Integration of In-situ Biodiversity Conservation and Modelling to Mitigate Climate Change Impacts

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10th GEOSS Asia-Pacific Symposium
Vietnam Academy of Science and Tech.,Hanoi, Vietnam
18-20 September 2017

Protect the planet from degradation through sustainable development and taking urgent action on climate change

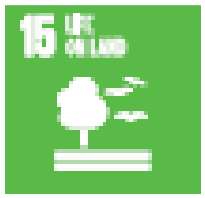
GOAL 13: TAKE URGENT ACTION TO COMBAT CLIMATE CHANGE AND ITS IMPACTS

Sustainable Development Targets		Relevant Aichi Biodiversity Targets
13.1	Strengthen resilience and adaptive capacity to climate-related hazards and natural disasters in all countries	5, 10, 14, 15
13.2	Integrate climate change measures into national policies, strategies and planning	2, 15, 17

Relevant Aichi Biodiversity Targets:

- 2 Biodiversity values integrated
- 5 Habitat loss halved or reduced
- 10 Ecosystems vulnerable to climate change
- 14 Ecosystem services
- 15 Ecosystem restoration and resilience
- 17 Biodiversity strategies and action plans

Source: CBD (2016)



GOAL 15: PROTECT, RESTORE AND PROMOTE SUSTAINABLE USE OF TERRESTRIAL ECOSYSTEMS, SUSTAINABLY MANAGE FORESTS, COMBAT DESERTIFICATION AND HALT AND REVERSE LAND DEGRADATION AND HALT BIODIVERSITY LOSS

Biodiversity values integrated

Protected Areas

Sustainable production and consumption

Reducing risk of extinction

Habitat loss halved or reduced

Ecosystem services

Sustainable agriculture, aquaculture and forestry

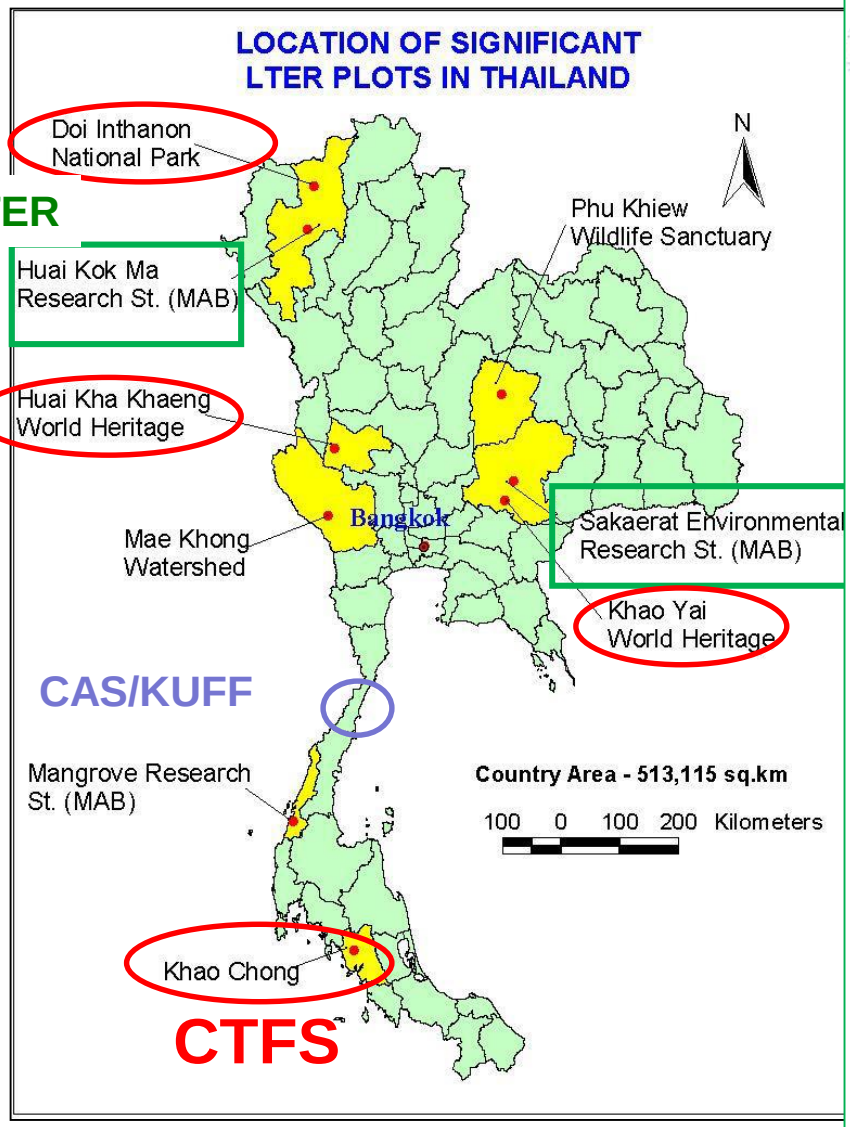
Ecosystem restoration and resilience

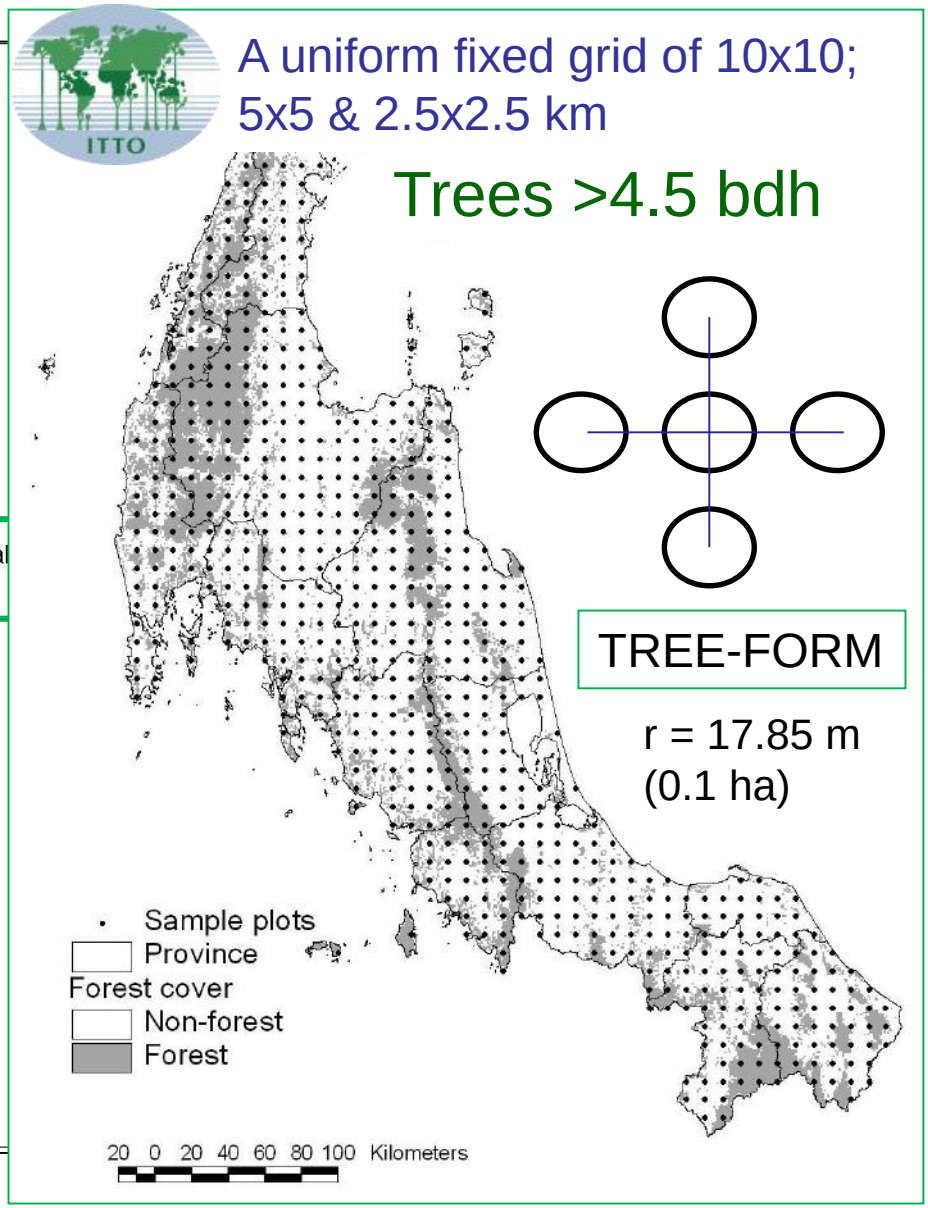
Invasive alien species prevented and controlled

