



ICIMOD

Mountain biodiversity, ecosystem services and people in times of climate change: a perspective from the Eastern Himalayas

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Mountain biodiversity

Drivers of change

Eastern Himalaya

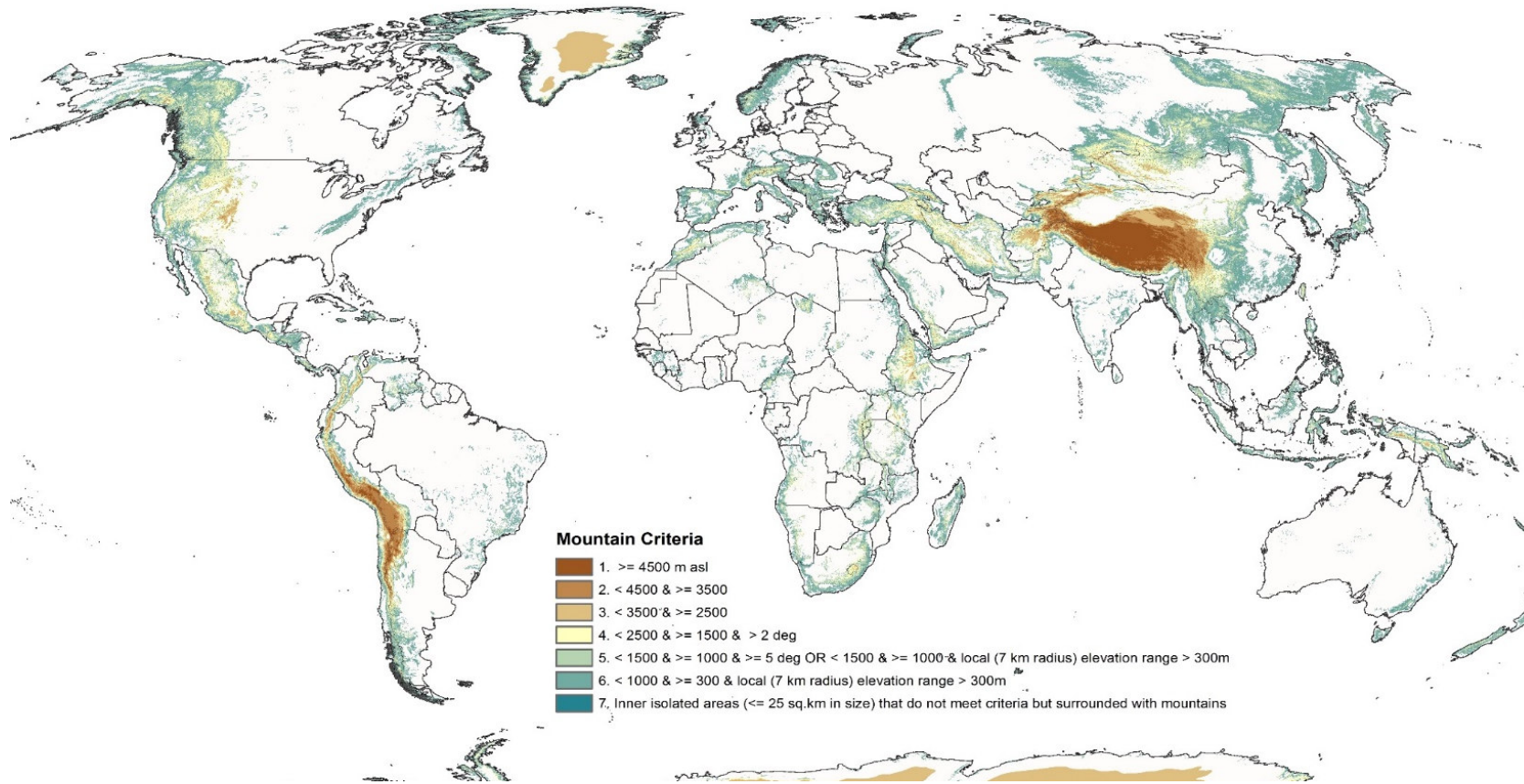
HKH Call for Action



Global mountain areas

Mountains of the World

(Source: WCMC-UNEP 2002; Kapos et al. 2000)



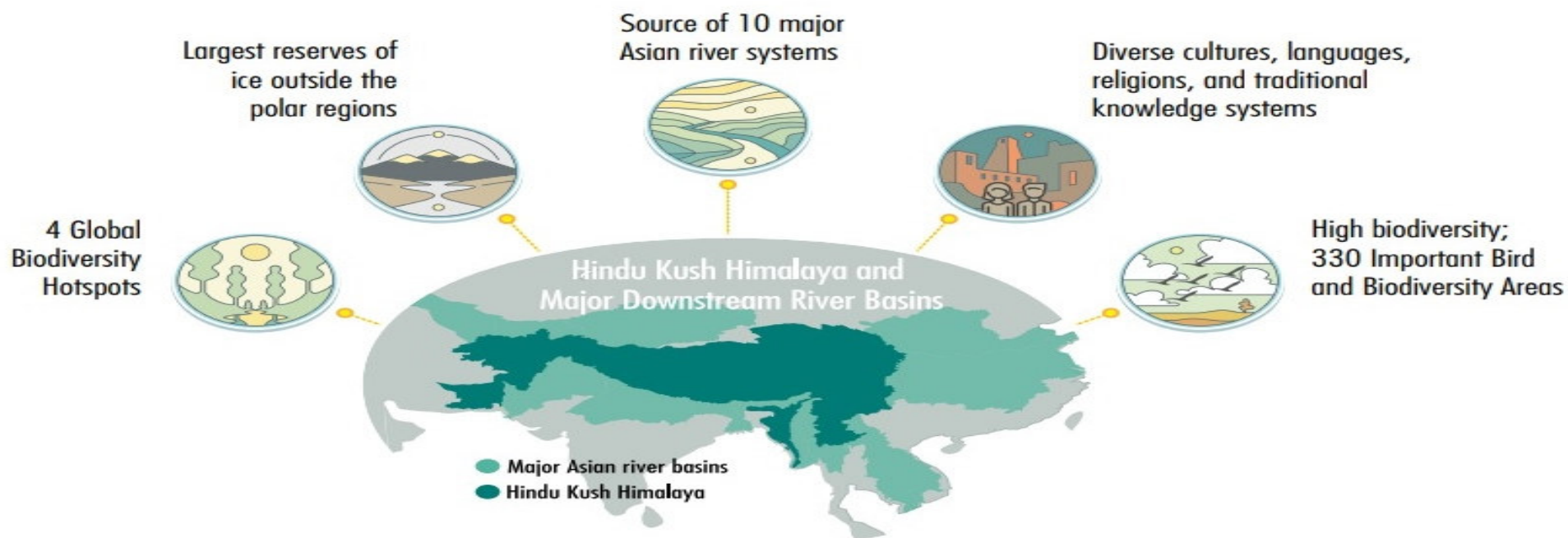
≈ 22% of the world's land surface can be classified as a mountainous

