IUCN RED LIST OF ECOSYSTEMS

Pelle Bågesund IUCN ESARO

Capacity-development workshop for Central, Eastern and Southern Africa on the restoration of forests and other ecosystems to support the achievement of the Aichi Biodiversity Targets

Durban, South Africa, 3 October 2017


@redlisteco


IUCN Red List of Ecosystems

www.iucnrle.org

ESARO

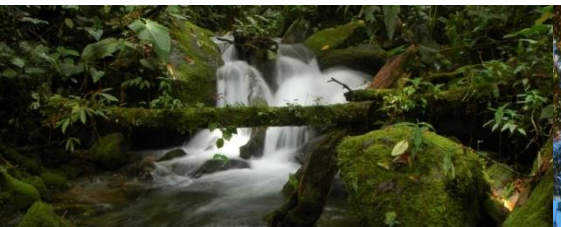

Mediterranean Sea
Syria
Iraq
Iran
Jordan
Morocco
Algeria
Libya
Egypt
SAHARA DESERT
Saudi Arabia
Red Sea
OMAN
Oman
Yemen
Mauritania
Mali
Niger
Chad
Sudan
Eritrea
Senegal
Burkina Faso
Guinea
Nigeria
Côte d'Ivoire (Ivory Coast)
Benin
Ghana
Cameroon
Central African Republic
South Sudan
Ethiopia
Somalia
Atlantic Ocean
Kampala
Kigali
Nairobi
Gabon
Congo
Democratic Republic of the Congo
Tanzania
Angola
Zambia
Harare
Zimbabwe
Mozambique
Madagascar
Namibia
Botswana
Pretoria
Maputo
South Africa
Atlantic Ocean
Sources: Esri, DeLorme, USGS, NPS, Esri, HERE, DeLorme, MapmyIndia, © OpenStreetMap contributors, and the GIS user community

CONSERVATION IMPERATIVES

- Which ecosystems are most at risk of large changes that involve loss of diversity?
- How great are the risks?
- How soon are the changes likely to occur?

WHY AN IUCN RED LIST OF ECOSYSTEMS?

- Ecological processes
  - Change in ecosystem function
  - Dependencies/interactions among species
  - Far-reaching changes in common species
  - Ecosystem change can precede species loss (extinction debt)
- Complements information about risks to species
  - Strengthens conservation messages
- Ecosystems & ecosystem services as essential components of land/water use planning



WHY AN IUCN RED LIST OF ECOSYSTEMS?

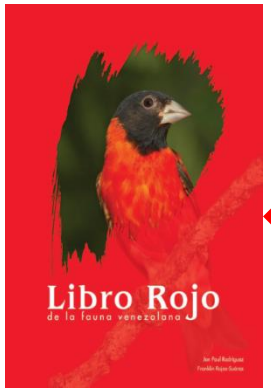
Goal:

Support conservation in resource use and management decisions by identifying ecosystems most at risk of biodiversity loss

IUCN RED LIST OF ECOSYSTEMS

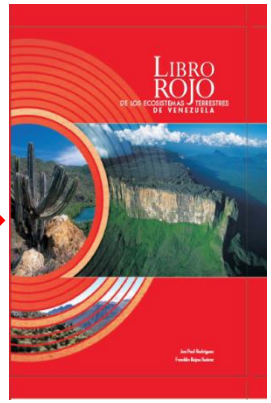
- **Scientific**, **transparent** & **repeatable** process for assessing risk of ecosystem collapse
- Applicable & useful across ecosystem types
- Designed to bring **different data types** together
- Focus on **ecological processes** not just patterns
- Separate **risk assessment** & **conservation priority**

Risk of ***extinction***



Species

Red Lists



Ecosystems

Risk of ***collapse***

SCIENTIFIC DEVELOPMENT OF RLE

- Global consultation – workshops, meetings, conferences
- Concepts published 2009, 2011
- Criteria & scientific foundations published 2013
- Formal adoption of categories and criteria by IUCN in 2014

Essay

Establishing IUCN Red List Criteria for Threatened Ecosystems

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OPEN ACCESS Freely available online