Access to and sharing benefits from genetic resources

T 15.9 integrate ecosystems and biodiversity values into nat. & local dev. planning

In-situ observation in Thailand

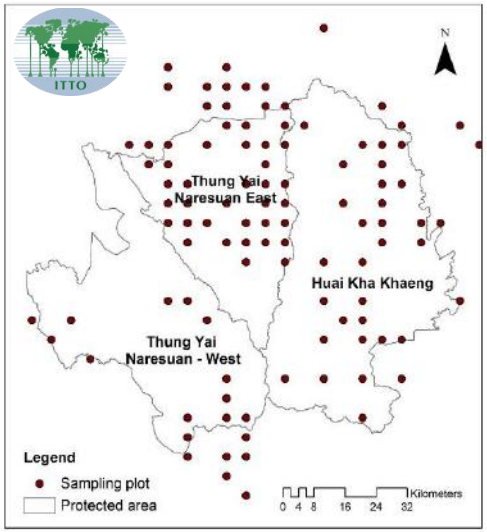


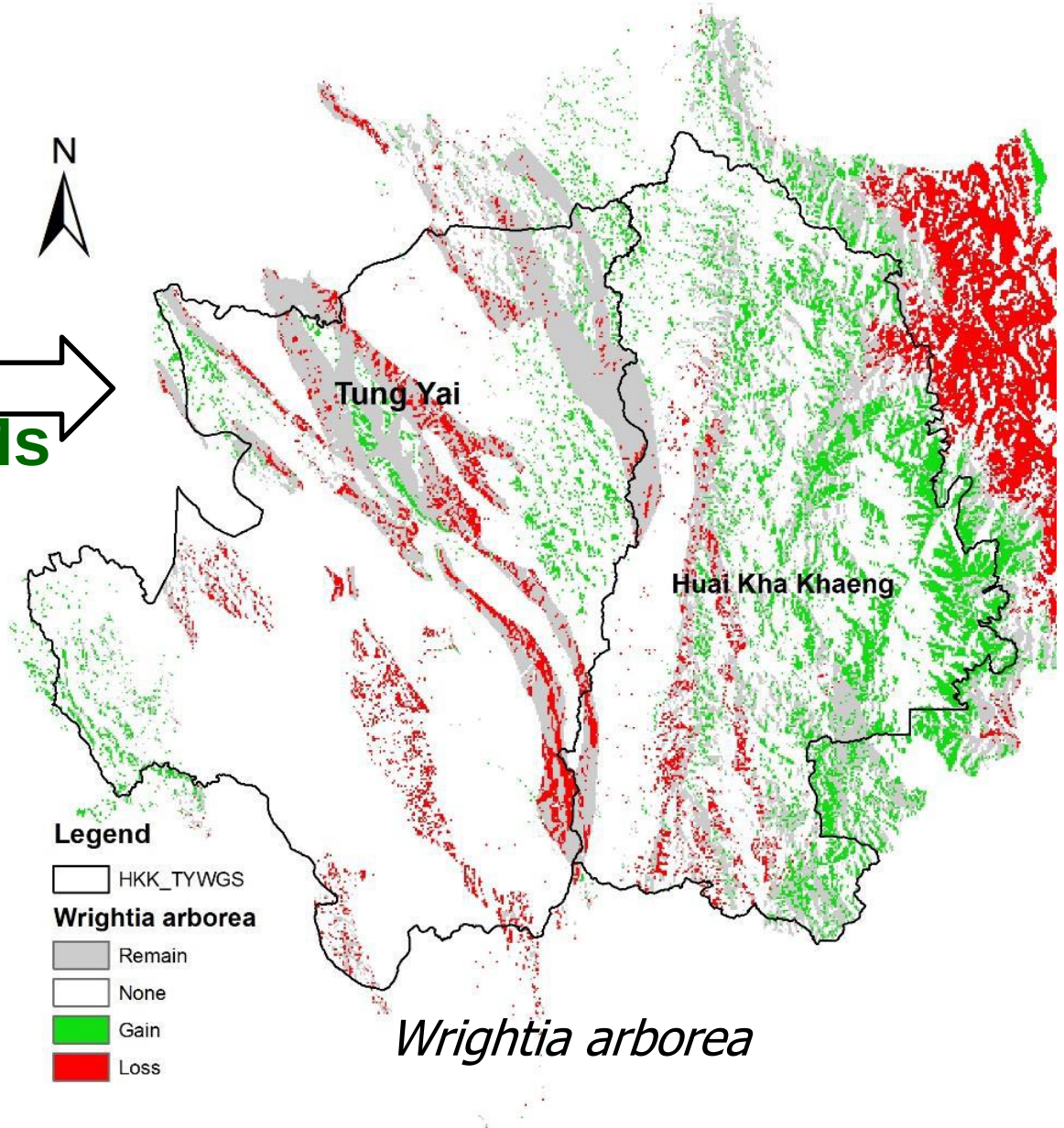


CC & Range shifts of 100 trees

WEFCOM
6,500 km2

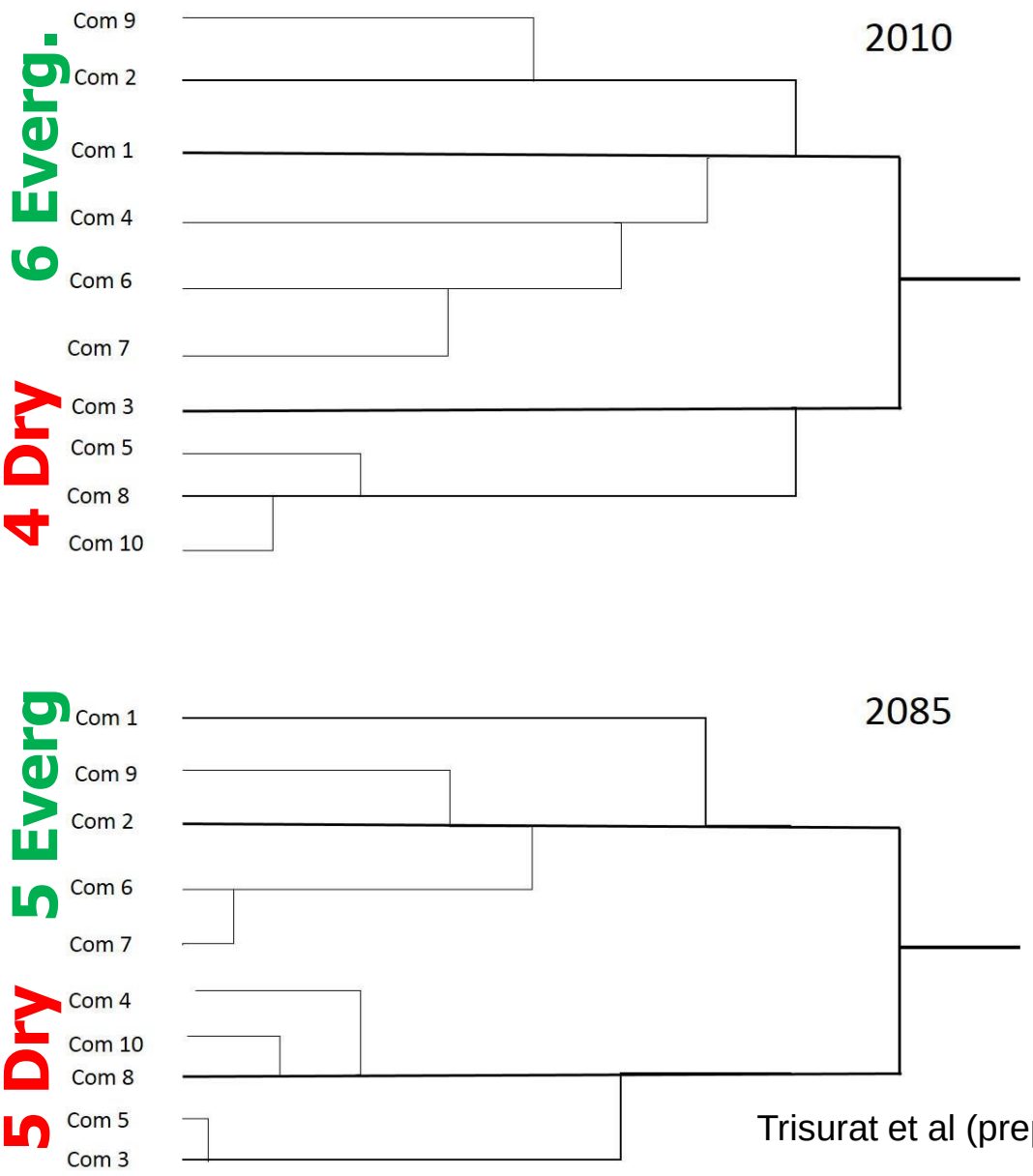
SDMs





Wrightia arborea

Altered Plant Communities

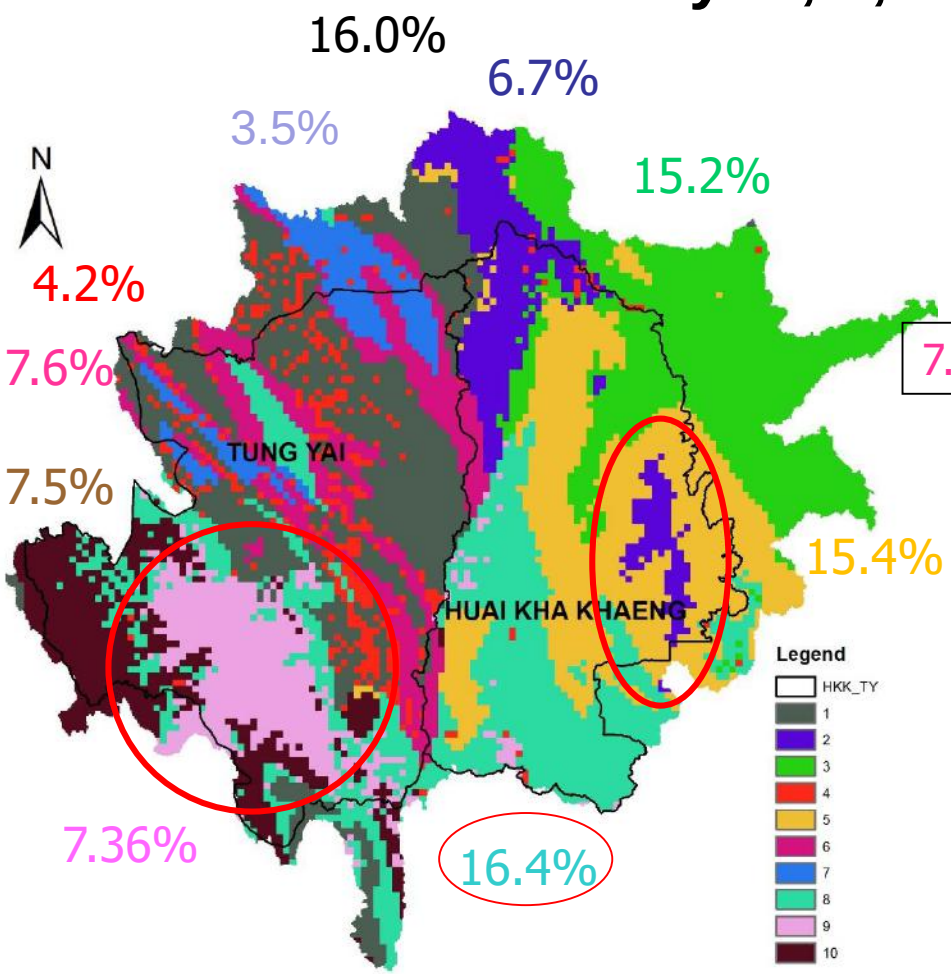


Trisurat et al (prep.)