Mountains support 25% of world's terrestrial biodiversity and include nearly half of the world's biodiversity "hotspots"

Mountains are home to 915 million people; more than 50% of world's population depend on goods and services from mountains



The Hindu Kush Himalaya



240 million

people depend directly on the HKH for their lives and livelihoods

1.9 billion

people depend on the HKH for water, food, and energy

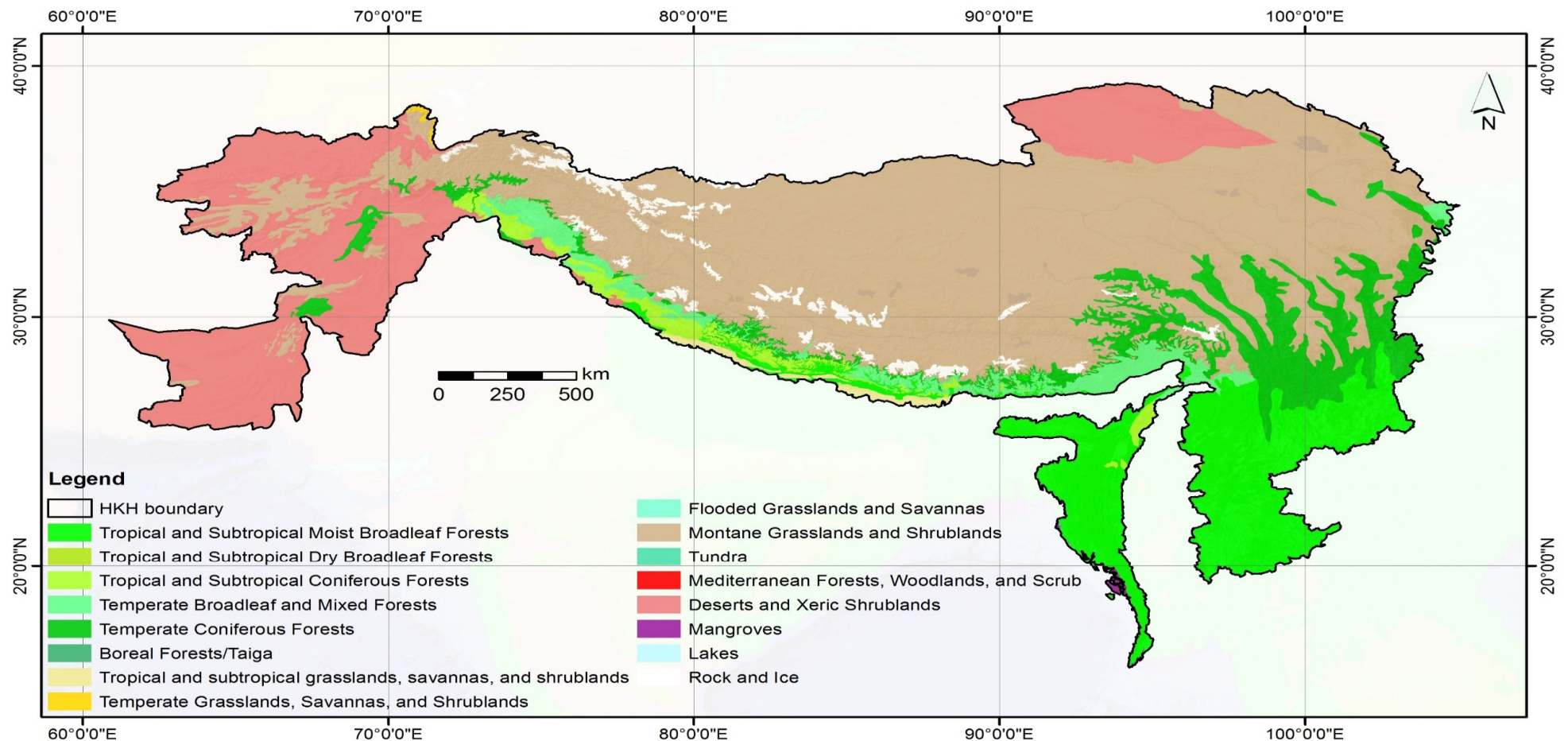
> 35%

of the world population benefits indirectly from HKH resources and ecosystem services