Scientific Foundations for an IUCN Red List of Ecosystems

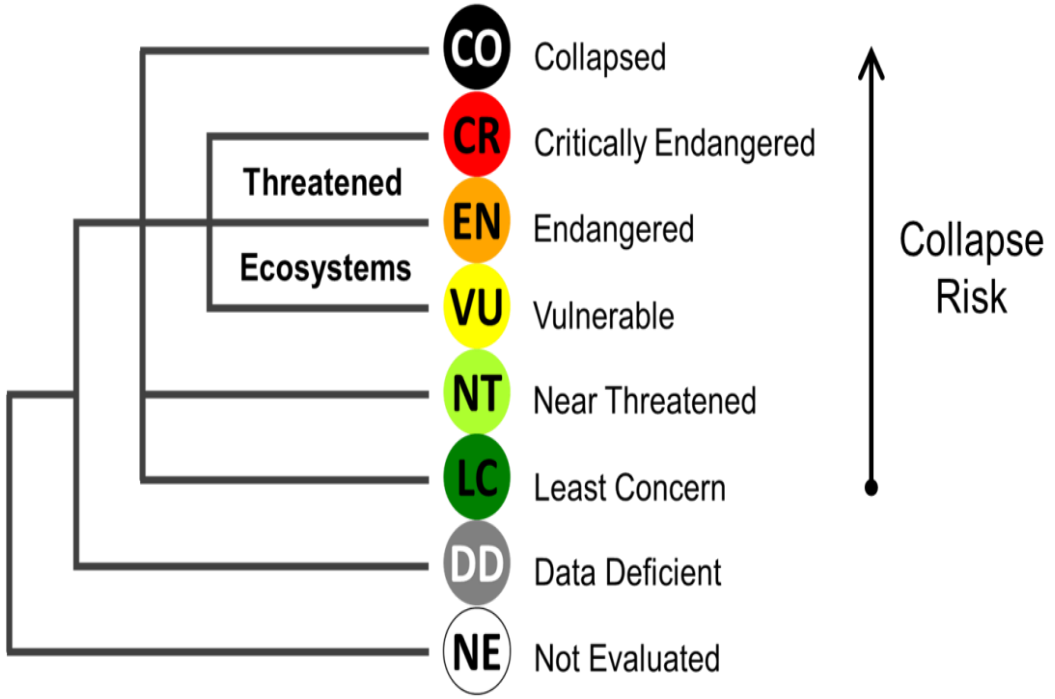
David A. Keith[1,2]*, Jon Paul Rodríguez[3,4,5,6], Kathryn M. Rodríguez-Clark[3], Emily Nicholson[7], Kaisu Aapala[8], Alfonso Alonso[9], Marianne Asmussen[3,5], Steven Bachman[10], Alberto Basset[11], Edmund G. Barrow[12], John S. Benson[13], Melanie J. Bishop[14], Ronald Bonifacio[15], Thomas M. [illegible], Mark A. Burgman[17], Patrick Comer[18], Francisco A. Comín[19], Franz Essl[20,21], Don Faber-Langendoen[22], Peter G. Fairweather[22], Robert J. Holdaway[23], Michael Jennings[24], Richard T. Kingsford[1], Rebecca E. Lester[25], Ralph Mac Nally[26], Michael A. McCarthy[7], Justin Moat[10], María A. Oliveira[-], Phil Pisanu[15], Brigitte Poulin[27], Tracey J. Regan[7], Uwe Riecken[28], Mark D. Spalding[29],

CRITERIA
(decision rules)

- A. Declining distribution
- B. Restricted distribution
- C. Degradation of abiotic environment
- D. Altered biotic processes & interactions
- E. Quantitative risk analysis

