The Ecosystem Approach

Commission on Ecosystem Management

Angela Andrade
CEM Chair

Lima, October 26-27 2017

CEM Mandate- Priorities

Mission

To provide expert guidance on integrated approaches to the management of natural and modified ecosystems to promote biodiversity conservation and sustainable development.

Vision

Healthy, resilient ecosystems that conserve nature and sustain life.

Objective

To promote the adoption of, and provide guidance for, ecosystem approaches to the management of landscapes and seascapes and build resilience of socio-ecological systems to address global changes.

Ecosystem Approach

- Strategy for the integrated management and restoration of land, water and living resources.
- It promotes conservation and sustainable use in an equal, participatory and decentralized manner.
- It integrates social, economic ecological and cultural aspects, in a geographical area defines by ecological limits.

Ecosystem Approach Principles

Social, Economic and Cultural: 1, 2, 4, 10, 11 y 12.

- The objectives are a matter of social choice.
- Management should be descentralized at the lowest appropriate level.
- Understand and manage the ecosystems in an economic context.
- Balance between and integration of conservation and use of BD.
- Consider, scientific, indigenous and local knowledge, innovations and practice.
- Involve all relevant sectors/scientific disciplines.

Biophisical/ Ecological: 3, 5, 6, 7, 8 y 9:

- Consider effects of activities on adjacent and other ecosystems.
- Conservation of ecosystem structure and function.
- Ecosystems must be managed within the limits of their function.
- Appropriate temporal and spatial scale.
- Long term objectives should be set for ecosystem management.
- Recognize that change is inevitable.

Ecosystem Approach

BARRIERS

- Different views of the same resources by different Stakeholders.
- Difficulties in working across sectoral interests.
- Lack of public/government understanding of the hiden and delayed costs in terms of EM.
- Short term thinking.
- Insufficient knowledge about process underpinning ES and lack of data to enable full valuation of ES.

KEY POINTS FOR GUIDANCE

- Promote closer collaboration across gov/business/academics/ others.
- Encourage changes in attitudes: from individuals to communities.
- Determine long term objectives.
- Clear Communication Strategy.
- Ensure quality level/certainty of information is defines.
- Take note of unintended results of actions taken in implementation.
- Collect information to enable adaptive management.

Taken from Matby,Ed and M. Acreman

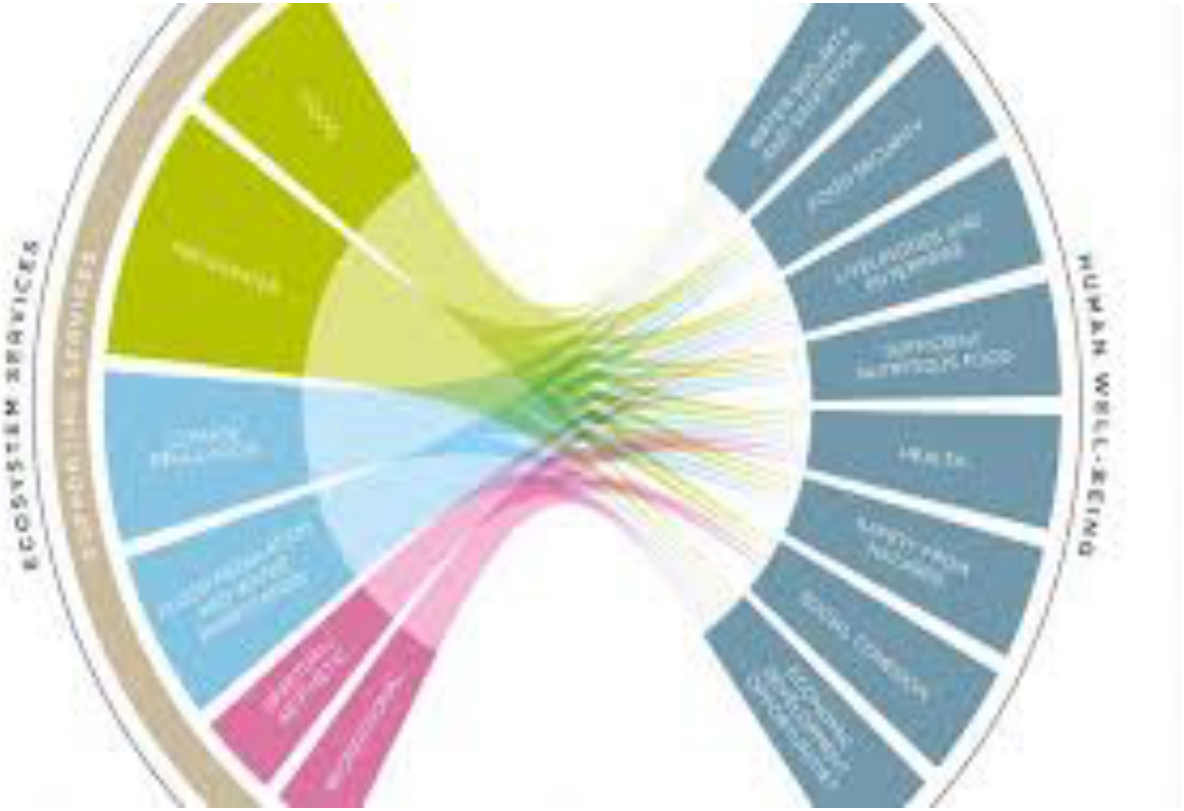
Ecosystem Services Classifications

Table 2
Comparison of four of the main ecosystem services classification systems used worldwide and their differences and similarities.