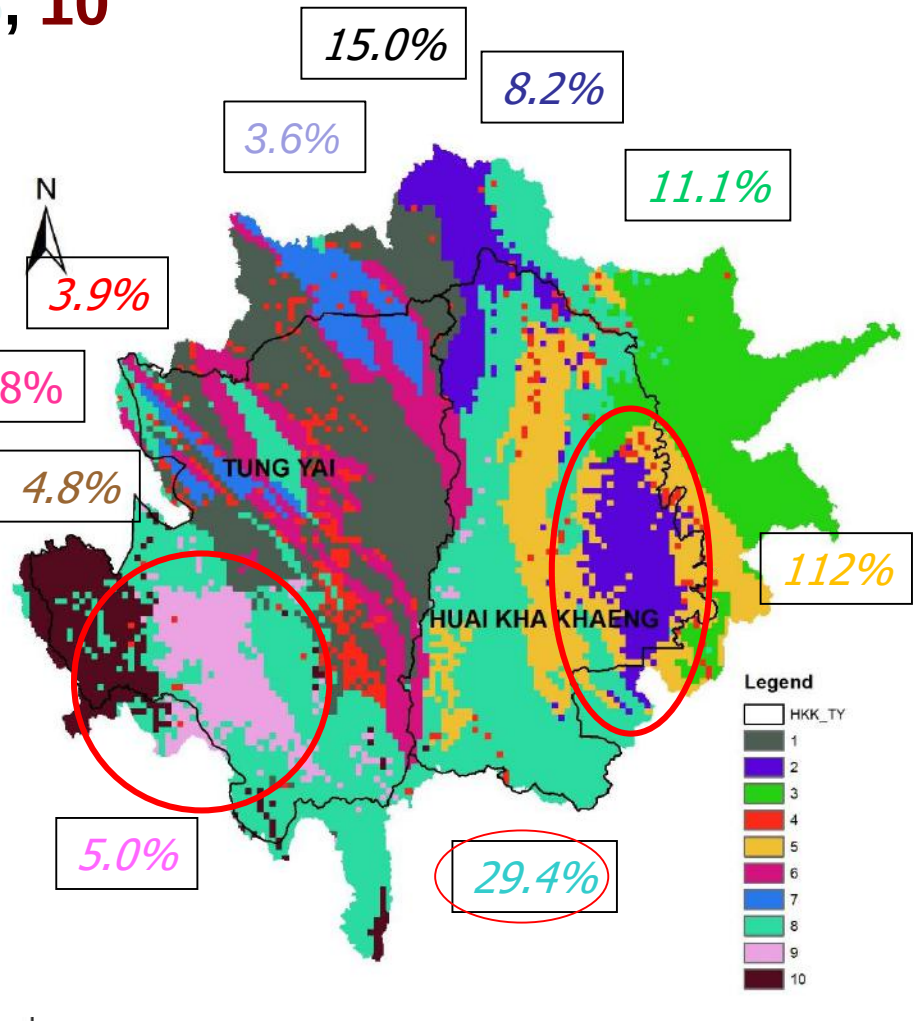
Ecosystem change & shifts

Everg: 1, 2, 4, 6, 7, 9

Dry: 3, 5, 8, 10



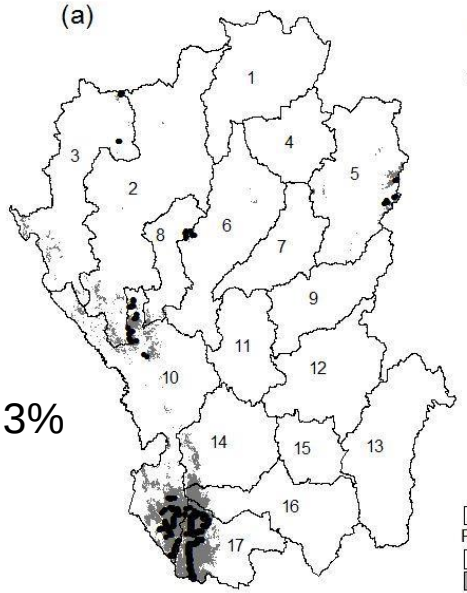
Baseline



Future CC

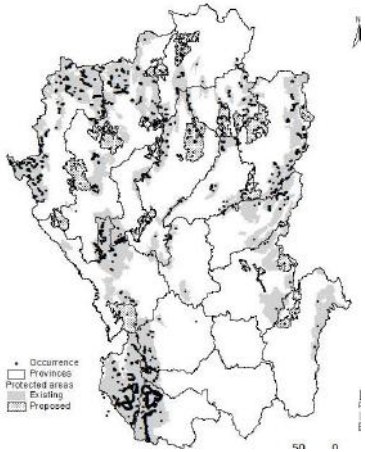
Trisurat et al (prep)

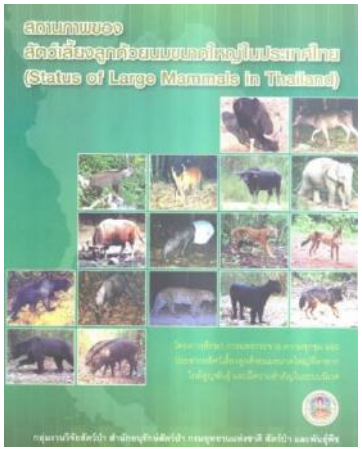
4.3%

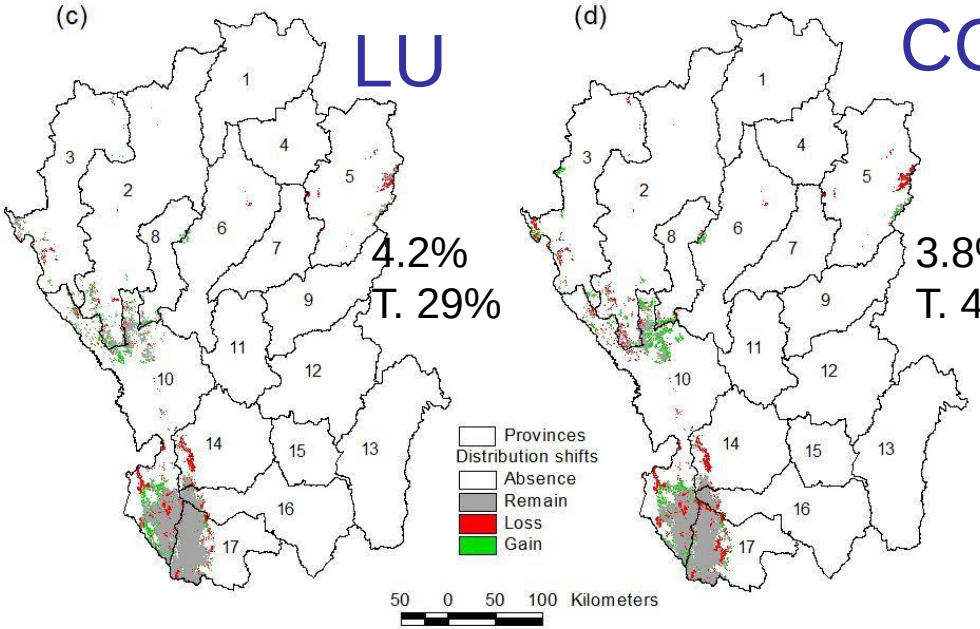


CC

4.8%
T. 36%







LU

4.2%
T. 29%

CC&LU

3.8%
T. 40%

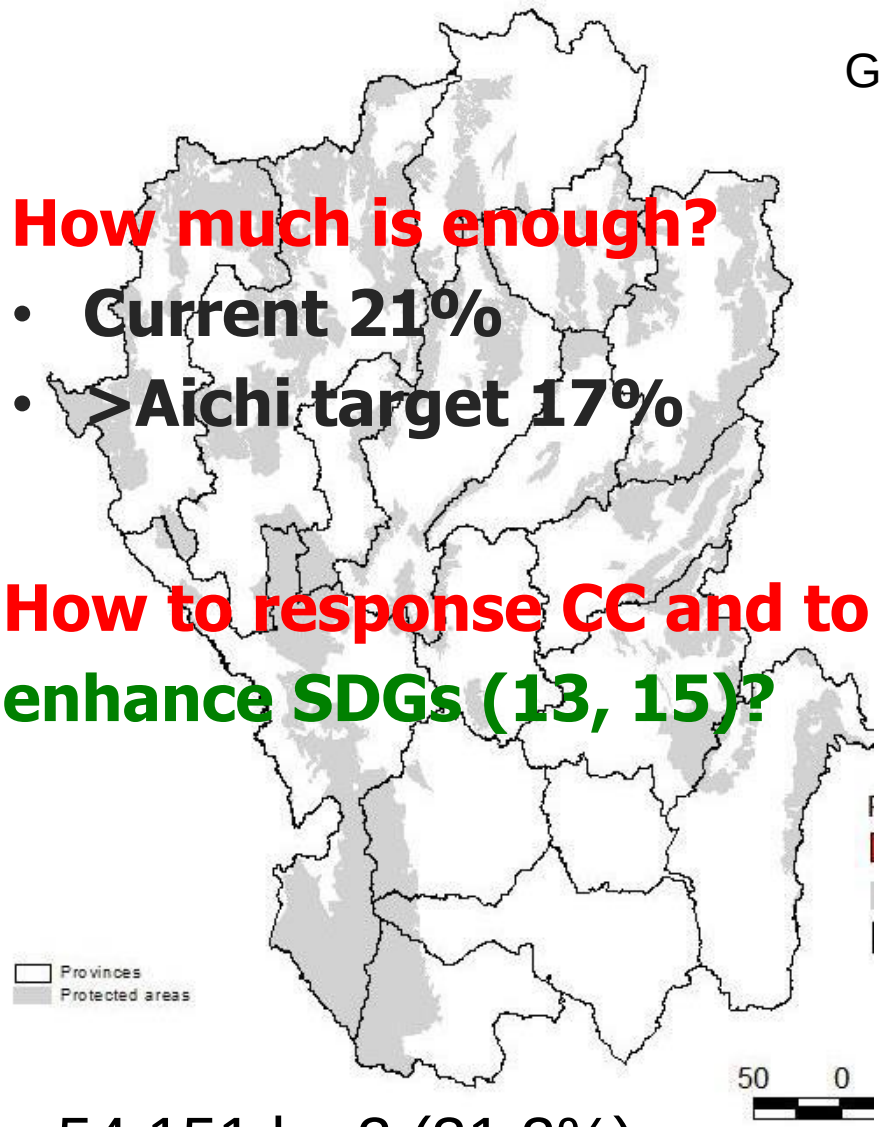
Trisurat et al (2012)

Priority for Conservation

How much is enough?