Thresholds

CATEGORIES

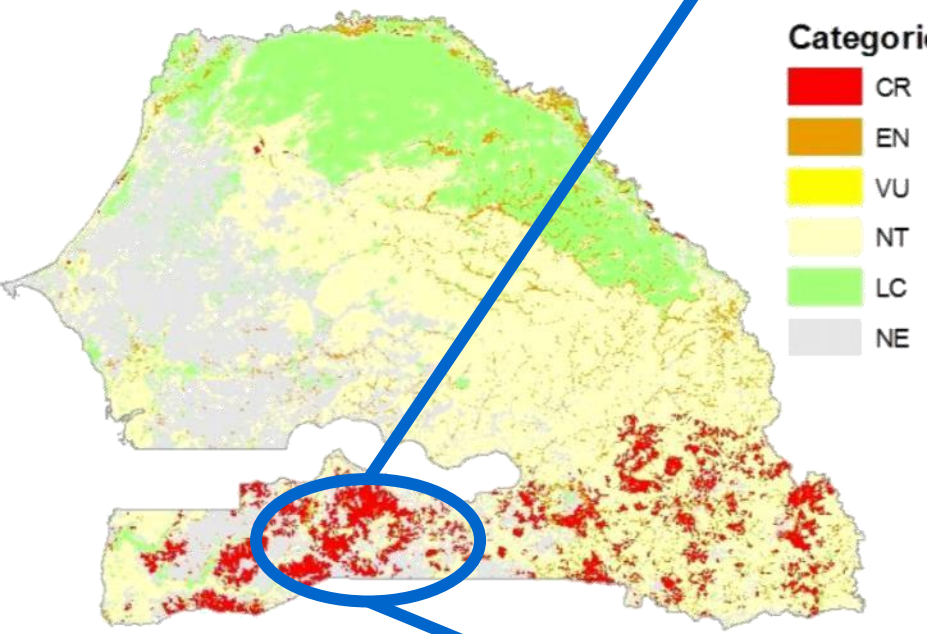


Assesses risk of ecosystem collapse, as measured by losses in area, biotic/abiotic degradation, and modelling

Keith *et al*. 2013 PLoS ONE http://dx.plos.org/10.1371/journal.pone.0062111
Bland et al. 2016 https://portals.iucn.org/library/node/45794