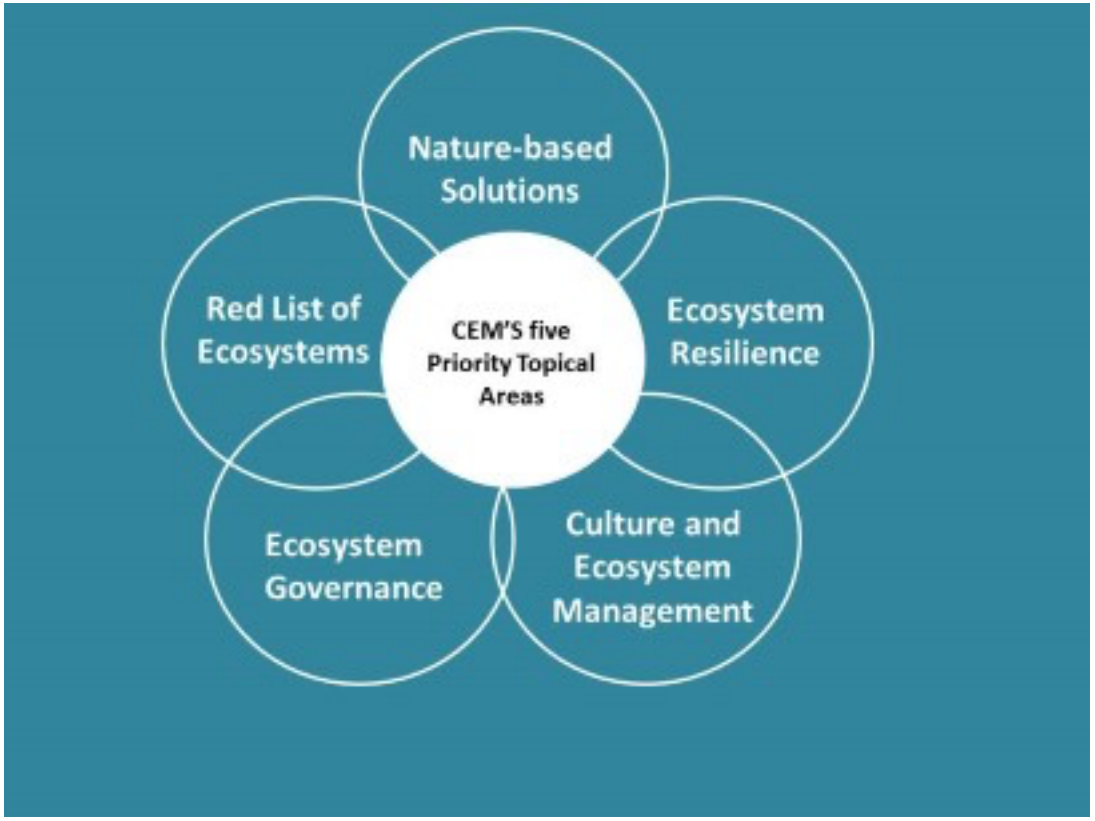
	Costanza et al., 1997	Millennium Ecosystem Assessment, 2005	TEEB, 2010	CICES (v. 2017?)
Provisioning	Food production *(13)*	Food	Food	Biomass - Nutrition
	Water supply *(5)*	Fresh water	Water	Water
	Raw materials *(14)*	Fibre, etc.	Raw materials	Biomass - Fibre, energy & other materials
		Ornamental resources	Ornamental resources	
	Genetic resources *(15)*	Genetic resources	Genetic resources	
		Biochemicals and natural medicines	Medicinal resources	
	X	X	X	Biomass - Mechanical energy
Regulating & Habitat	Gas regulation *(1)*	Air quality regulation	Air purification	Mediation of gas- & air-flows
	Climate regulation *(2)*	Climate regulation	Climate regulation	Atmospheric composition & climate regulation
	Disturbance regulation (storm protection & flood control) *(3)*	Natural hazard regulation	Disturbance prevention or moderation	Mediation of air & liquid flows
	Water regulation (e.g. natural irrigation & drought prevention) *(4)*	Water regulation	Regulation of water flows	Mediation of liquid flows
	Waste treatment *(9)*	Water purification and waste treatment	Waste treatment (esp. water purification)	Mediation of waste, toxics, and other nuisances
	Erosion control & sediment retention *(8)*	Erosion regulation	Erosion prevention	Mediation of mass-flows
	Soil formation *(7)*	Soil formation *[supporting service]*	Maintaining soil fertility	Maintenance of soil formation and composition
	Pollination *(10)*	Pollination	Pollination	Life cycle maintenance (incl. pollination)
	Biological control *(11)*	Regulation of pests & human diseases	Biological control	Maintenance of pest- and disease-control
Supporting & Habitat	Nutrient cycling *(8)*	Nutrient cycling & photosynthesis, primary production	X	X
	Refugia (nursery, migration habitat) *(12)*	'Biodiversity'	Lifecycle maintenance (esp. nursery)	Life cycle maintenance, habitat, and gene pool protection
			Gene pool protection	
Cultural	Recreation (incl. eco-tourism & outdoor activities) *(16)*	Recreation & eco-tourism	Recreation & eco-tourism	Physical and experiential interactions
	Cultural (incl. aesthetic, artistic, spiritual, education, & science) *(17)*	Aesthetic values	Aesthetic information	
		Cultural diversity	Inspiration for culture, art, & design	
		Spiritual & religious values	Spiritual experience	Spiritual and/or emblematic interactions
		Knowledge systems	Information for cognitive development	Intellectual and representative interactions
		Educational values		

Constanza et al, 2017.

Ecosystem Services and Human Wellbeing



CEM Priority Areas 2017-2020



- Artic
- Drylands
- Mediterranean
- Mountain
- Peatland
- Holarctic Steppes
- Coastal and Marine
- Deep Sea Mining
- Island
- Oasis/Deserts
- Urban ecosystems
- Agro-ecosystems
- Forest ecosystems

Ecosystem Risk Assessment- RLE

Objectives:

- Assess and document the conservation condition of ecosystems of the world: from the most threatened to the ones in good conservation conditions.
- To promote the interaction with other products of the IUCN to have a more certain outlook of the situation of the biodiversity.

- IUCN Categories and Criteria is a Global Standard for the assessment of the conservation status of ecosystems, at different levels.
- Evaluates whether ecosystems have reached the final stage of degradation (Collapse), or threatened at Critically Endangered, Endangered or Vulnerable levels.
- Based on a set of rules or criteria, for performing evidence based, scientific assessments of the risk of ecosystem collapse.

LRE Objectives and Goals

Main Goal is to support conservation in resource use and management decisions by identifying ecosystems most at risk of biodiversity loss.