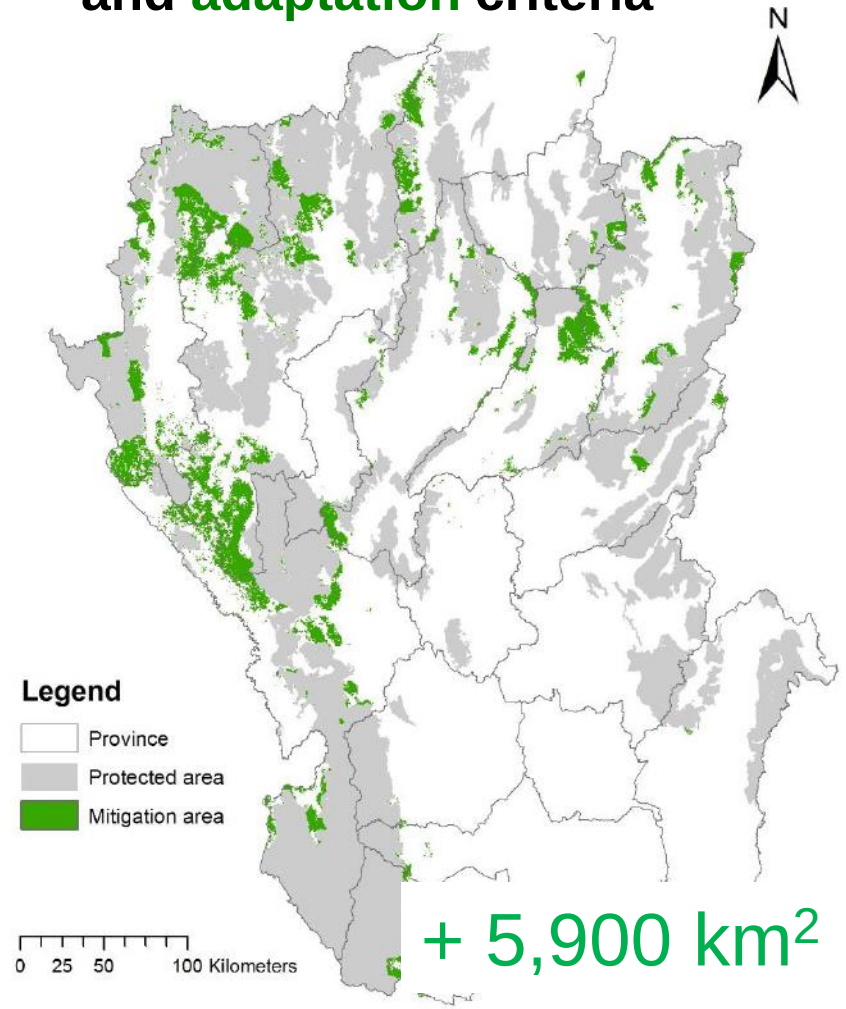
- **Current 21%**
- **>Aichi target 17%**

How to response CC and to enhance SDGs (13, 15)?



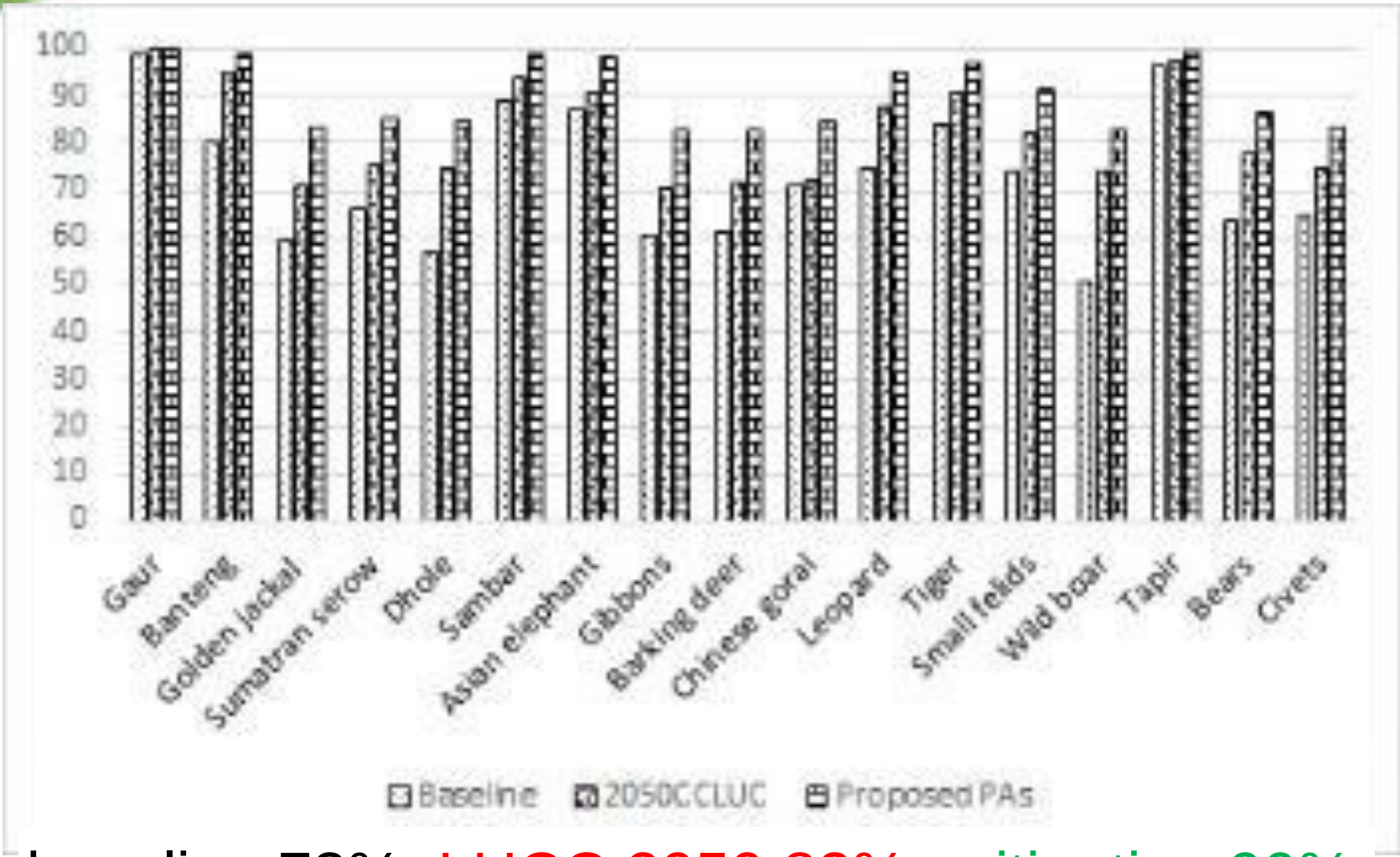
54,151 km2 (31.2%)

Exposure, sensitivity and adaptation criteria



59,347 km2 (34.4%)