FROM RISK ASSESSMENT TO ACTION

Draft RLE for Senegal



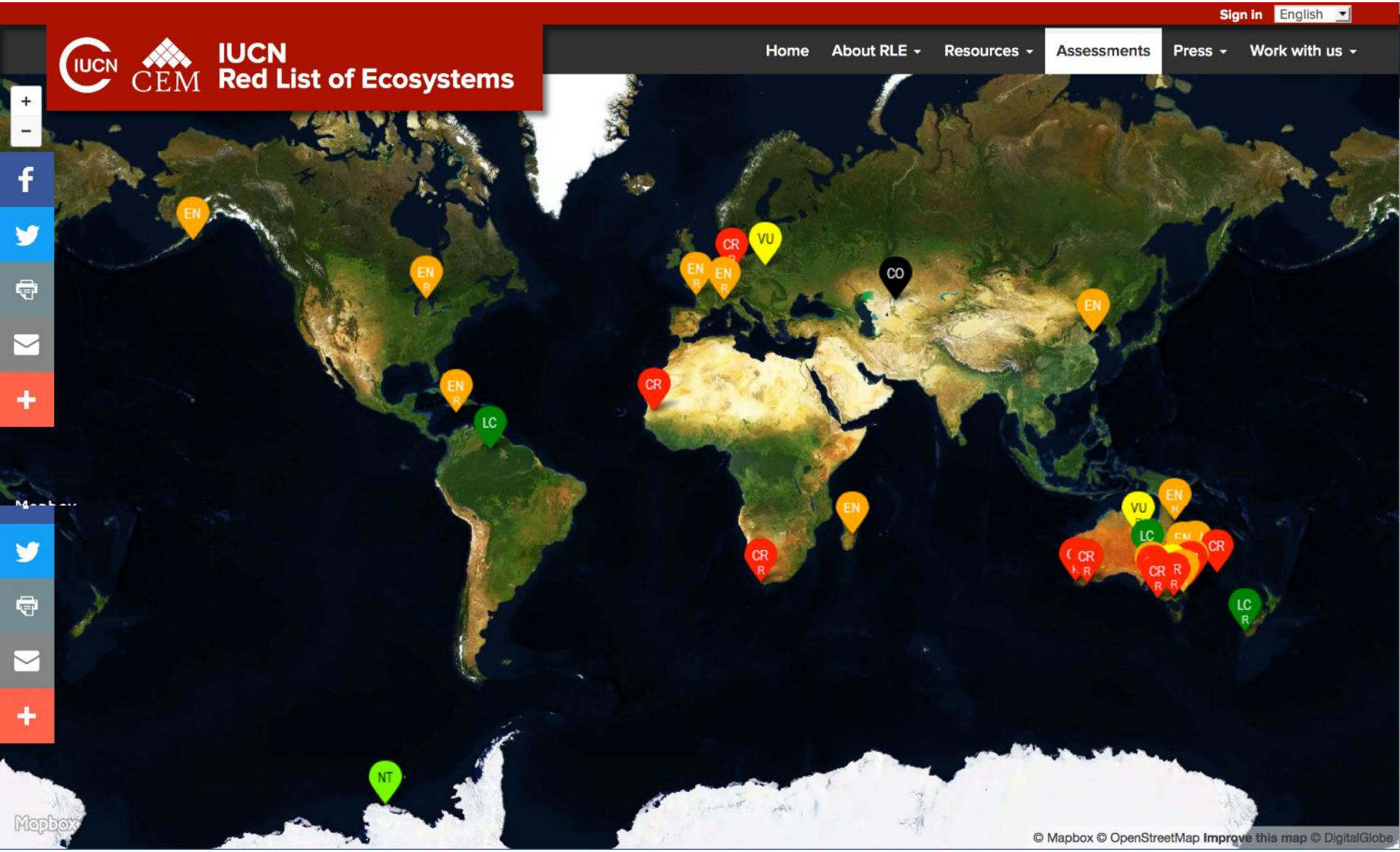
High risk of collapse

- Why?(risk) Forest clearance, climate change agriculture, poor governance (tenure, rights)
- What action? (choice) Restoration, agro-forestry, protected areas, assess species at risk (RLS)
- Who? People/villages, governments...
- So what? Revisit RLE after X time – changes??