- A Global Assessment of the ecosystems of the world by 2025. Partial results on specific regions will become available from 2015 onwards.
- Technical support will be provided for stakeholders to carry out assessments at national and regional levels.
- Assess individual ecosystems of particular interest to stakeholders.

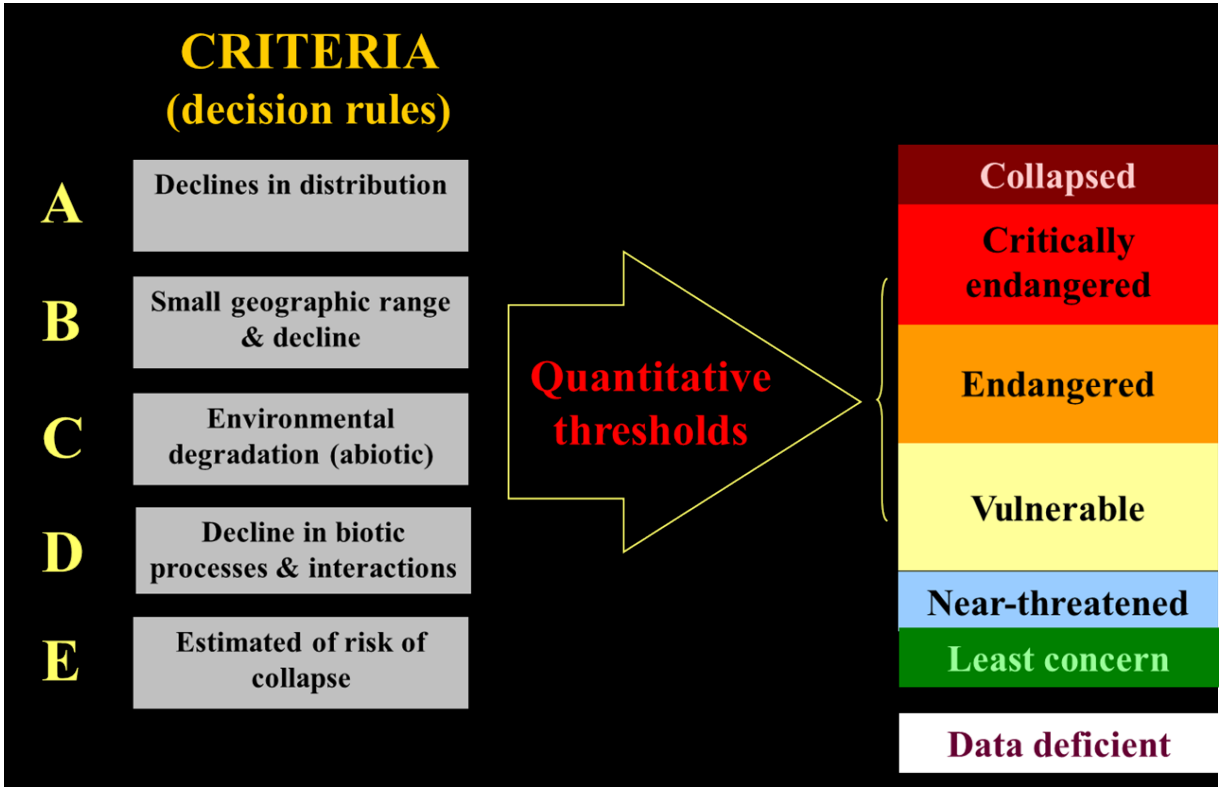
From Species to Ecosystems

- Ecosystems may more effectively represent biological diversity as a whole than individual species.
- They include fundamental abiotic components that are only indirectly included in species assessments.
- Declines in ecosystem status may be more apparent than extinctions of individual species.
- Ecosystem-level assessments may be less time consuming than species-by-species assessments.
- Red lists of ecosystems may suggest areas in which extirpations are likely to result from extinction debt in response to loss and fragmentation of species' habitats, because decline in the extent and status of an ecosystem may precede the loss of its species.