Summary of the HKH Assessment Report



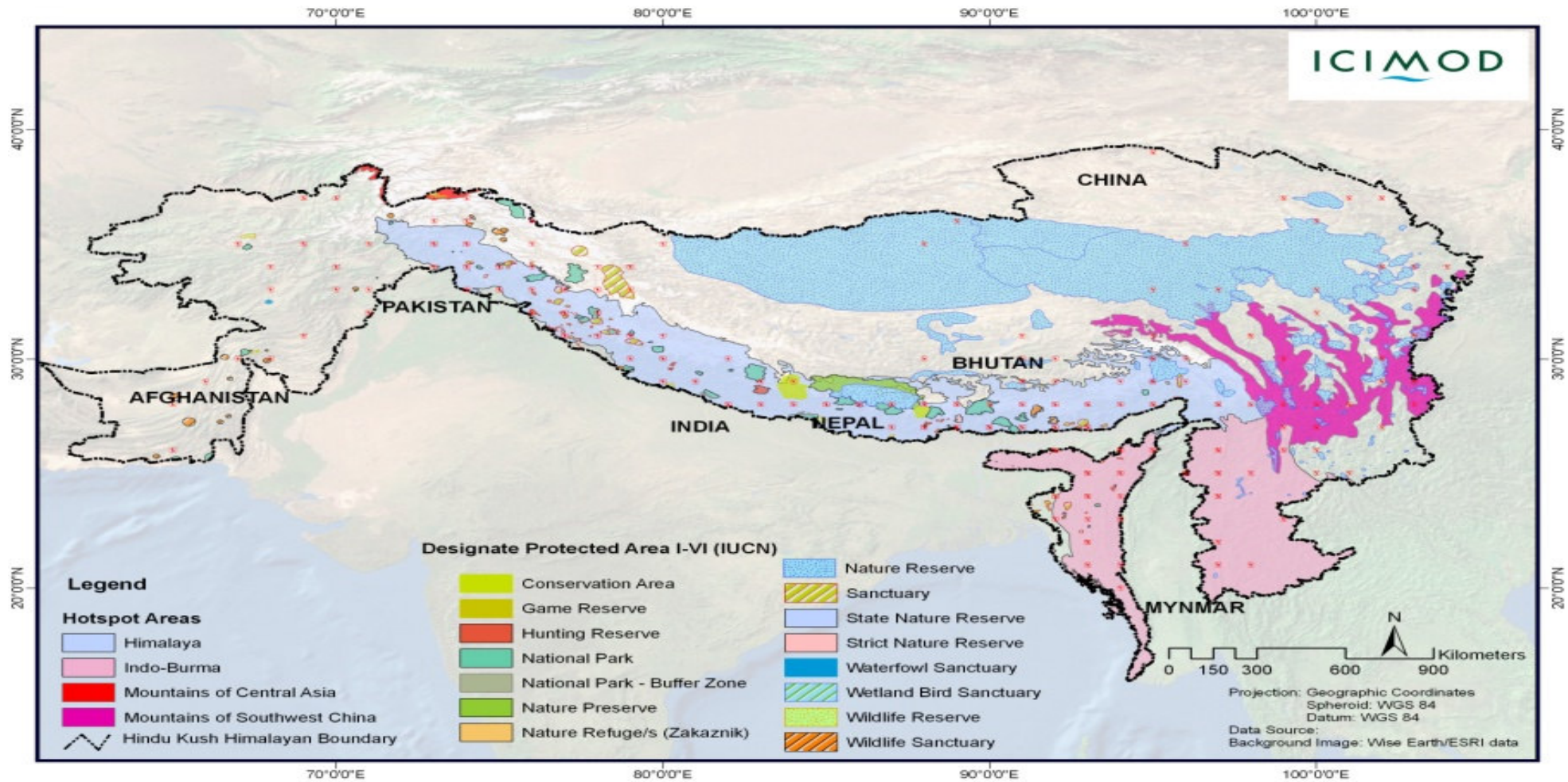
Contiguous ecoregions



Xu et al. 2019



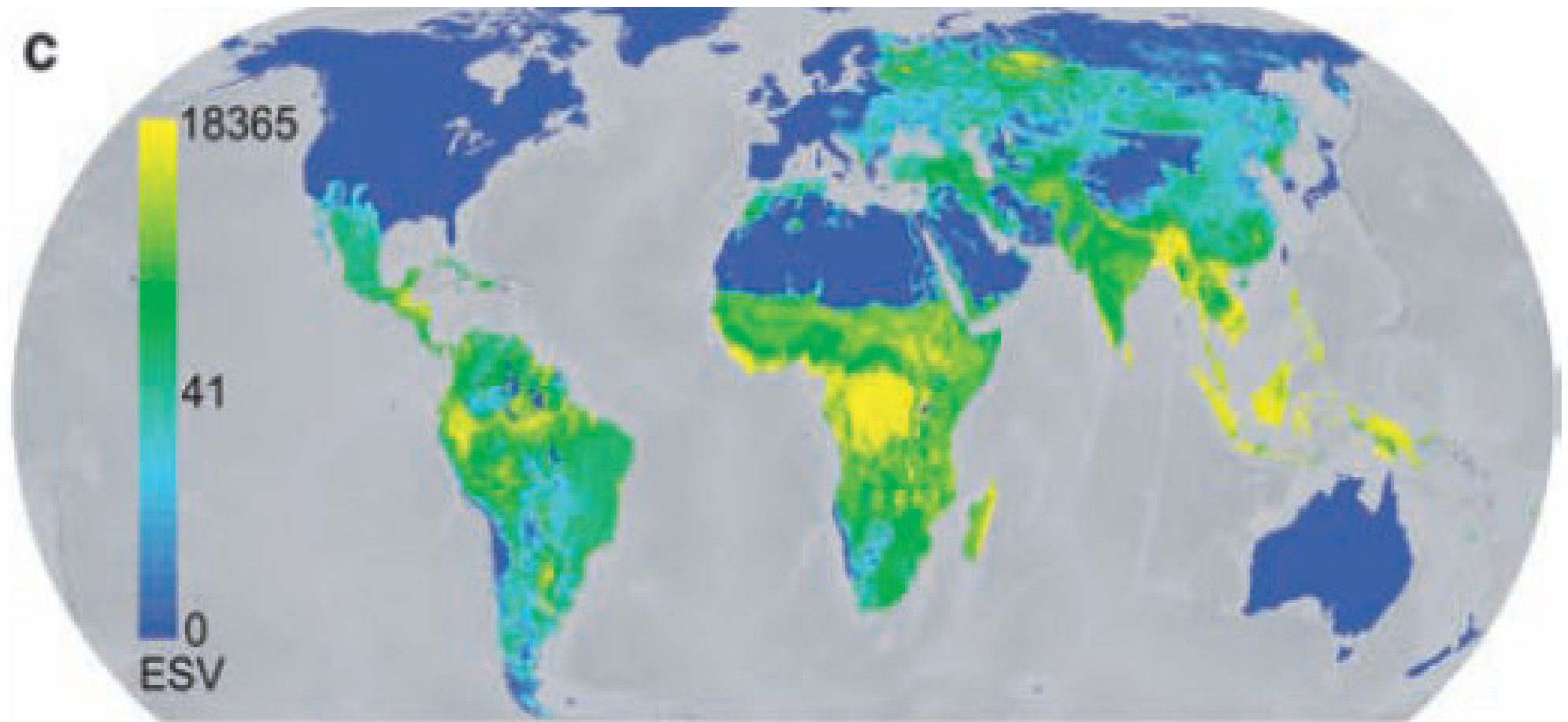
Protected areas



Chettri et al. 2008.