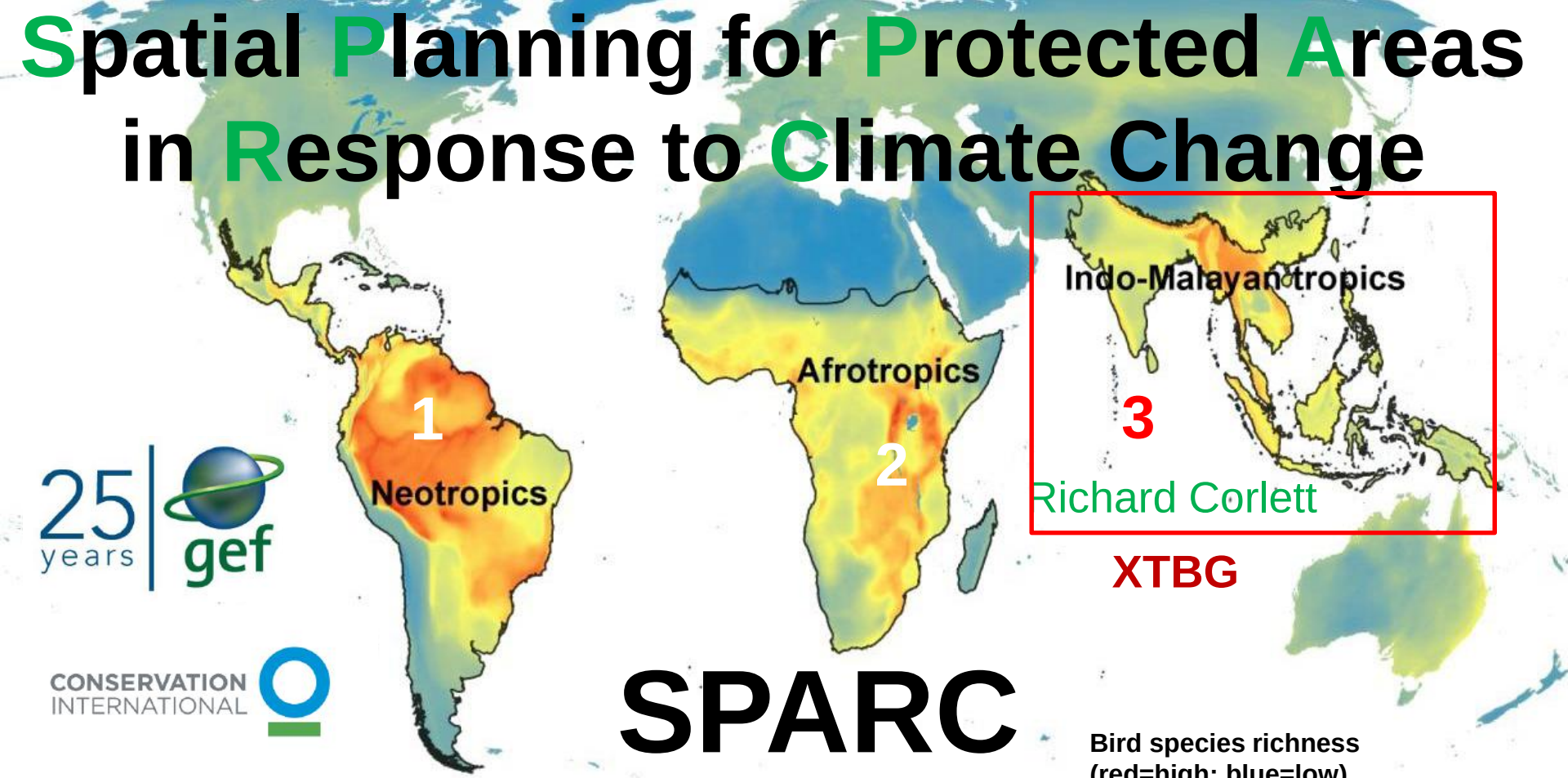
Coping Capacity



baseline 73%; LUCC 2050 82%; mitigation 90%

Trisurat et al (prep)

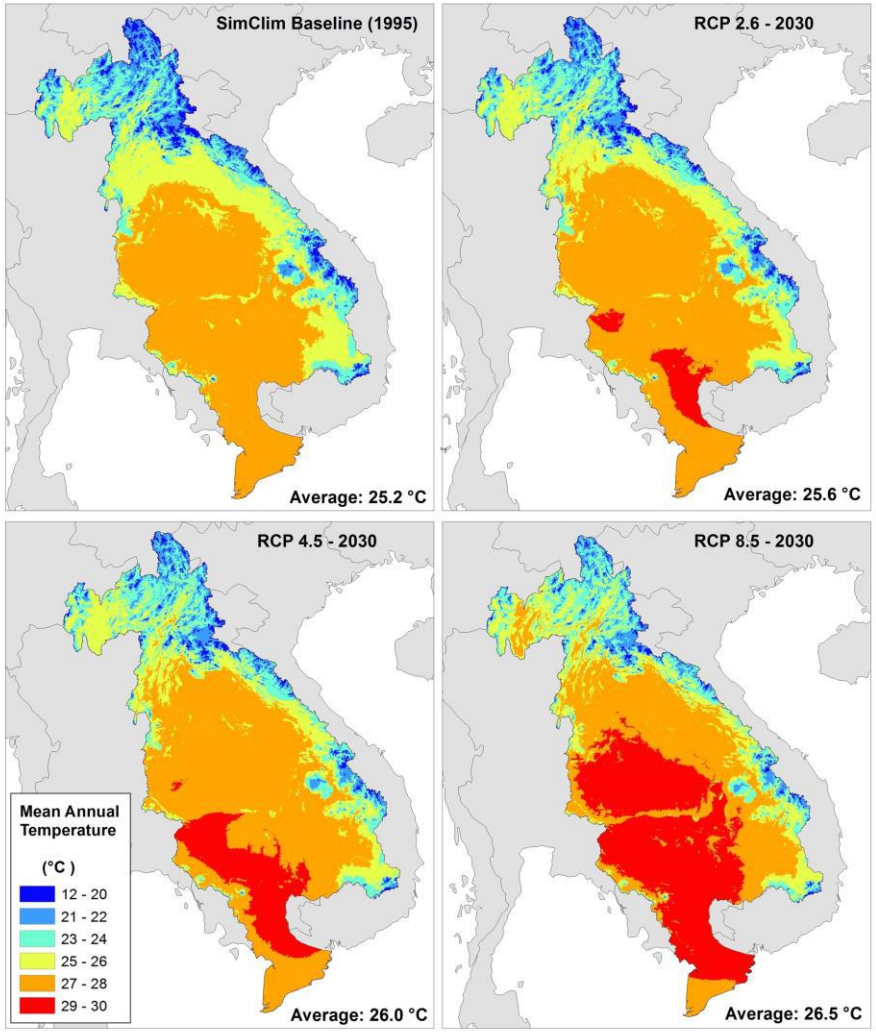
Spatial Planning for Protected Areas in Response to Climate Change