Ecosystem Risk Assessment- RLE

Identifying ecosystems at greatest risk of large detrimental change

http://iucnrle.org/ for more info



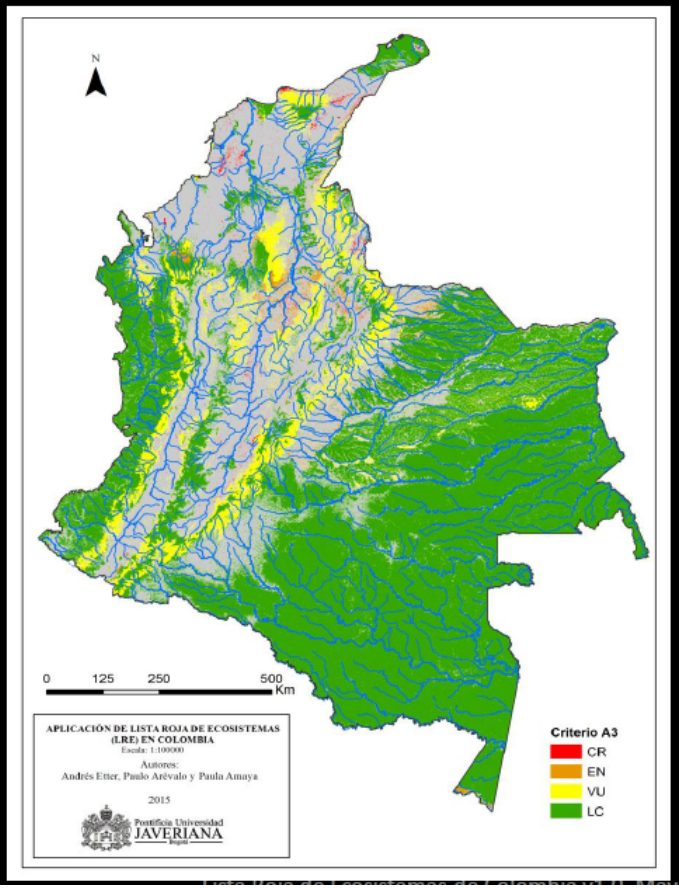
Ecosystem Risk Assessment- RLE

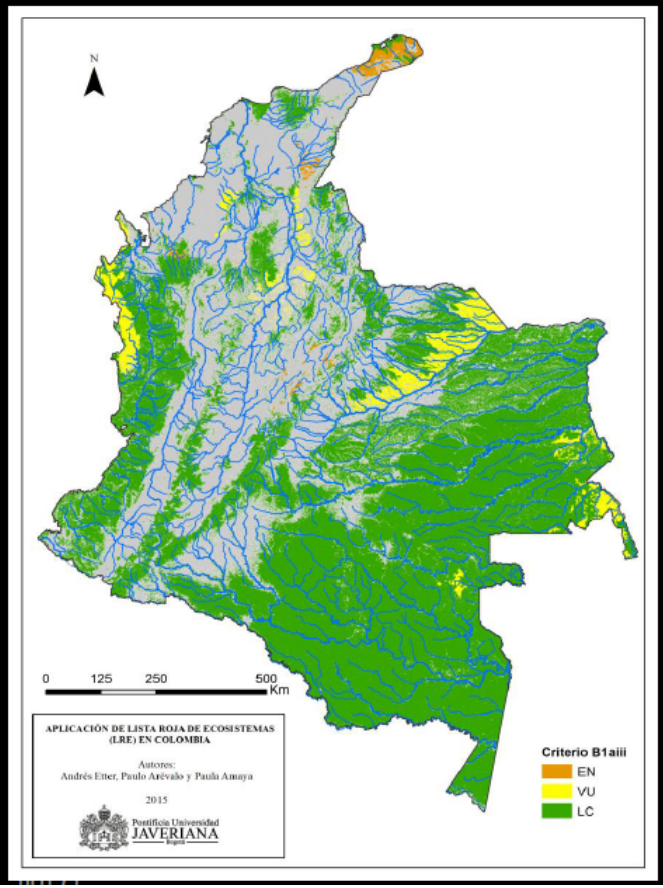
RESULTS

Criteria A and B

Reduction in geographic distribution

1970- 2014





