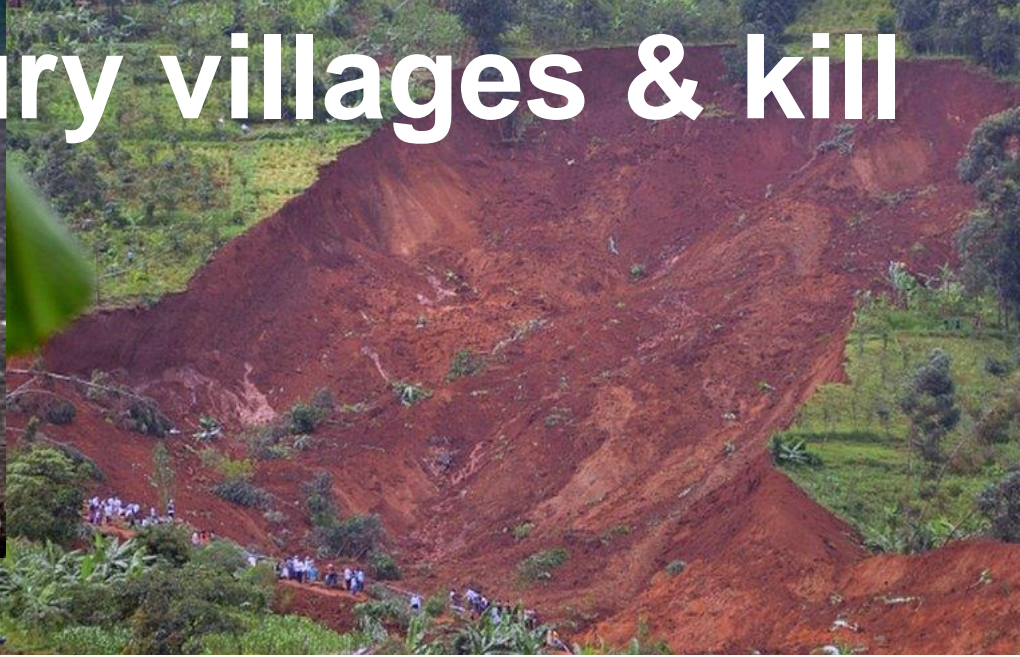


Some examples CC vulnerable Ecosystems now

- Mountains, alpine
- Polar & tundra
- Drylands & woodlands
- Coral reefs

Some Results of climate risk (& other risks)

Landslides Bury villages & kill



- Poor agriculture & land use
- Extreme events (excessive rainfall, floods)
- Combination CC & land use

Droughts : Extended period due to deficiency in rainfall over extended period – usually 1+ seasons – impacts on people, livestock vegetation. Dry times are part of natural cycles – but now exacerbated by CC & poor land use (policy failures)