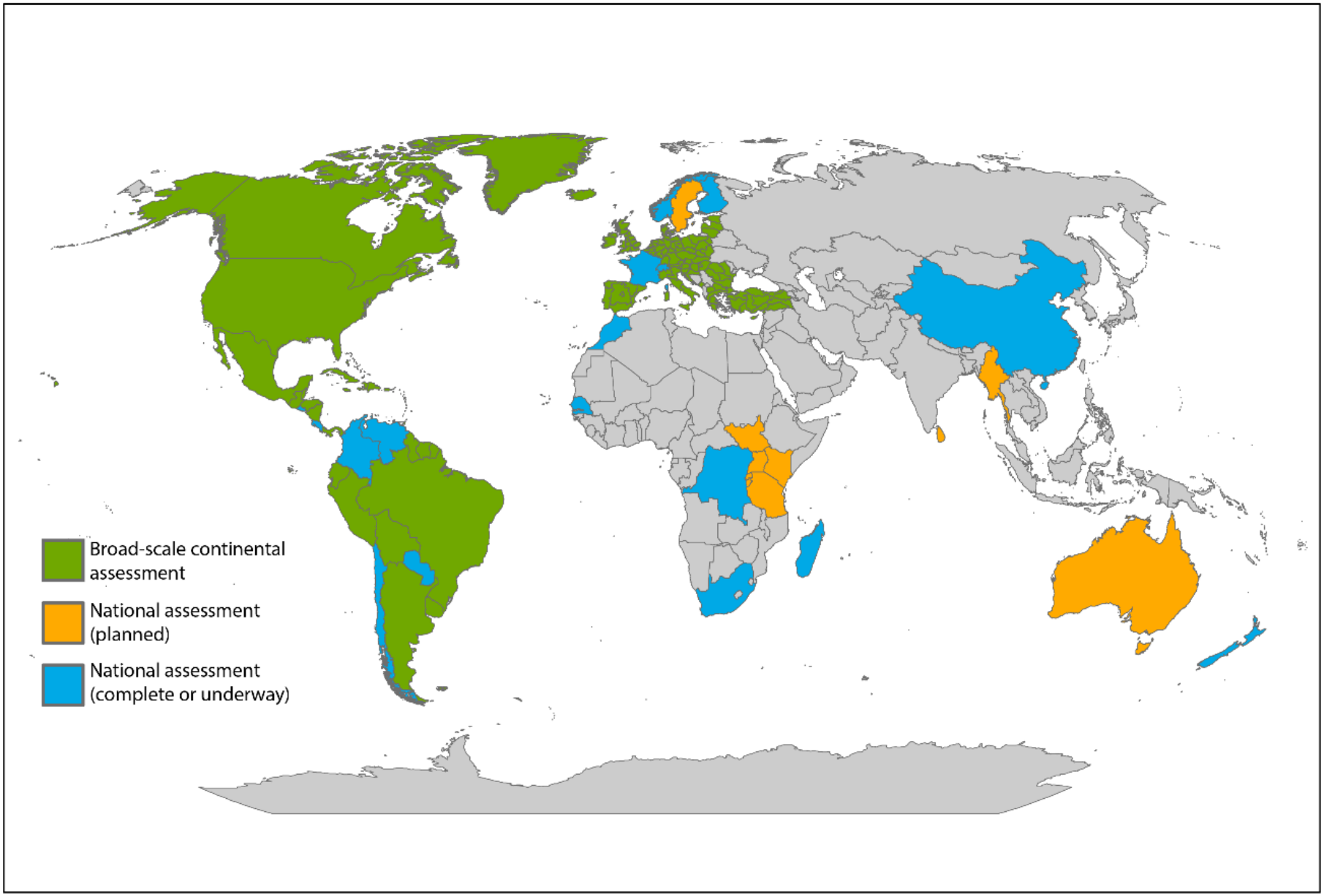
RISK ASSESSMENT OUTPUTS

- Descriptions of **defining biotic components**, **abiotic environments** & **ecological processes** that define the ecosystem type
- Diagnosis of **threats & salient mechanisms** that drive loss of biodiversity from the system
- Identification of **ecological variables** thought to provide the most **sensitive and direct measures** of ecosystem status
- Collation and synthesis of **spatial data** and **time series data** relevant to tracking the status of the ecosystem type
- Identification of the major factors that **management strategies** must address to conserve the ecosystem type
- Contextual information, such as contributions to ecosystem services.