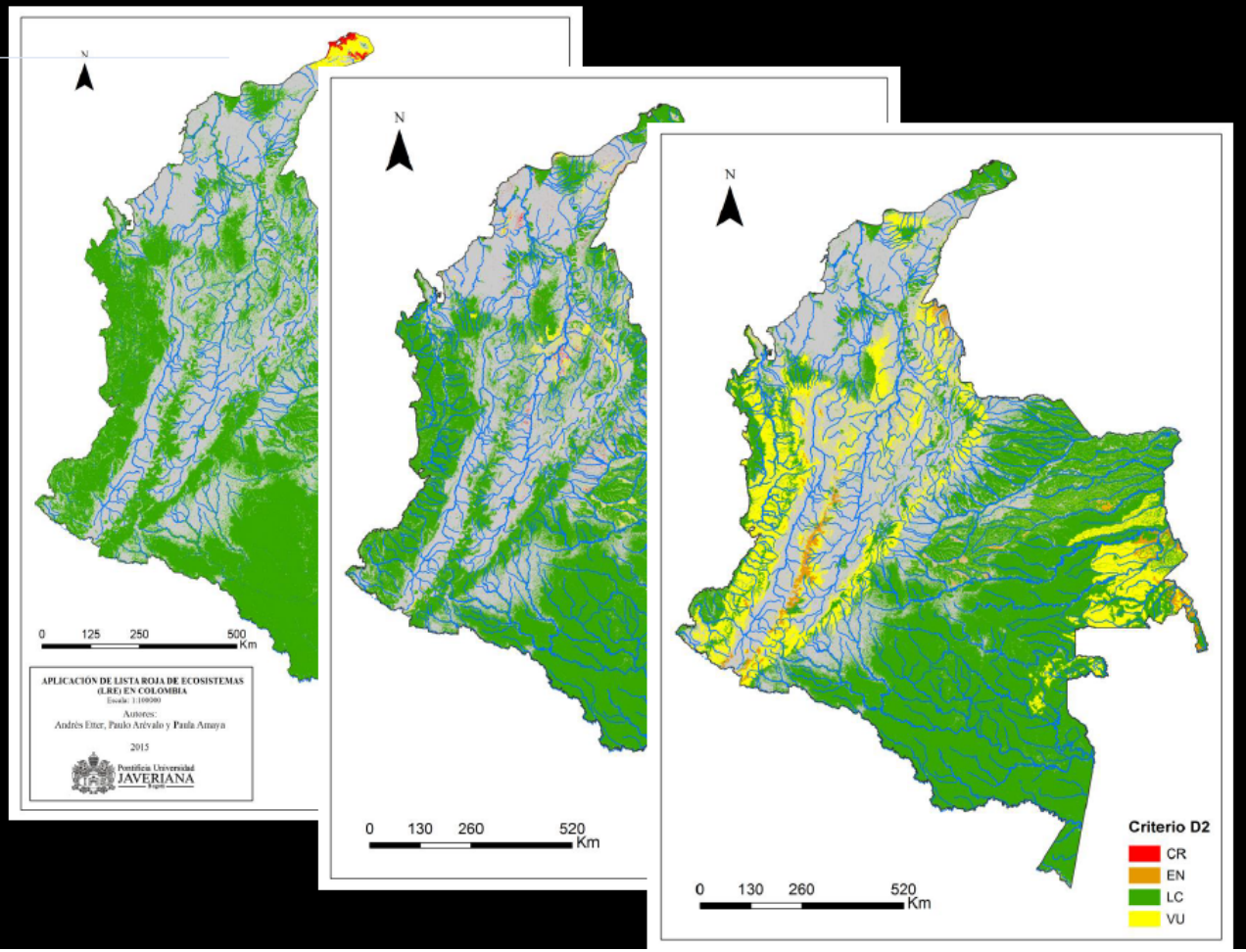
Ecosystem Risk Assessment- RLE

RESULTS

Criteria C and D

Loss of ecological functionality

Past and future



Ecosystem Risk Assessment- RLE

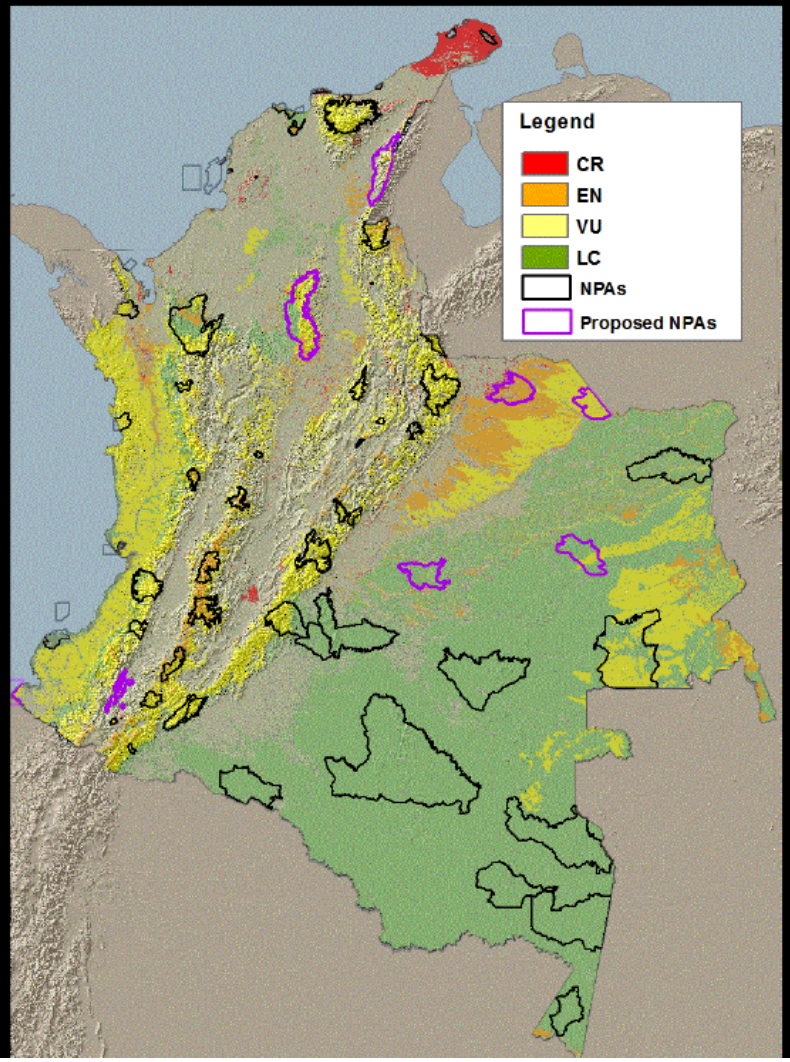
RESULTS

Final Evaluation

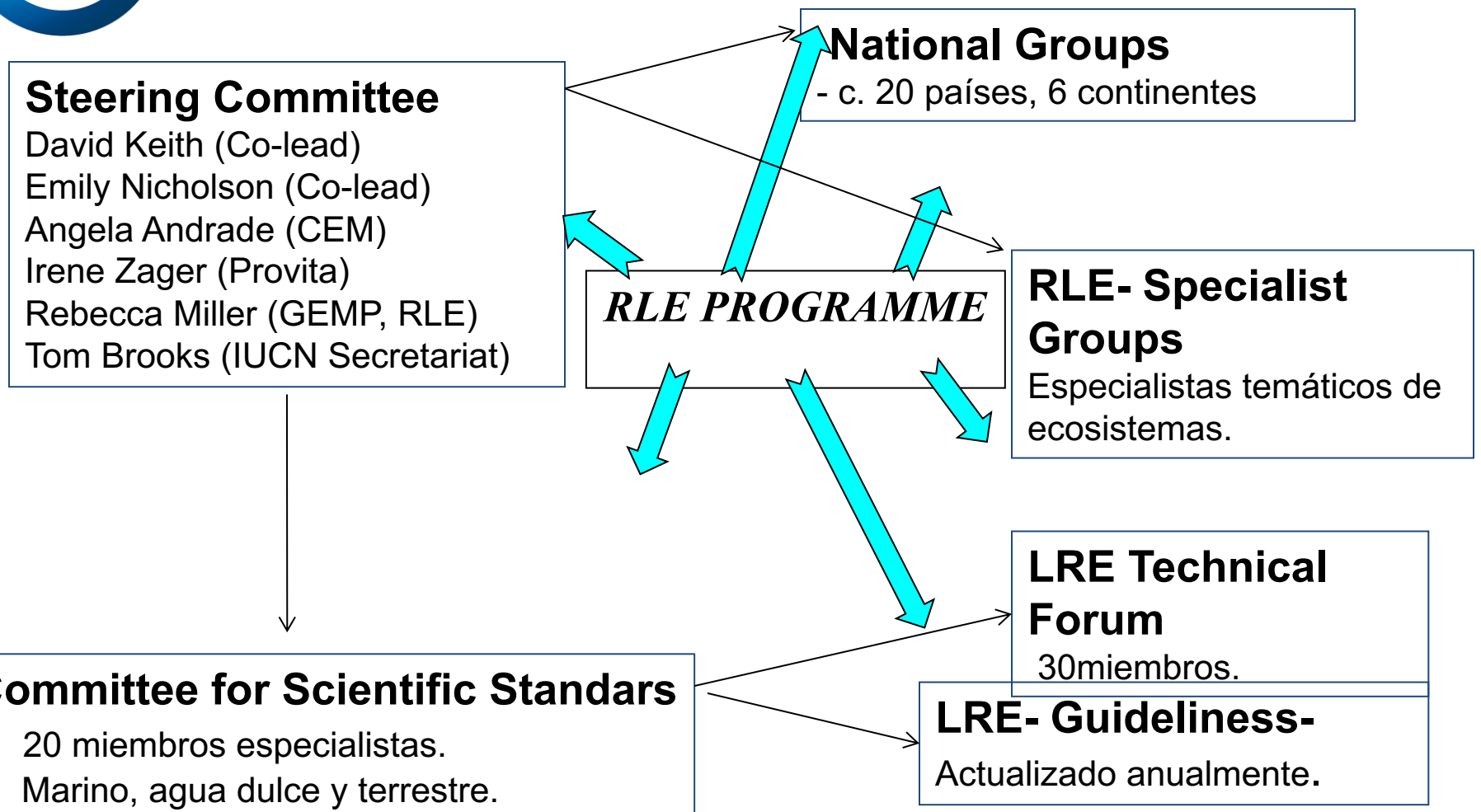
CR 19 ecosystems 23% (**2 %** of area)
EN 19 ecosystems 23% (**8 %** of area)