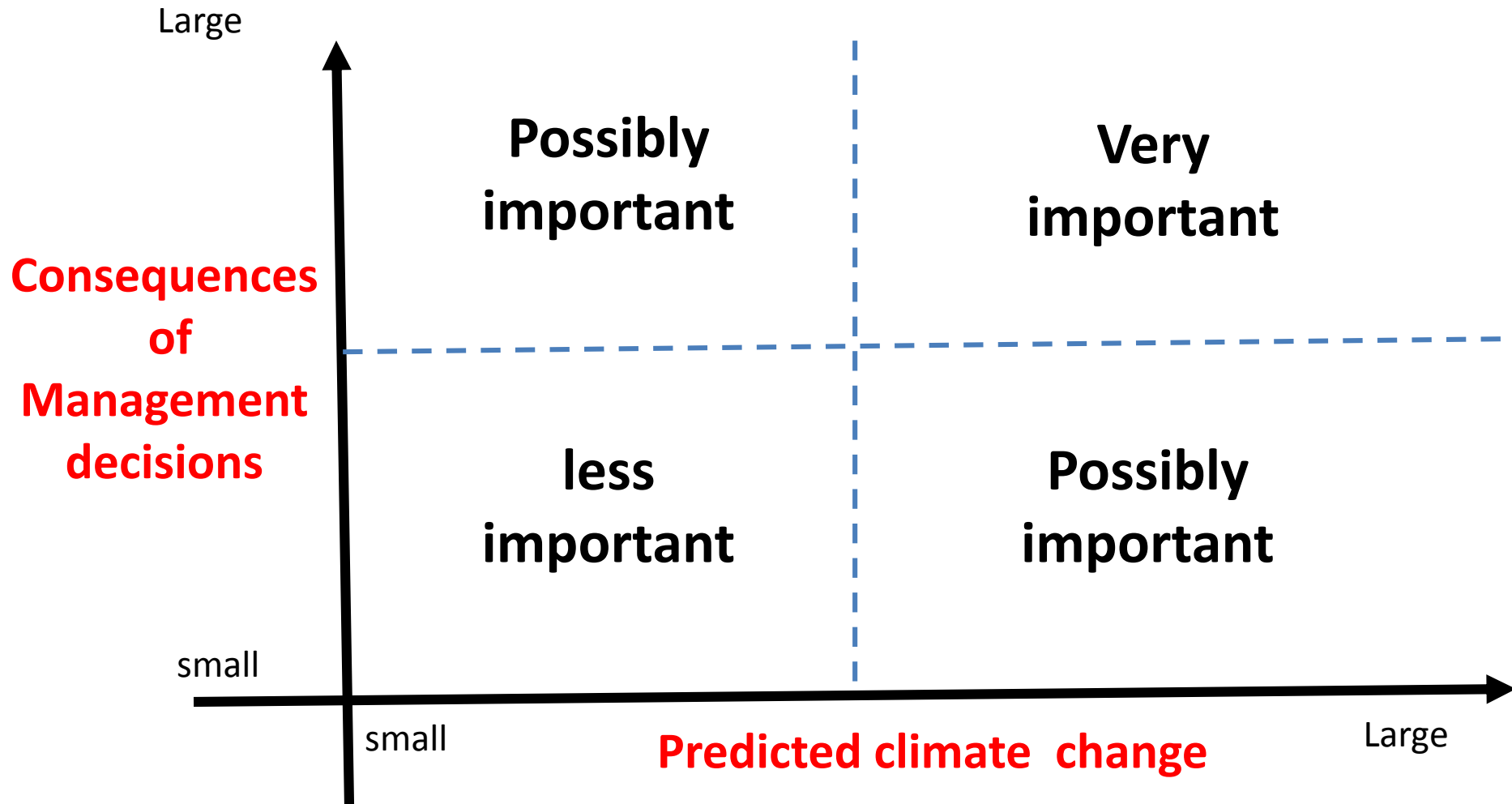


Invasives: make great use of poor land use, & make optimal use of CC opportunities

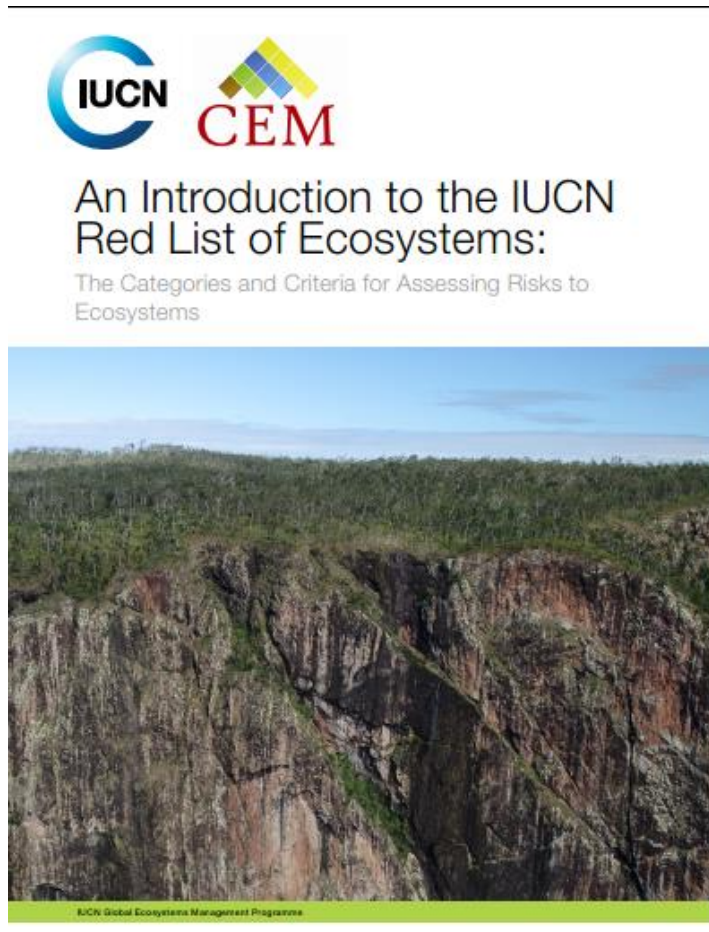


How do we know that Ecosystems are at Risk & why??