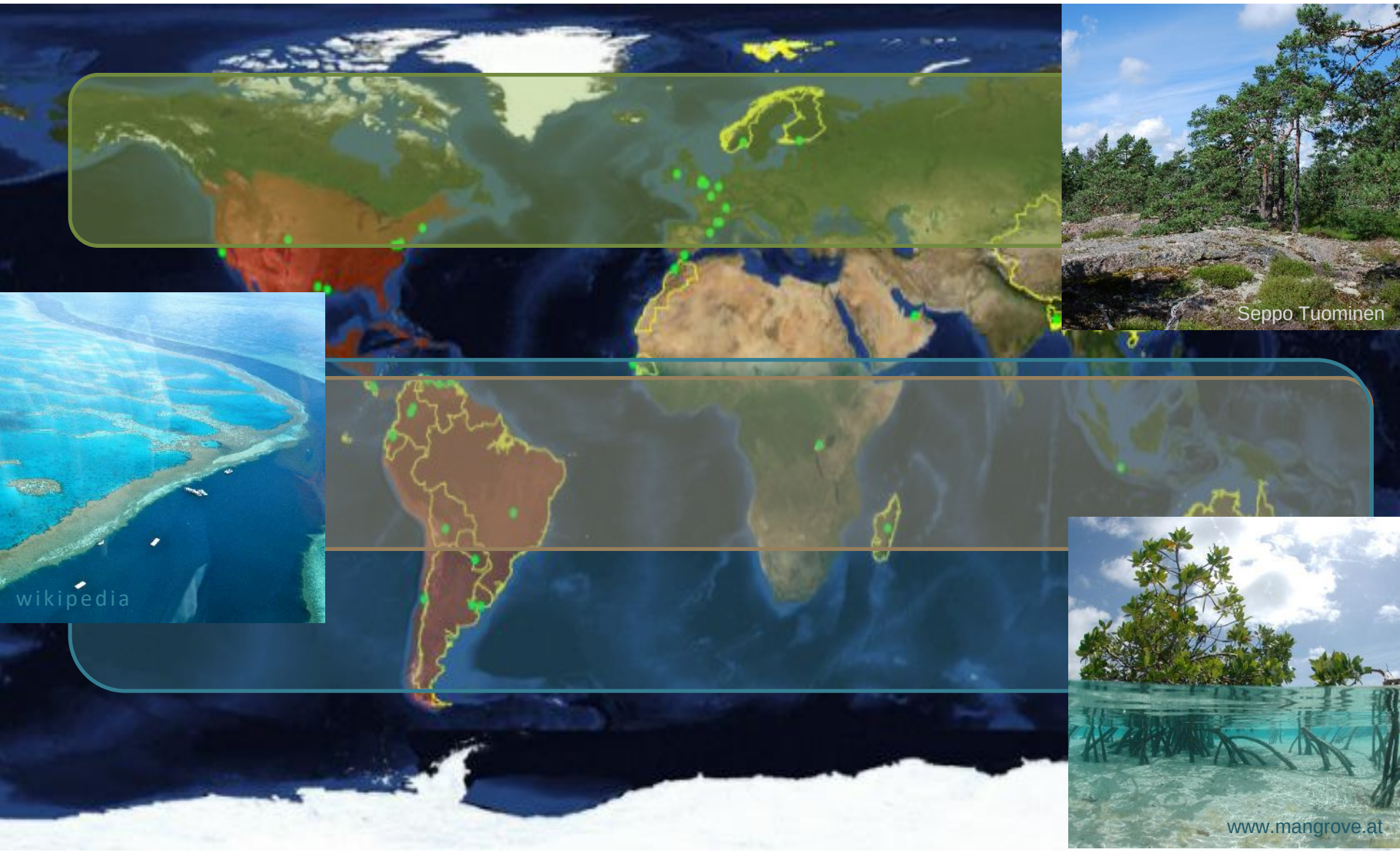
ASSESSMENTS: TARGETED ECOSYSTEMS



ASSESSMENTS: NATIONAL+REGIONAL



ASSESSMENTS: GLOBAL THEMATIC



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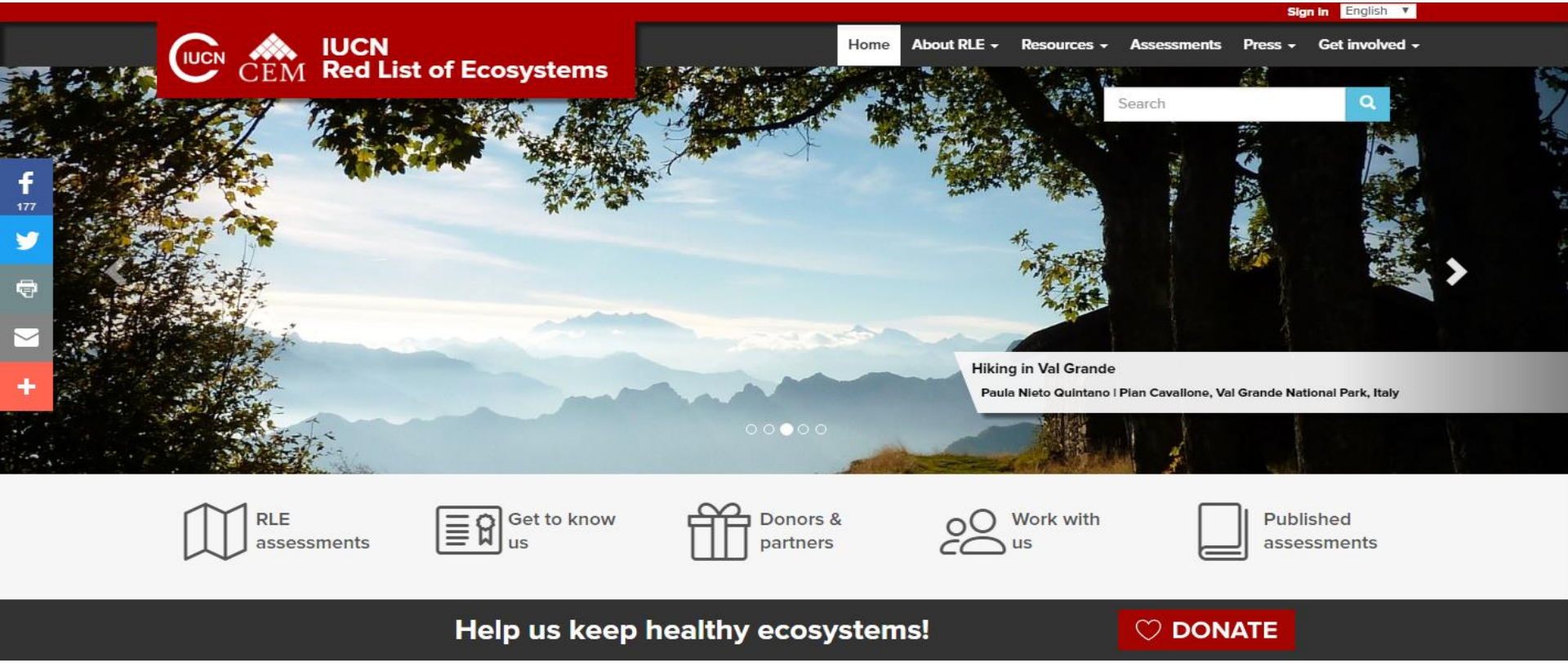