Most critical ecosystems:

- All ecosystems of the **Dry Tropical Forest** and **Desert** biomes
- Andean intrazonal **dry** and **wetland** ecosystems
- **Tropical rainforests** of the Orinoco piedmont



RLE- Governance Structure



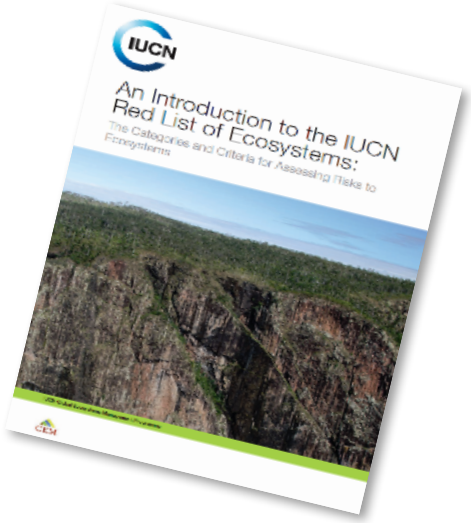
Kieth, 2017

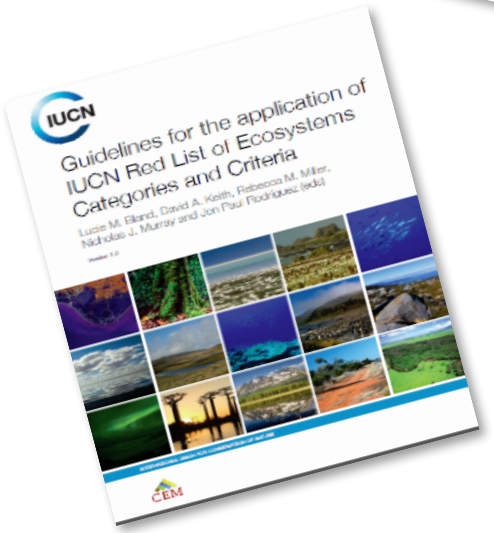
RLE- Current Progress: Support Tools- Capacity Building

- IUCN- Introductory Guide
  - 2016

- IUCN RLE Application Guides
- v1.0 (2016), v1.1 (2017)

- RLE- Online Technical Forum
  - Launched in 2017





Red List of Ecosystems- Current progress

Systematic Assessments:

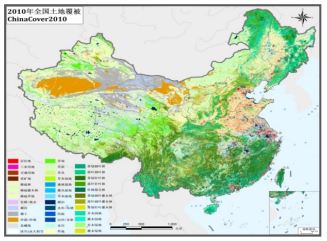
- For conservation planning & Sustainable development.
- All ecosystem types..
- Moderate levels of detail.

Strategic Assessments:

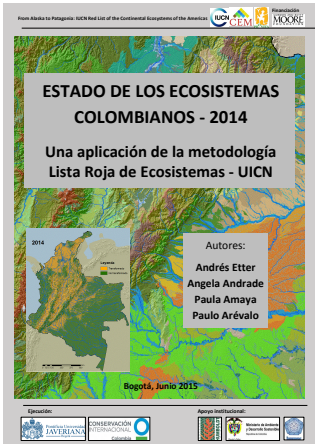
- For informing ecosystem specific management.
- One/few targeted ecosystems.
- Highly detailed assessments.

Thematic Assessments:

- Conservation planning.
- Thematically related ecosystems.
- Moderate levels of detail.