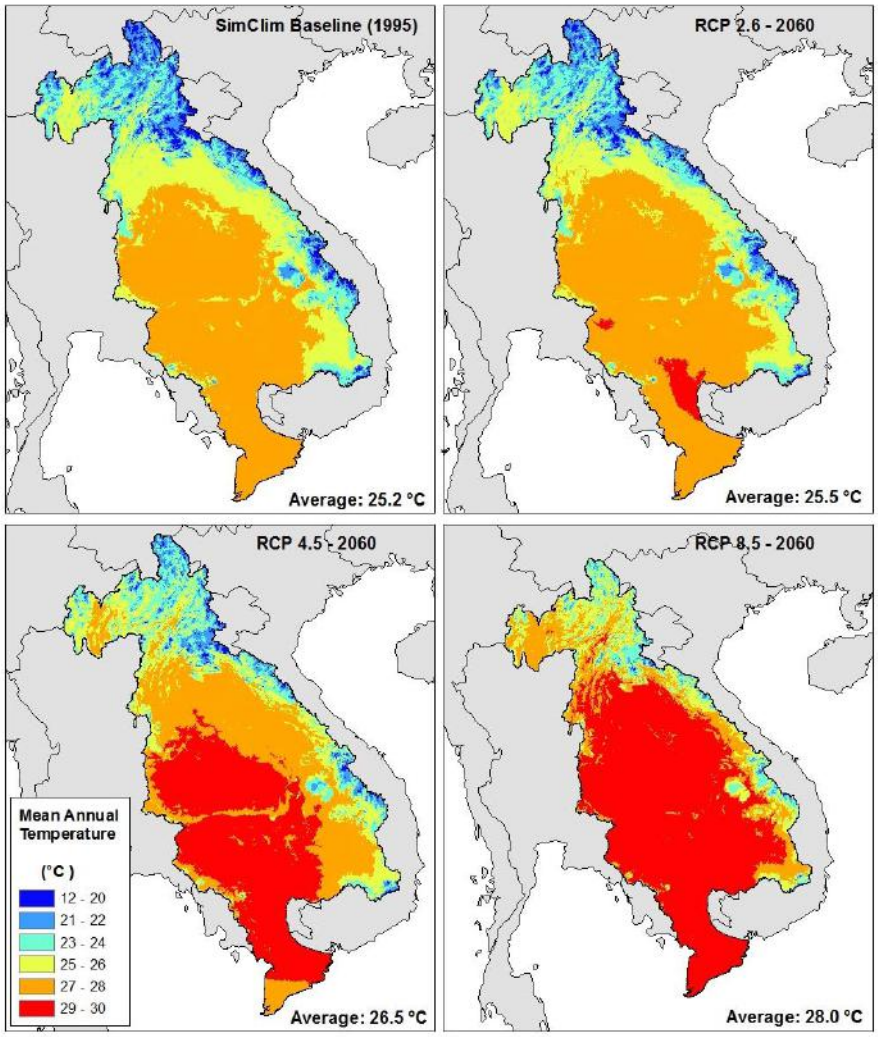
SPARC Objectives

1. Assessing **climate change threats** to PAs;
2. Identifying the species that need **priority for conservation action**;
3. **Focusing management efforts** on the major problems.

lean Annual Temperature - Historical and Projected
Lower Mekong Basin - 2030 - Ensemble (n =13)



Mean Annual Temperature - Historical and Projected
Lower Mekong Basin - 2060 - Ensemble (n =13)



Substantial warming of mean annual temperatures is evident across the LMB regions.
Similar trends are evident for both Minimum and Maximum Annual Temperature.

MRC (2015)

Environmental Stratification and Projected Shifts in the LMB by 2030 and '60

Robert Zomer, Ph.D.

Most areas tend toward the Extremely Hot and Mesic under the RCP 8.5 impact level across, almost all scenarios.

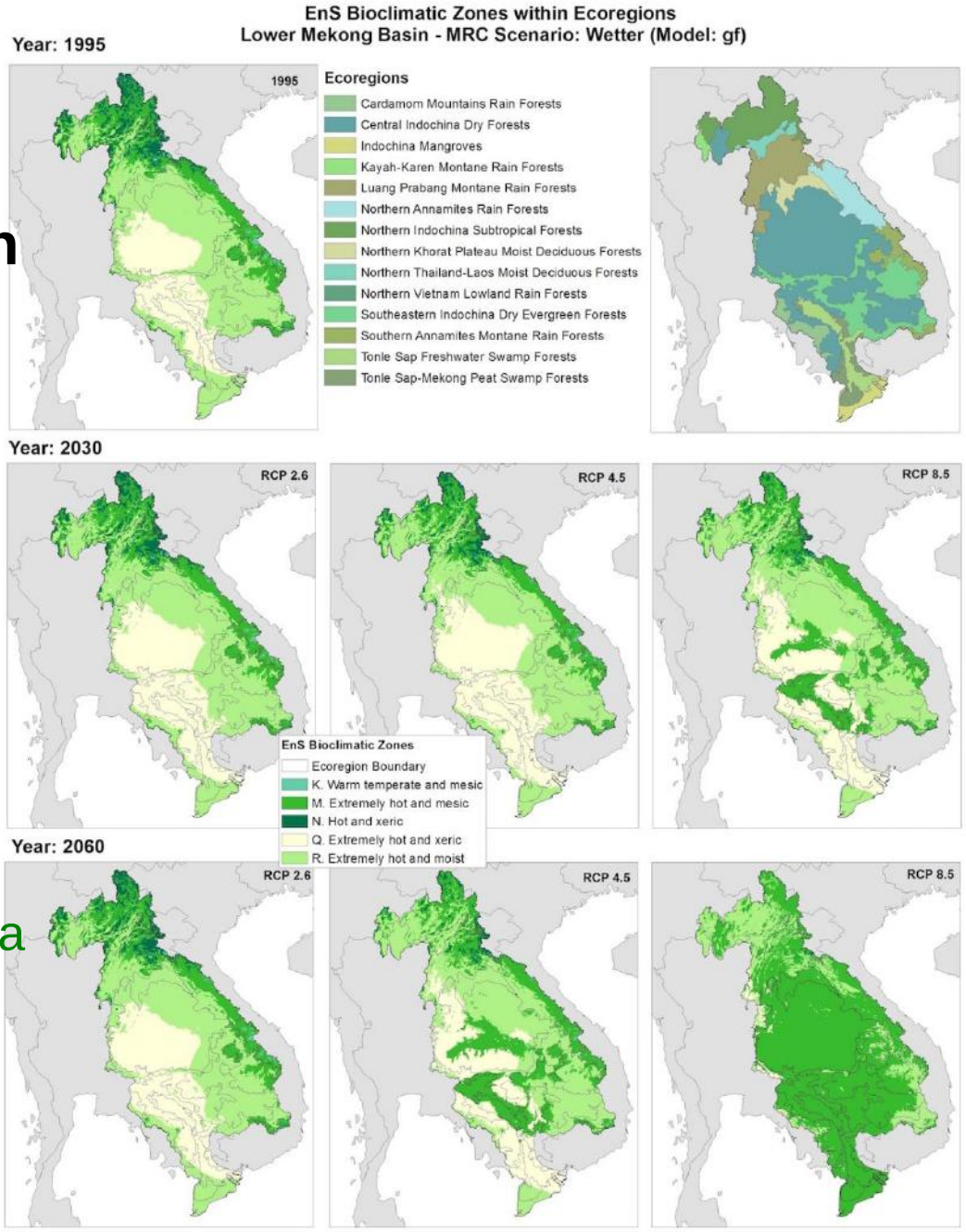
How to interpret and incorporate climate exposure into protected area planning? -