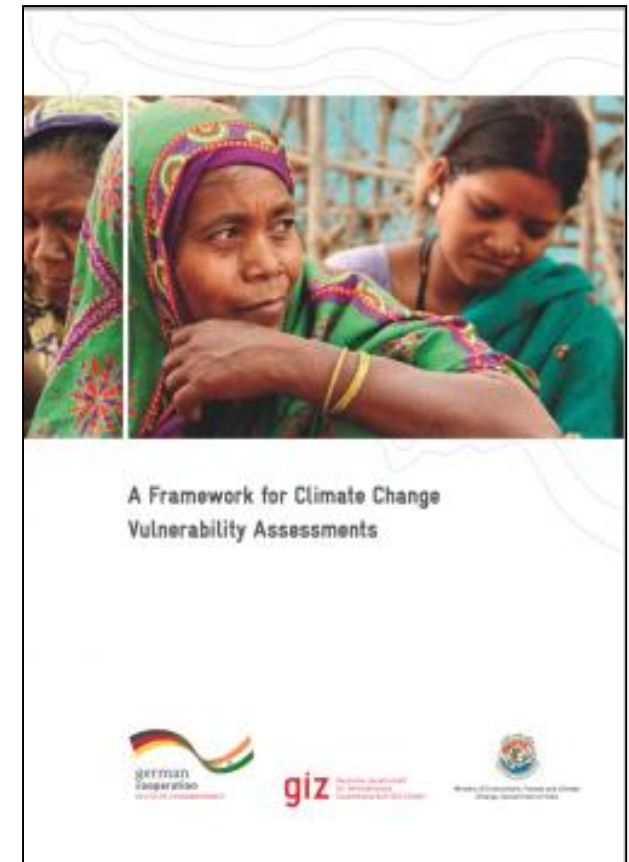
Levels of climate change & need for action



There are Tools & Methods – here are two



www.iucnrle.org



<https://www.weadapt.org/knowledge-base/vulnerability/climate-change-vulnerability-assessments>

- There are many other tools – esp for human vulnerabilities & exposures (e.g.. CRISTAL)



IUCN Red List of Ecosystems – the Risk of ecosystem collapse

Criteria

A. Declining distribution

B. Restricted distribution

C. Degradation of abiotic environment

D. Altered biotic processes & interactions

E. Quantitative risk analysis

Thresholds

Adequate data

Evaluated

All ecosystems

Categories

Collapse (CO)

Threatened categories

Critically Endangered (CR)

Endangered (EN)

Vulnerable (VU)

Near Threatened (NT)

Least Concern (LC)