China



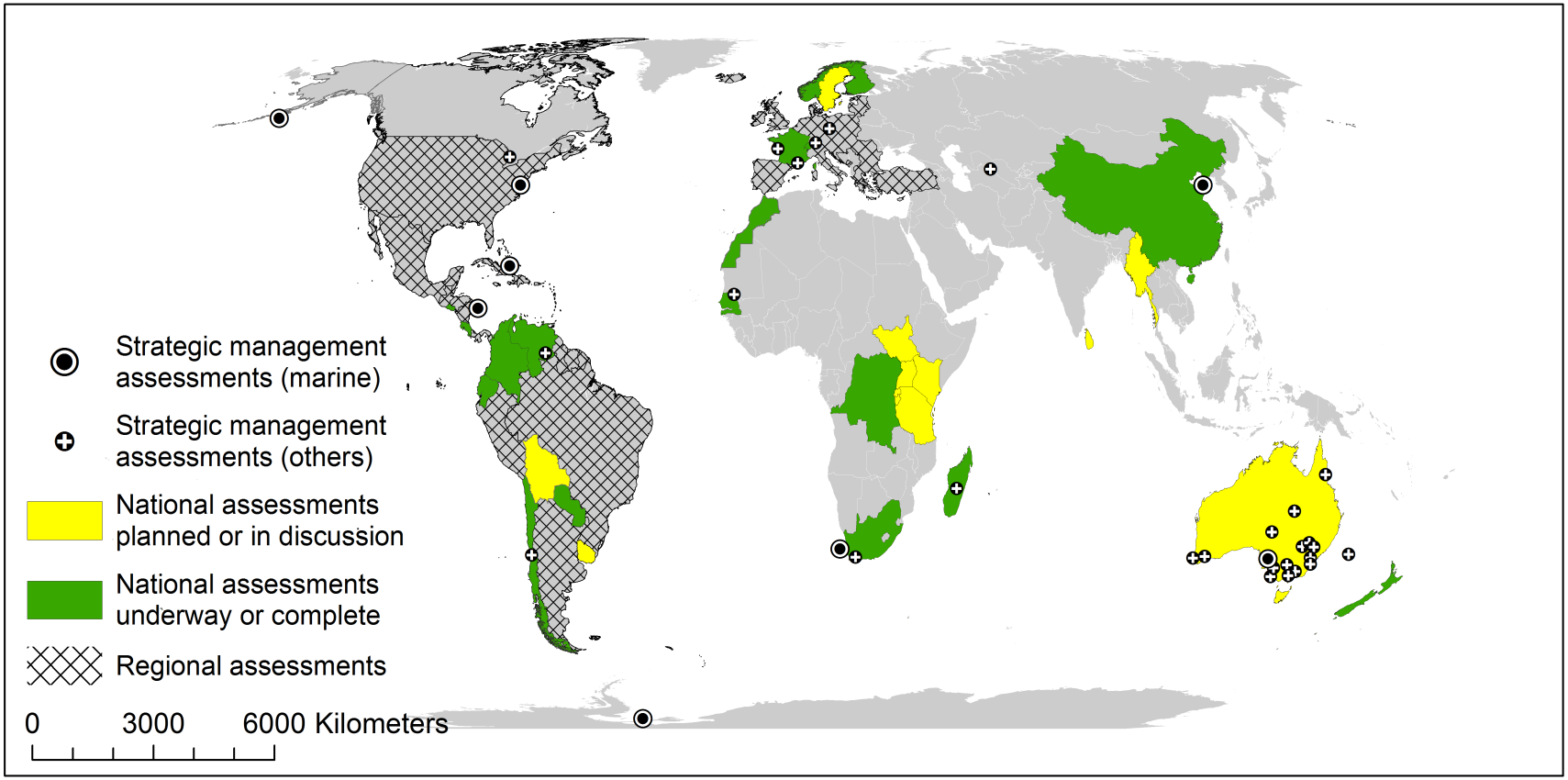
Colombia

Chile

France

Kieth,2017

Red List of Ecosystems – Current Progress.

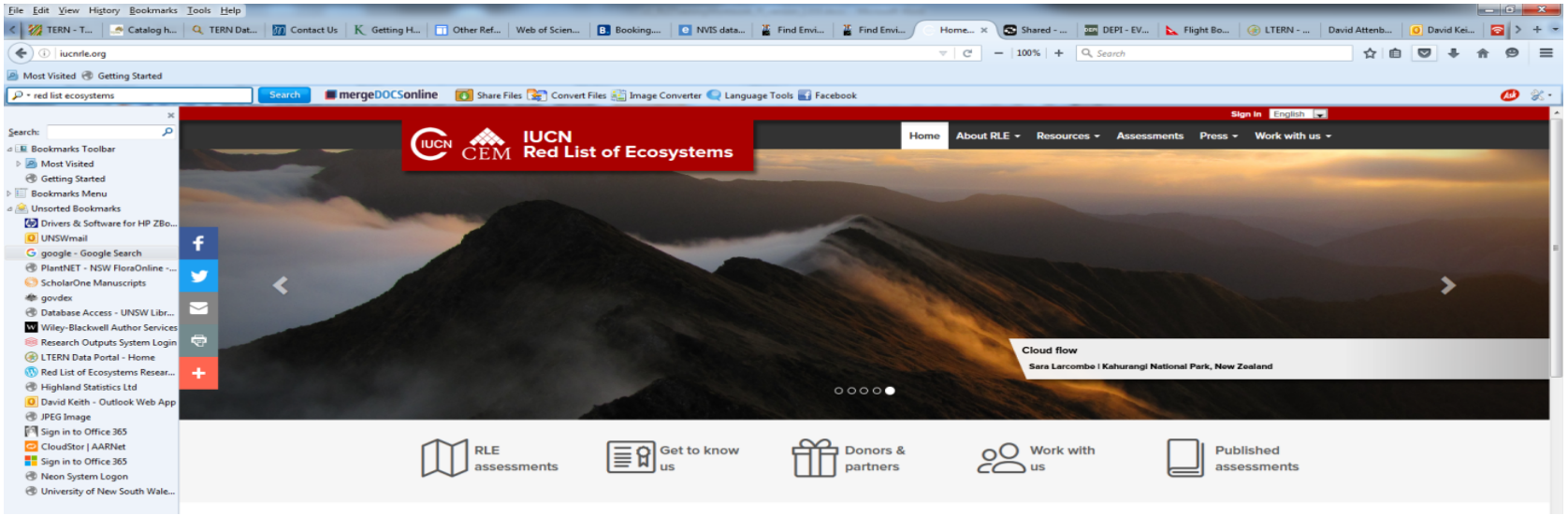


Kieth,2017

RLE and Sustainable Development Goals

- Well functioning ecosystems are a prerequisite to achieve SDG, climate change agreements, Aichi Targets, etc.
- 17 SDG rely on resilient and diverse ecosystems, and 2/6/12/13/14/15 depend on the status of the ecosystems other 12 benefit from enhanced governance and a shared view of people and nature.
- A periodic assessment of the status of the ecosystems is required.
- RLE provides an early warning system of ecosystem status and risk of collapse assessment.

http://iucnrle.org/



IUCN, CEM, MAVA Foundation, PLuS Alliance, Australian Research Council

https://www.iucn.org/commissions/commission-ecosystem-management

CONSERVACIÓN INTERNACIONAL Colombia

Nature based Solutions

What are Nature-based Solutions?

Nature-based Solutions (NbS) are defined by IUCN as "actions to protect, sustainably manage, and restore natural or modified ecosystems, that address societal challenges effectively and adaptively, simultaneously providing human well-being and biodiversity benefits".

Nature based Solutions

- **Objective** Develop and improve the knowledge base on NbS support the integration of this knowledge in planning and decision making, take part in the further development and expansion of the NbS work, with the IUCN Secretariat and other relevant commissions (WCPA, WCEL, CEC, *CEESP*).

- **Contribute to future publications**: report on case-studies to annex to the NbS IUCN book.
- **Contribute to the operational framework to implement the NbS Resolution**: developing the parameters/standards, the guidelines; testing the standards in case-studies; Collect evidence base on successful NbS standards; Synthesize NbS experiences & linkages.
- **CEM relevant TG leads** (ES, Eco-DRR, ER, EbA&Mitigation, resilience),

Ecosystem Resilience

- **Objective:** to clarify the concept of resilience with respect to simple and complex systems and demonstrate the value of tools for resilience-based natural resource stewardship, disaster risk reduction and ecosystem-based adaptation.