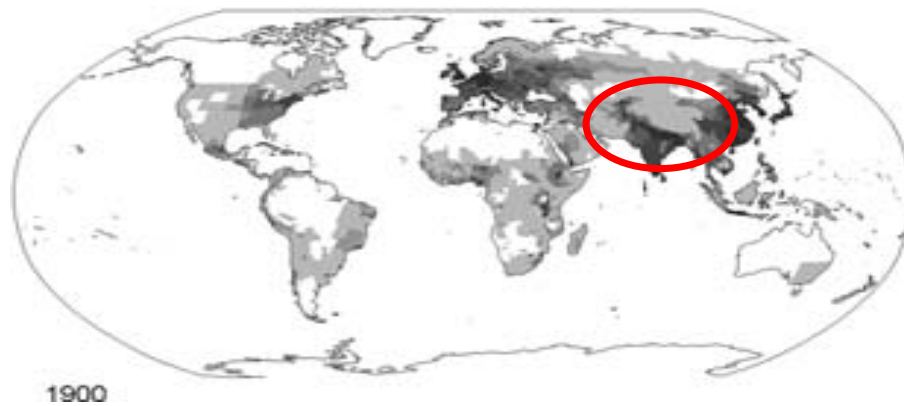
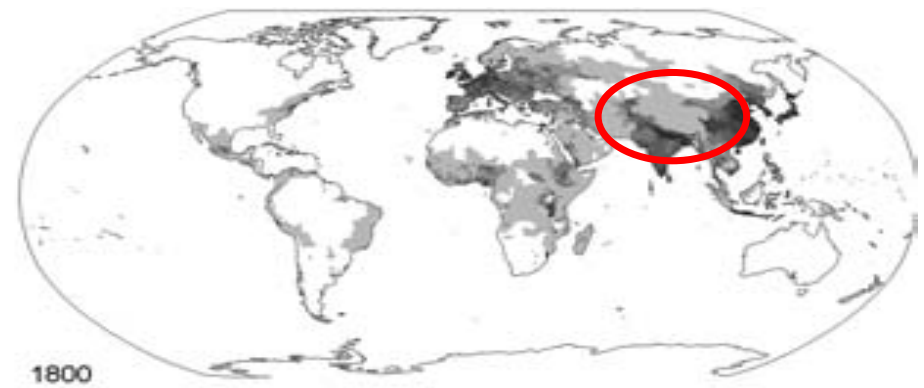
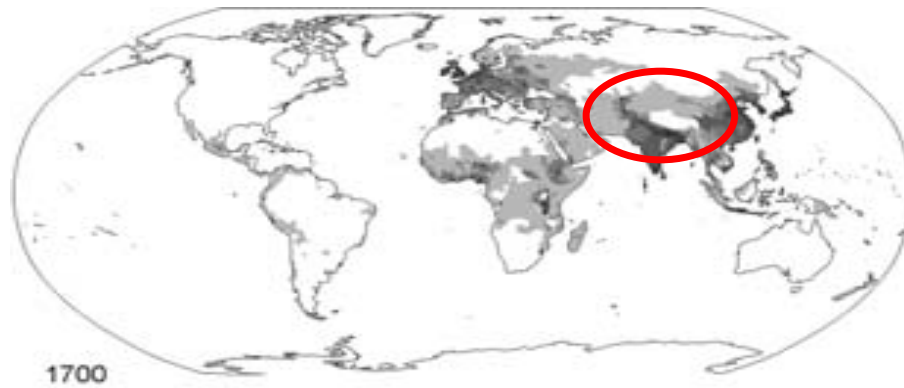
Ecosystem Services