A need of in-situ occurrences

•*Vulnerable species*

-*Modeling & validation*

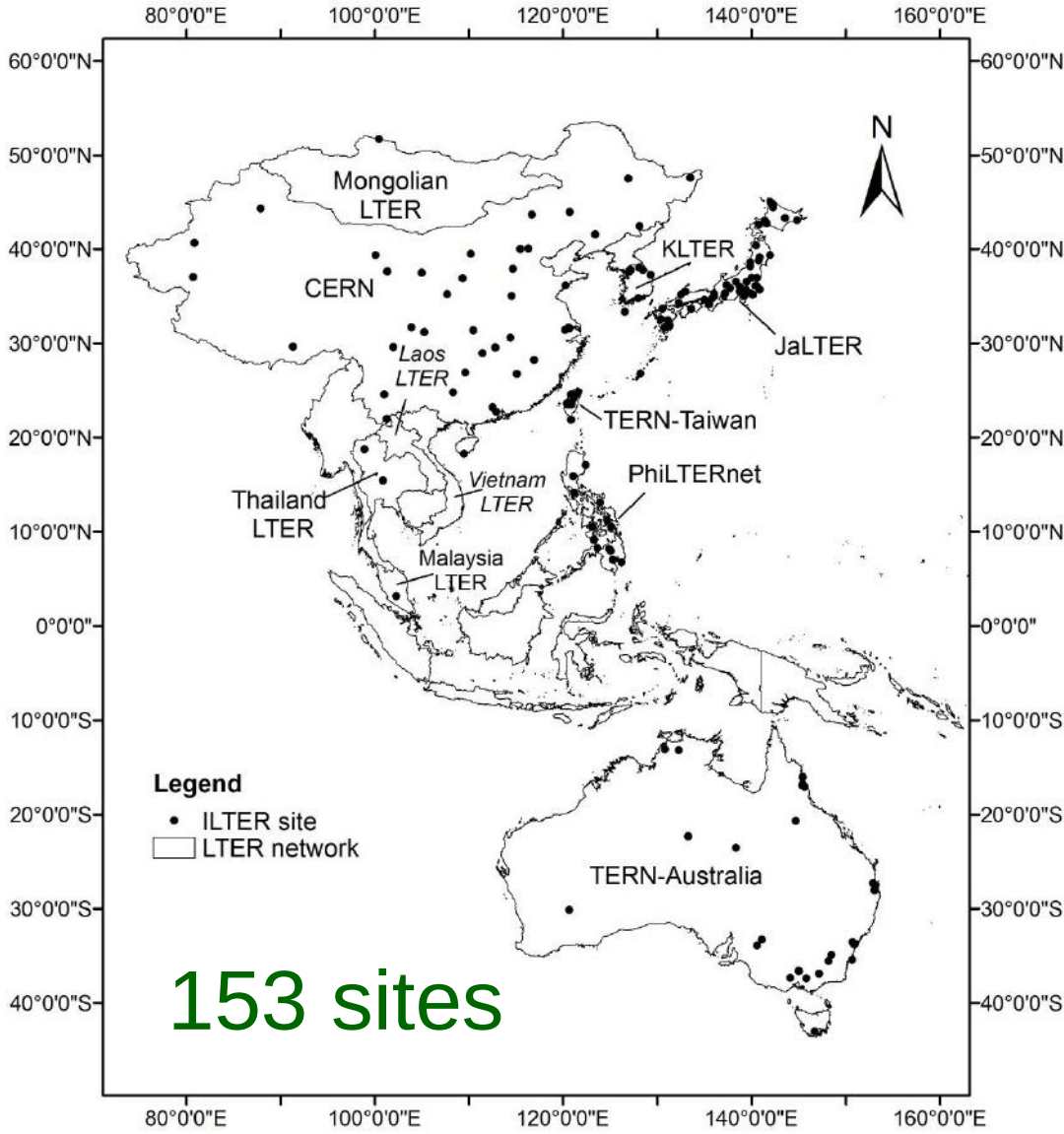
-*Priority areas*

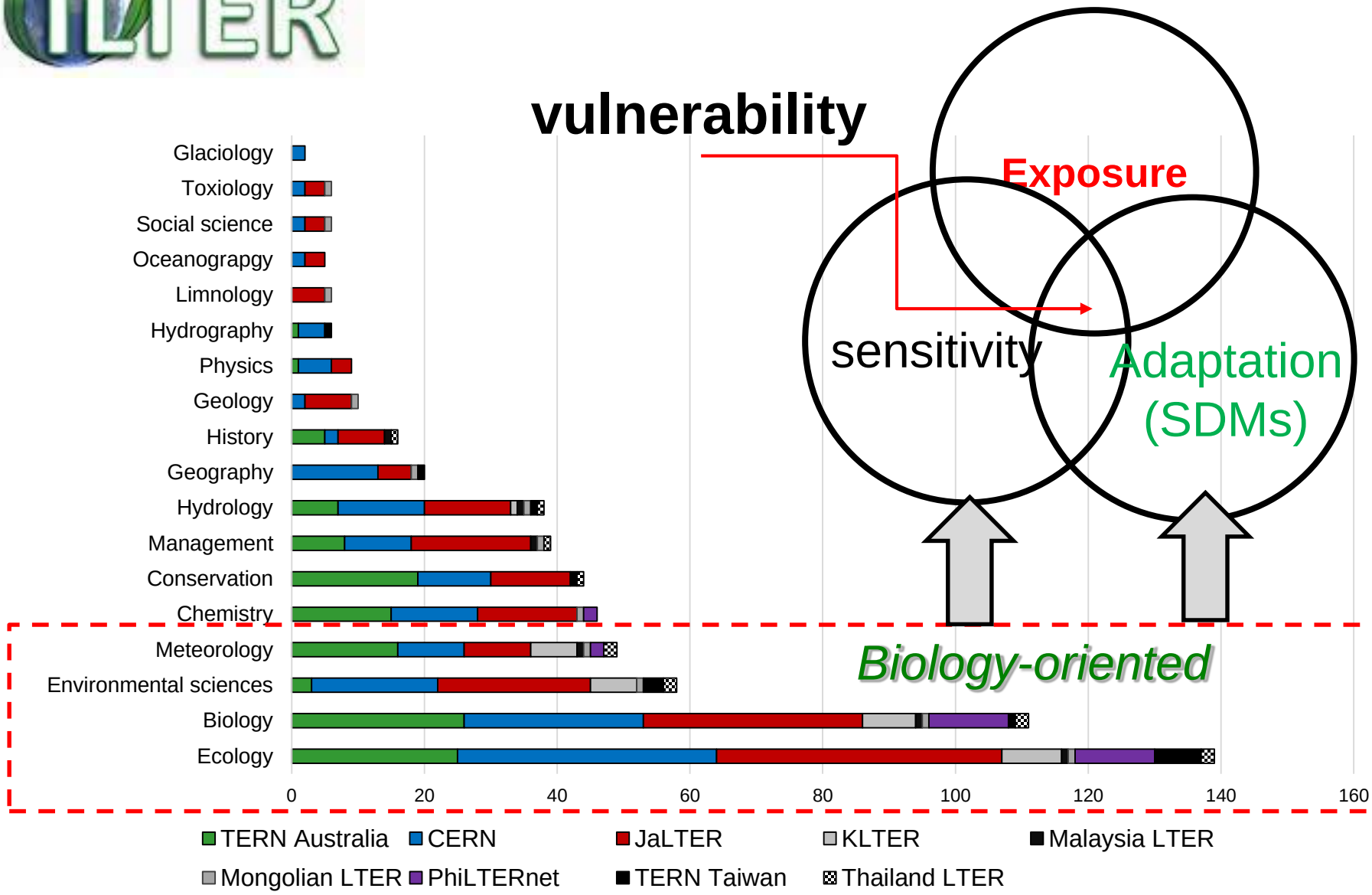


Potential Contribution of In-situ Observation

- Site-based
- Long-term data
- Across landscape
  - *Elev 4-4,500 m*
  - *Precip. 340-3,600 mm*
- Multi-disciplines
- 1,000s scientists
- Etc

+ others





Source: ILTER/DEIMS

Conclusions

- **CC** indicated a **prolonged period of impacts** on ecosystems, biodiversity, and ESs.
- Current **conservation efforts will be affected**, as ecological conditions may change beyond limits (narrow niches) or designated protected areas.
- A need to incorporate effective **spatial planning and adaptation strategies** to response CC.
- **In-situ observation** data are **VERY ESSENTIAL** to fulfill the above measures at all temporal and spatial scales.