- Guidelines, scientific documents, support tools, case studies, communications
- English, Spanish and French

IUCN Red List of Ecosystems

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TOOLS & RESOURCES

- RLE Guidelines, training workbook, case studies
- Training workshop curriculum (online to come)
- Capacity building section on website (spreadsheets, tutorials)
- Excel calculators
  - Absolute and proportional rate of decline
  - Estimation of the risk of collapse
- R package (“redlist”)
- ArcGIS toolbox
- REMAP
- User e-Forum

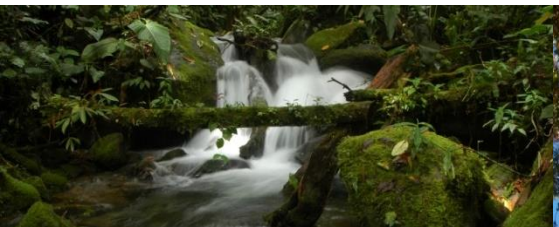
A TOOL FOR IMPROVING DECISION-MAKING

INFLUENCING POLICY DEVELOPMENTS AND LAND USE PLANNING

- Adoption of RLE into legislation as national standard in 3 countries
  - Norway, Finland, Australia
- Various national RLE projects supported
- Direct uptake into conservation policy: e.g. Madagascar NBSAP, Senegal national sustainable development policy
- Norway: national RLE used to preserve biodiversity and assess performance against national targets and international obligations.
- Gap analyses of PA networks (Venezuela, Costa Rica, Colombia)
- High potential for interrelation with other databases
  - Presence of indigenous communities & RLE status
  - Status of current & future availability of resources to humans
  - Ecological + social vulnerability (EbA/DRR)

IUCN RLE PROGRAMME

- **Aim: Global coverage by 2025**
- ***Supporting*** RLE application: training, peer review, integration
- ***Supporting*** fundamental aspects of RLE: standards, database, coordination, convening (learning, research, links to other products)
- ***Exploring/testing***
  - Integration with other conservation tools
  - Implementation: conservation, land/water use, economic decisions
- ***Meeting needs for a global ecosystem assessment:*** Aichi targets, IPBES, SDGs
- ***Convening*** to learn (experience), solve challenges (science), & explore actual/potential uses



A POWERFUL TOOL FOR INFORMING ACTION

- Highlights need for action to protect threatened ecosystems and their biodiversity – or face loss of ecosystem services with economic impacts.
- Embraces ecosystem services & human inhabited ecosystems (links to food security)
- Highlights need for restoration, and to reward good ecosystem management.
- Makes linkages with productive land/water use – engage Finance & Planning
- Means for evaluating land/water use and development scenarios, managing for improved biodiversity and livelihood security; monitoring progress towards international targets; reporting on environmental impacts.
- Informing private sector decision making, environmental safeguards & sustainable finance.
- Long term, repeatable, impartial monitoring tool for national reporting (SDGs, Aichi targets, climate change).