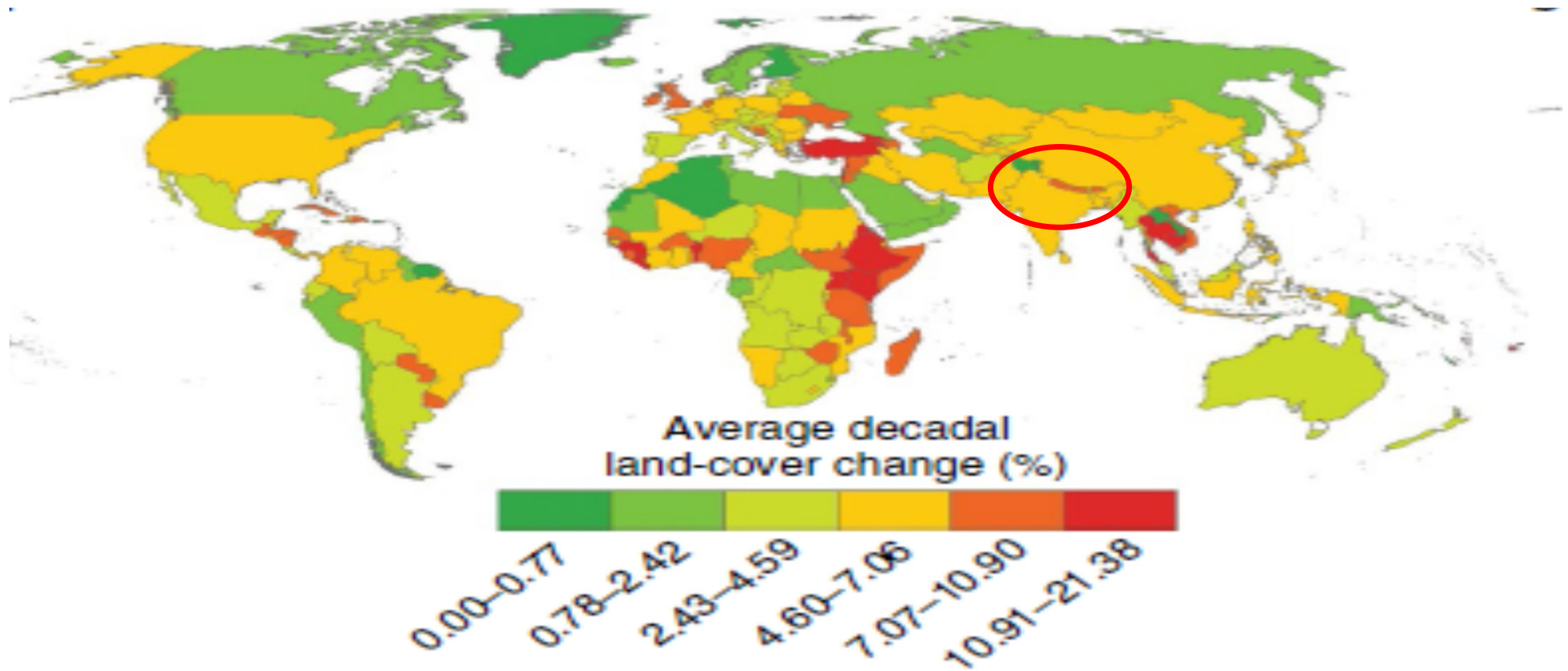
Turner et al. 2012



Demographic change



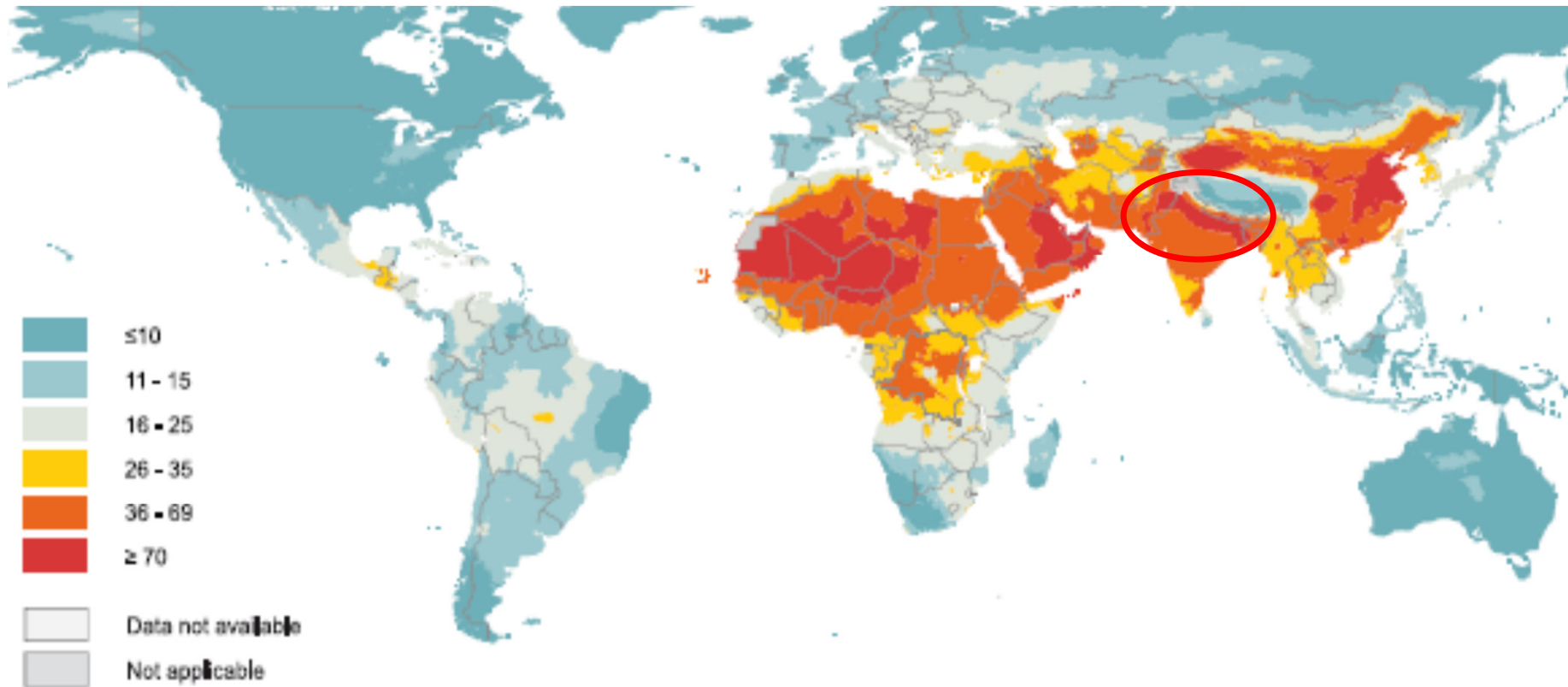
Land use cover change



Powers and Jetz 2019



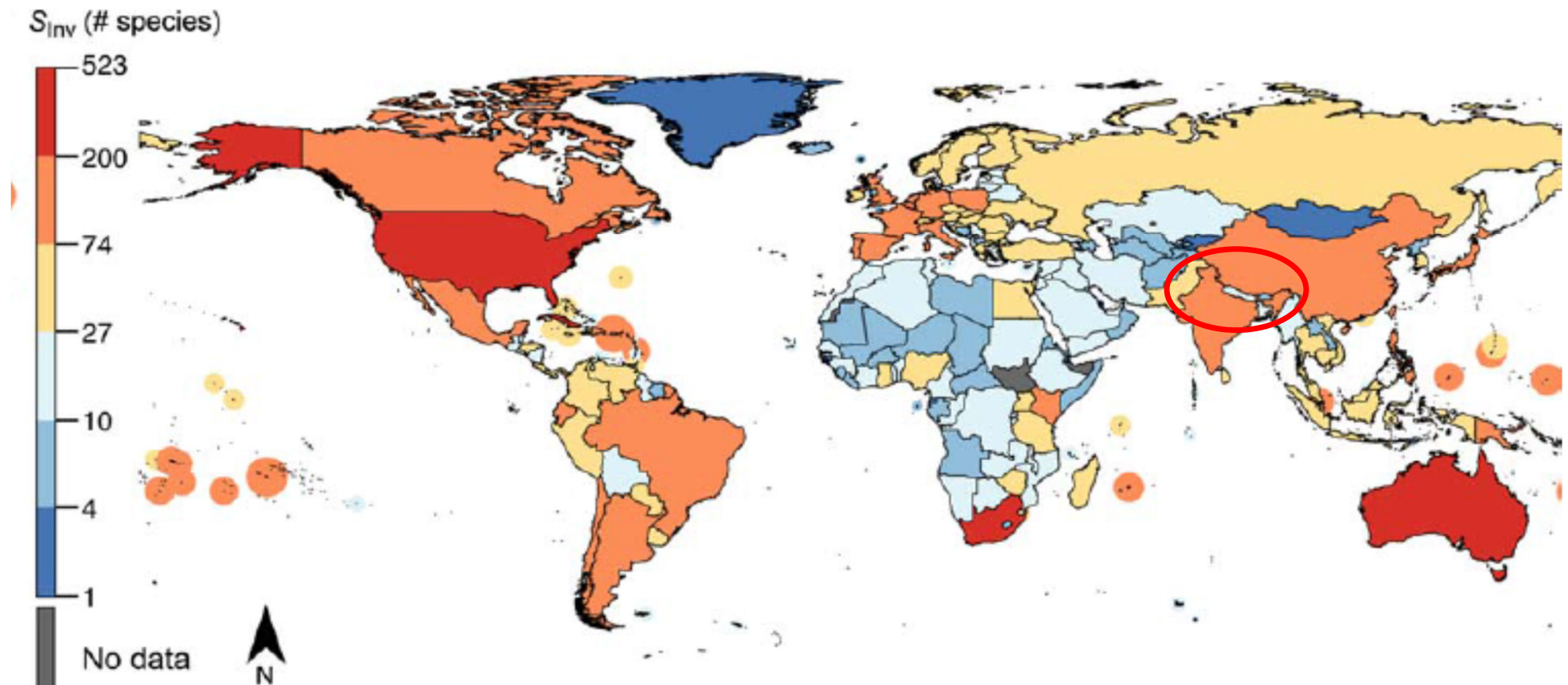
Pollution - Air



WHO 2016



Invasive species



Turbelin et al. 2017

Climate change

Climate change

Even 1.5 Degrees is Too Hot for the HKH

and amplified by
Elevation Dependent
Warming

Wester et al. 2019