Actions:

- Building capacity for resilience thinking and assessment in a "learning-by-doing" process:
- Provides tools and guidance to assess resilience in a wide range of ecosystems.
- Communicates lessons learned from case studies for social learning. Assists the development of policies that support the emergence of resilience in SE systems.
- Platform to facilitate sharing of lessons learned for policy and regulatory frameworks.

Ecosystem Governance

Objective: To foster discussion and analyze information that may help better understand how ecosystem governance can be support and enhance across the world and in various ecosystems to ensure biodiversity conservation, protection of ecosystem services, and environmental sustainability. Concepts and actions focus on supporting the SDGs, Paris Agreement and the Aichi targets under the CBD.

Actions:

✓Stimulate research on how different approaches to ecosystem governance and how this can be supported in different circumstance and ecosystems & MAB.

✓Develop a framework that can be used to assess ecosystem governance and thus support sustainable development and the delivery of ecosystem services at regional scales, particularly in the context of climate change.

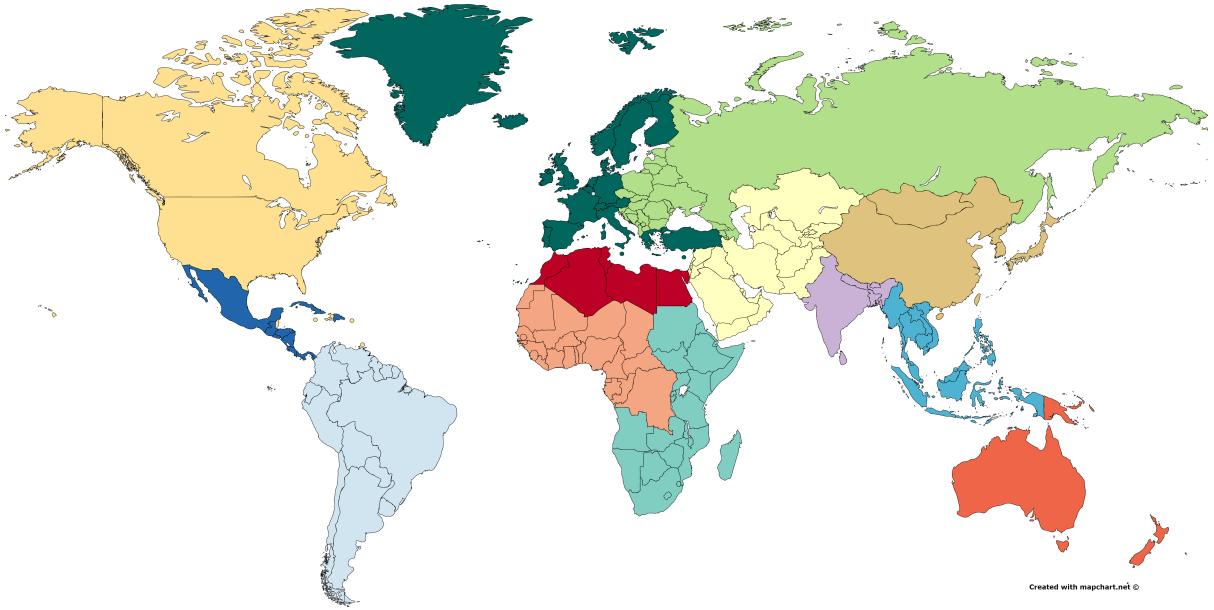
✓Communicate with governments, communities, corporations and the general public to encourage the use of EG to support SDGs.

Culture and Ecosystem Management

Objective: provide expert knowledge and guidance on the values of culture and cultural practices to support biodiversity conservation, maintain and enhance cultural diversity and address the impacts of climate change in the management of both natural and modified ecosystems.

- **Actions:**
  Enhance understanding of cultural practices that contribute to or erode conservation and climate change adaptation, and the cultural values and value systems that support them.
- Increase knowledge of the role that human culture plays in climate change.
- Promote the development of tools and guidance to understand the relationship between various cultures and ecosystem management.
- Assist the development of policies that include and support the role of culture in ecosystem management for biodiversity conservation and climate change adaptation.

CEM 2017-2020



Africa	Northern Africa; West and Central Africa; Southern and East Africa
America	North-America and Caribbean (includes English speaking Caribbean); Meso America (including Spanish speaking Caribbean); South-America
Asia	North East Asia; South East Asia; South Asia; West and Central Asia
Europe	Eastern Europe and Western Europe
Oceania	Oceania

Nations with Focal Points: France, Mexico, Netherlands

CEM STRUCTURE- 2017-2020

OTHER COMMISSIONS:

CEC

CEESP

SSC

WCEL

WCPA

CHAIR

Chair Advisor

SC

SC MEMBERS:

Bernal Herrera
Birguy Lamizana
Kelvin Passfield
Liette Vasseur
Madhav Karki
Mike Jones

Chair Advisor:
Steve Edwards.

INVITED: YPR

Regional Chairs-13

TG-13

SG-13

TF-4

CEM Structure- 2017-2020

THEMATIC GROUPS

NBS

Ecosystems Resilience
Eb Adaptation & Mitigation
Eco-DDR
Restoration
Ecosystem Services
RLE
Sustainable Use Biodiv.
Ecosystems and Invasive Spp.
Business and EM.
Biosphere Reserves
Ecosystem Governance
Cultural Practices and EM,

SPECIALIST GROUPS

Artic
Drylands
Mediterranean
Mountain
Peatland
Holartic Steppes

Coastal and Marine
Deep Sea Mining
Island
Oasis/Deserts
Urban ecosystems
Agro-ecosystems
Forest ecosystems

TASK FORCES

Systemic Pesticides
EbAquaculture
Fisheries Expert Group
Human Health and EM
Habitats/Species
Re-wilding

Young Professionals Network

MUCHAS GRACIAS

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https://www.iucn.org/commissions/commission-ecosystem-management/about