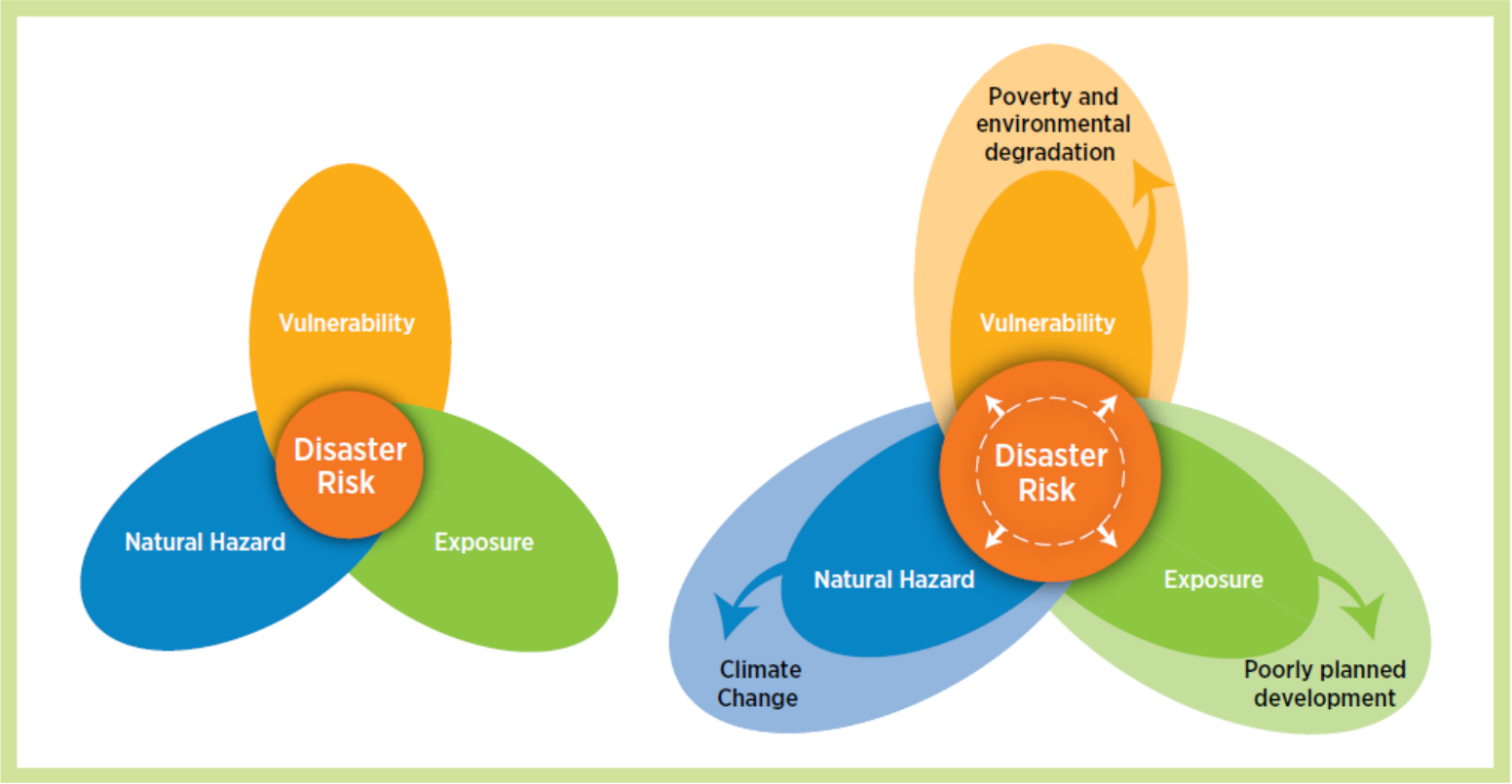

Ecosystem based Disaster Risk Reduction (Eco-DRR)

Disaster Risk Reduction

HAZARD **EXPOSURE** **VULNERABILITY**

$$\text{Risk} = \frac{\text{HAZARD} \times \text{EXPOSURE} \times \text{VULNERABILITY}}{\text{CAPACITY}}$$

The role of natural hazards, exposure and vulnerability in disaster risk



Disaster risk is determined by the occurrence of a natural hazard (e.g., a cyclone), which may impact exposed populations and assets (e.g., houses located in the cyclone path). Vulnerability is the characteristic of the population or asset making it particularly susceptible to damaging effects (e.g., fragility of housing construction). Poorly planned development, poverty, environmental degradation and climate change are all drivers that can increase the magnitude of this interaction, leading to larger disasters.

Source: Adapted from IPCC, 2012.

Ecosystem Based Disaster Risk Reduction

"Sustainable management, conservation and restoration of ecosystems to provide services that reduce disaster risk by mitigating hazards and by increasing livelihood resilience."

(PEDRR, 2013)

Regulating Ecosystem Services

- Forests/trees
  - Reduce runoff
  - Reduce risk of landslides/avalanches
  - Increase water retaining capacity (e.g. dry areas)
- Wetlands
  - Mitigates floods
  - Purifies water
- Natural meandering streams
  - Mitigates floods
- Coastal vegetation/coral reefs/sand dunes/mangroves
  - Reduce effects of storm surges

Eco-DRR work in ESARO

- Concept idea of regional mapping
  - IUCN red list of Ecosystems
  - Disaster-prone areas

  } GIS mapping

  - Economic evaluation and comparison of present and future level of environmental degradation or restoration
  - To see where actions in the region should be focused
- national workshops on Eco-DRR
  - Mauritius

Thank you!

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