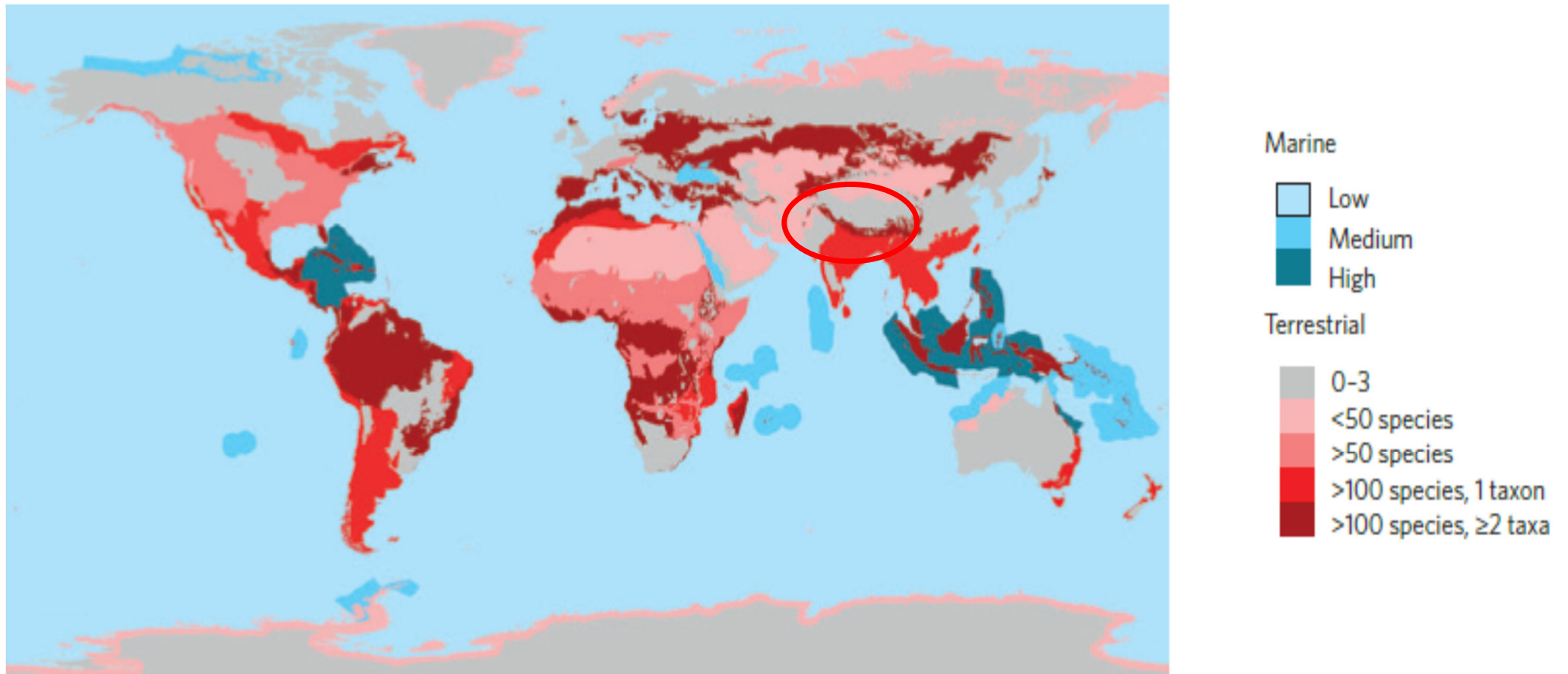


- $2.1 \pm 0.1^{\circ}\text{C}$ (PI) in a 1.5 degree world
- $2.5 \pm 1.5^{\circ}\text{C}$ by 2100 relative to 1976-2005 (RCP 4.5)
- $5.5 \pm 1.5^{\circ}\text{C}$ by 2100 relative to 1976-2005 at current emission trends

For areas above 2,000m, if 1.5°C EOC then:

- Karakoram $2.2 \pm 0.4^{\circ}\text{C}$
- Central Himalayas ($2.0 \pm 0.5^{\circ}\text{C}$)
- Southeast Himalayas ($2.0 \pm 0.5^{\circ}\text{C}$)