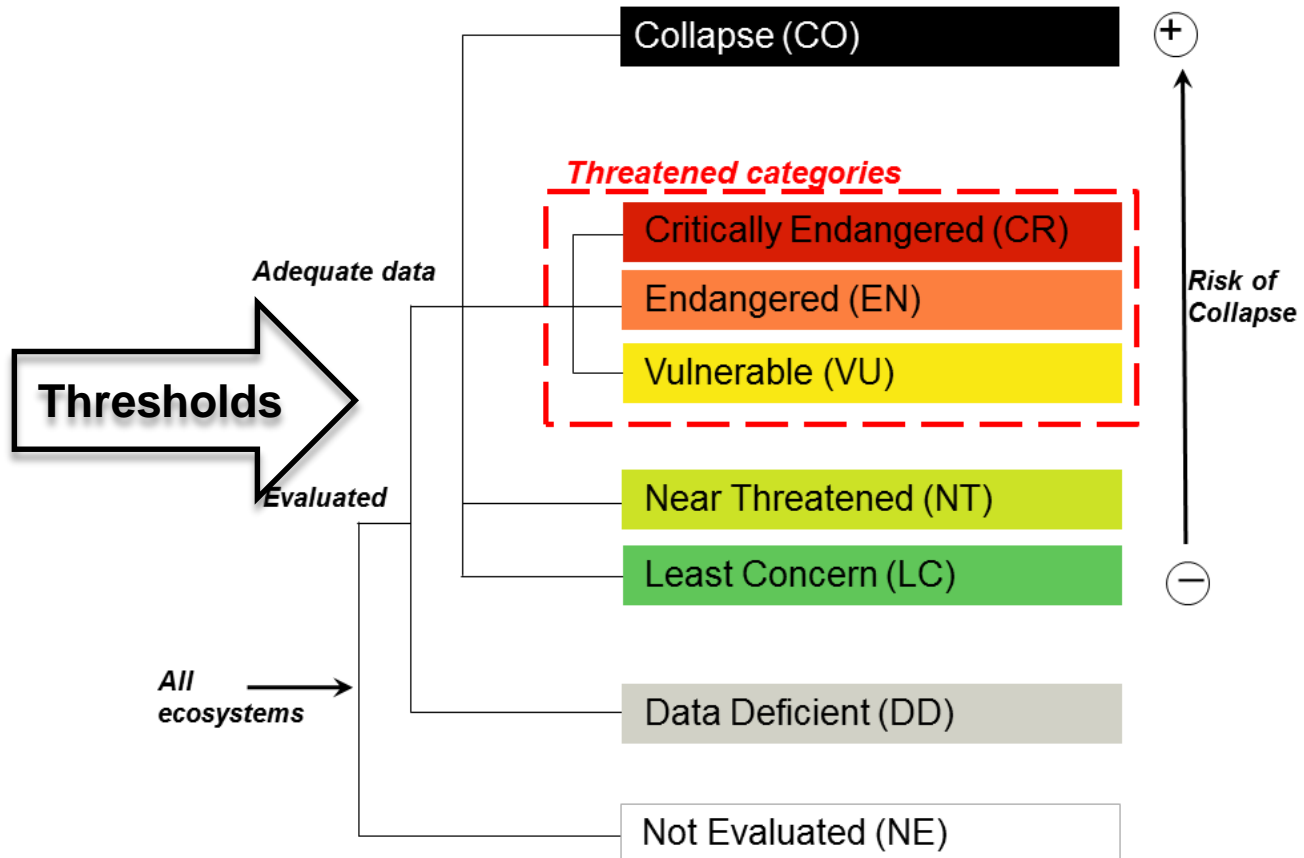
Data Deficient (DD)

Not Evaluated (NE)

+

Risk of Collapse

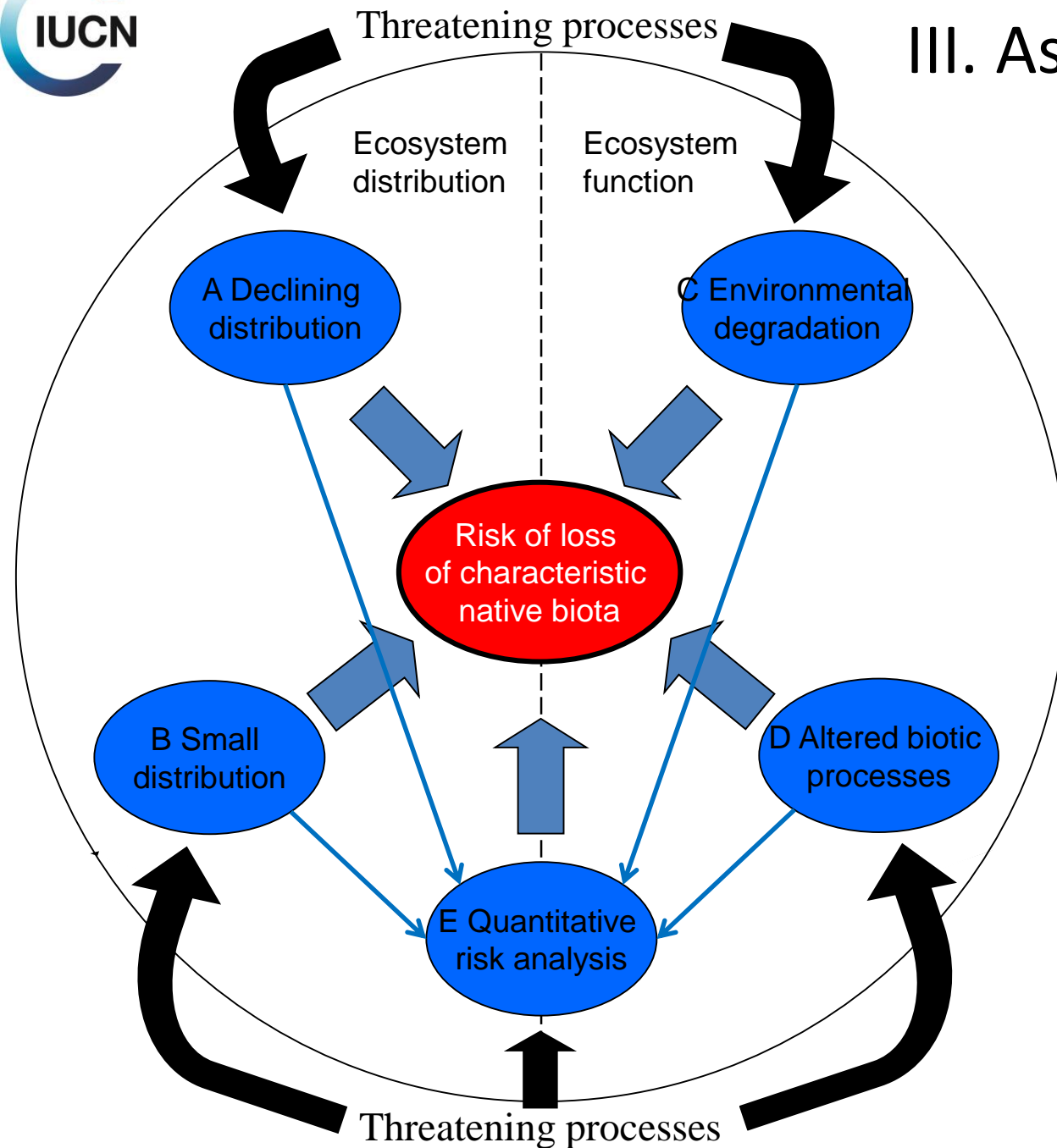
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III. Assessing ecosystem change

Risk model for ecosystems

- Threats to defining features (distribution, biota & function).
- Multiple mechanisms (causes of threat).
- 4 symptoms (of decline) = 4 criteria.
- Plus one overarching criterion (probability of collapse).



Key Drivers of change so far from RLE

- Degradation of hydrology & water quality, & soil/air
- Climate change
- Invasive species impacts
- Loss of ecosystem structure, conversion
- Over-harvesting



RLE can identify drivers – but more often it is a combination

RLE Progress so far

- Completed Americas & Europe
- Numerous ecosystem Case studies across the global (Australia, China, Asia, Africa, Europe, Americas)
- Can be done at varying scales (ecosystem, national, regional, global)
- To start soon – China, Africa, boreal/artic

**How can we help vulnerable ecosystems
adapt to climate change?**

Wetlands & floodplains control floods



Vegetation stabilises slopes



Vegetation management in drylands improves drought resilience



Other Methods

- Climate smart agriculture
- Restoration with climate smart species (trees, grasslands)
- Diversified land (& water) use – increases resilience
- Flood management trenches, contour grass strips & tree planting
- River bank rehabilitation - restoration, & planting appropriate indigenous trees
- Slope stabilization through soil & water conservation, & planting of indigenous trees

**How can we safeguard
ecosystems to help vulnerable
communities?**

Build Green climate Smart Infrastructure



IWRM - tropical storms & flooding in Guatemala, Mexico



Community planning, action, & reflection



Mangroves, saltmarshes & sand dunes buffer from winds, sandstorms, storm surges

Restoration & Management key



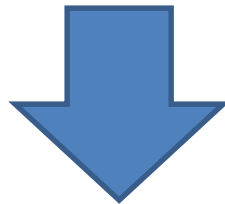


What are some key challenges for us with respect to ecosystems?

- Why is it important to consider vulnerable ecosystems in adaptation?
- What are the best methods for mapping risks?
- What are some examples for ensuring ecosystems are properly considered in adaptation planning?
- What are some examples of how we can implement, monitor, & evaluate our work?
- What are practical steps that countries can use?
- What are some practical next steps at regional & global levels to support national efforts?

Conclusion

- Reduce risks to ecosystems, will reduce risks to communities
- Its more than land (water) productivity – its about ecosystem & community resilience
- At ecosystem level – difficulties of separating climate from human induced changes – but does that matter?
- & separating climate variability from Change



Key: Promote practical action that results in increased ecosystem & human resilience