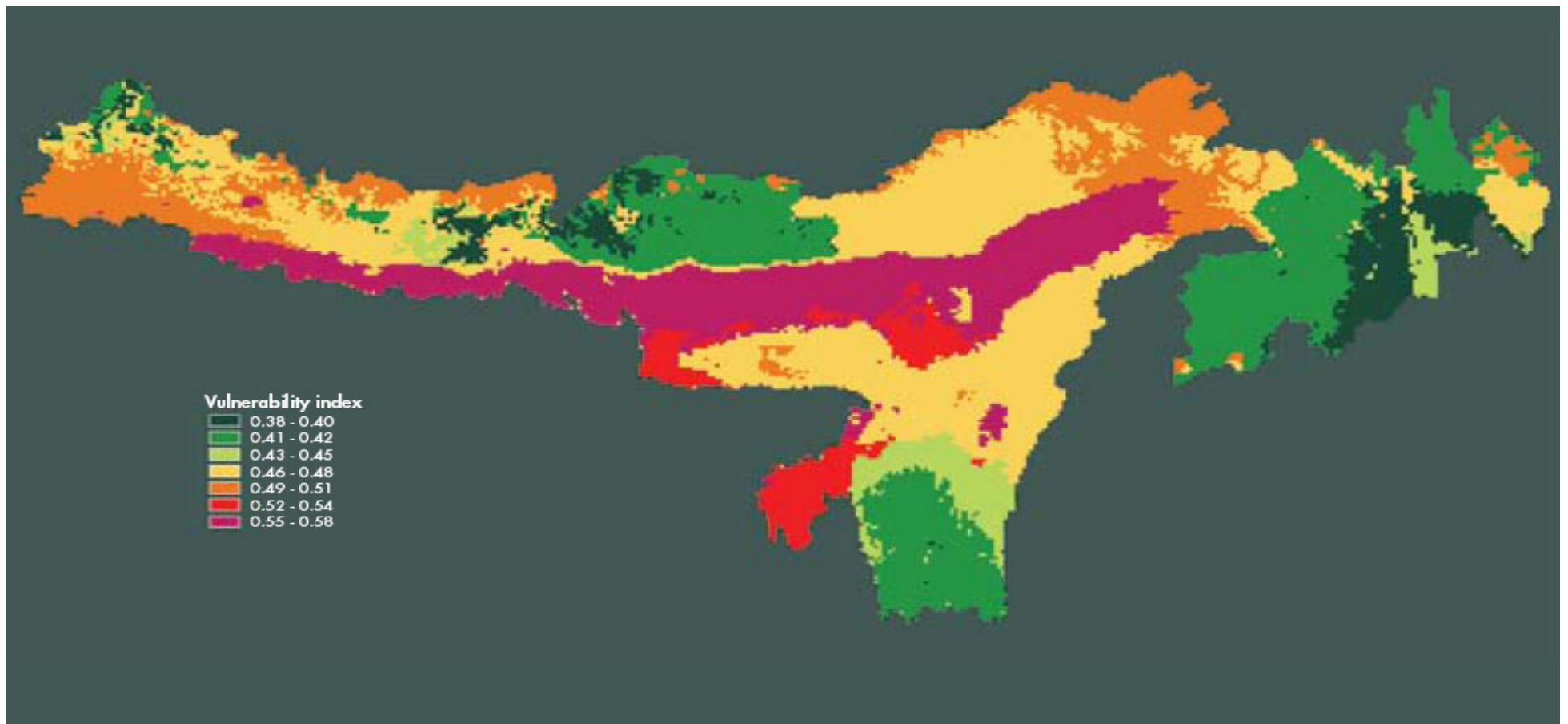
Vulnerability



Pacifici et al. 2015

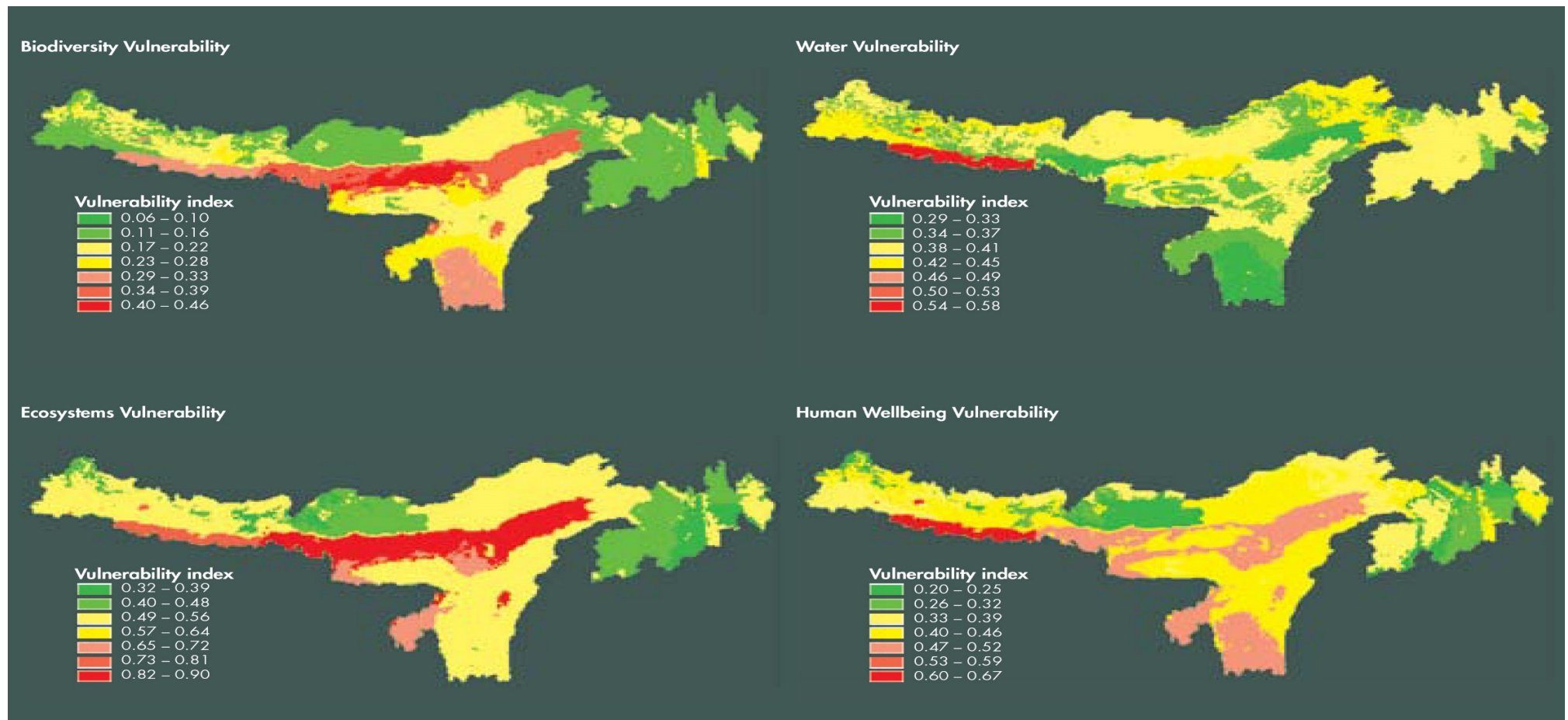


Vulnerability of Eastern Himalaya



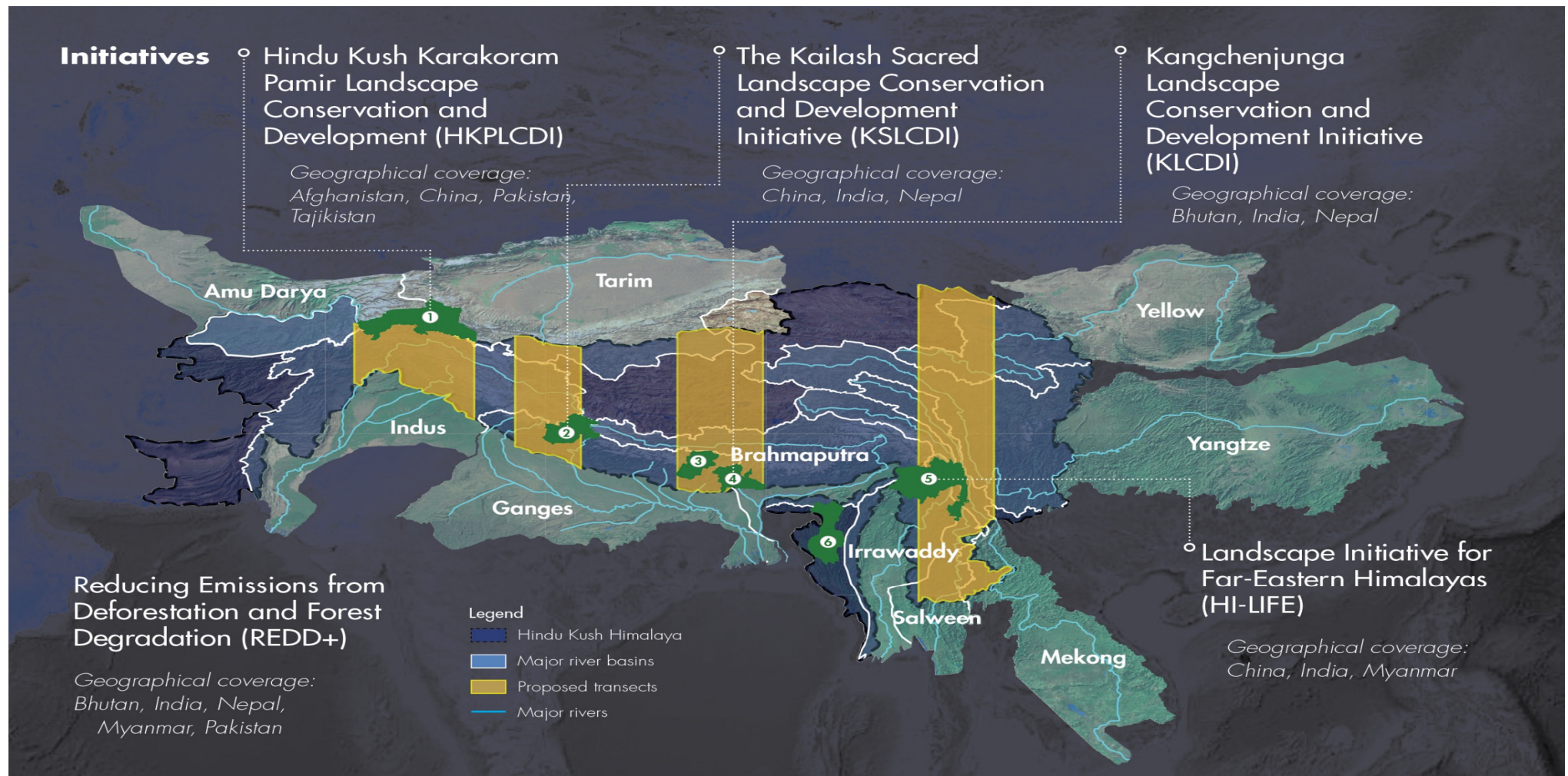
Chettri et al. 2010

Vulnerability of Eastern Himalaya

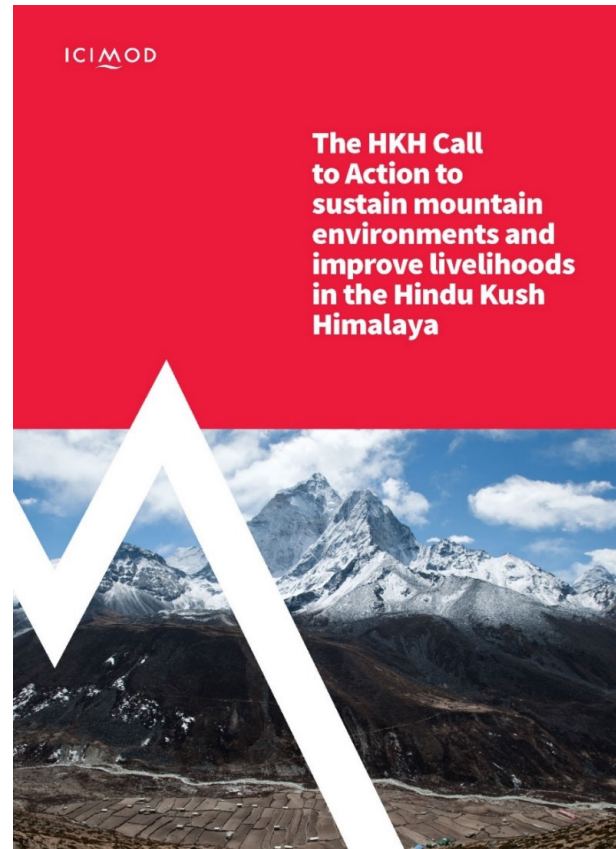
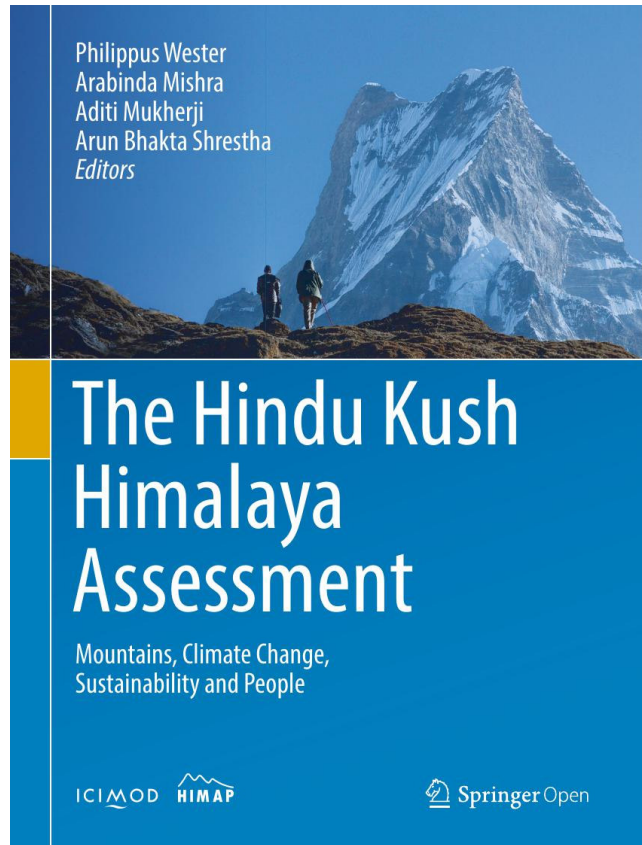


Chettri et al. 2010

HKH Call to Action



Scientific assessment leading to action



SIX URGENT ACTIONS FOR THE HINDU KUSH HIMALAYA

Cooperate at all levels
across the HKH

Limit global
warming to
under 1.5 degrees

Enhance ecosystem
resilience



Recognize and
prioritize the
uniqueness of HKH
mountain people

Achieve the SDGs
in the HKH

Share information
and knowledge

Hindu Kush Himalaya Ministerial Mountain Summit 2020

15 October 2020

HINDU KUSH HIMALAYA REGIONAL MEMBER COUNTRIES



AFGHANISTAN



BANGLADESH



BHUTAN



CHINA



INDIA



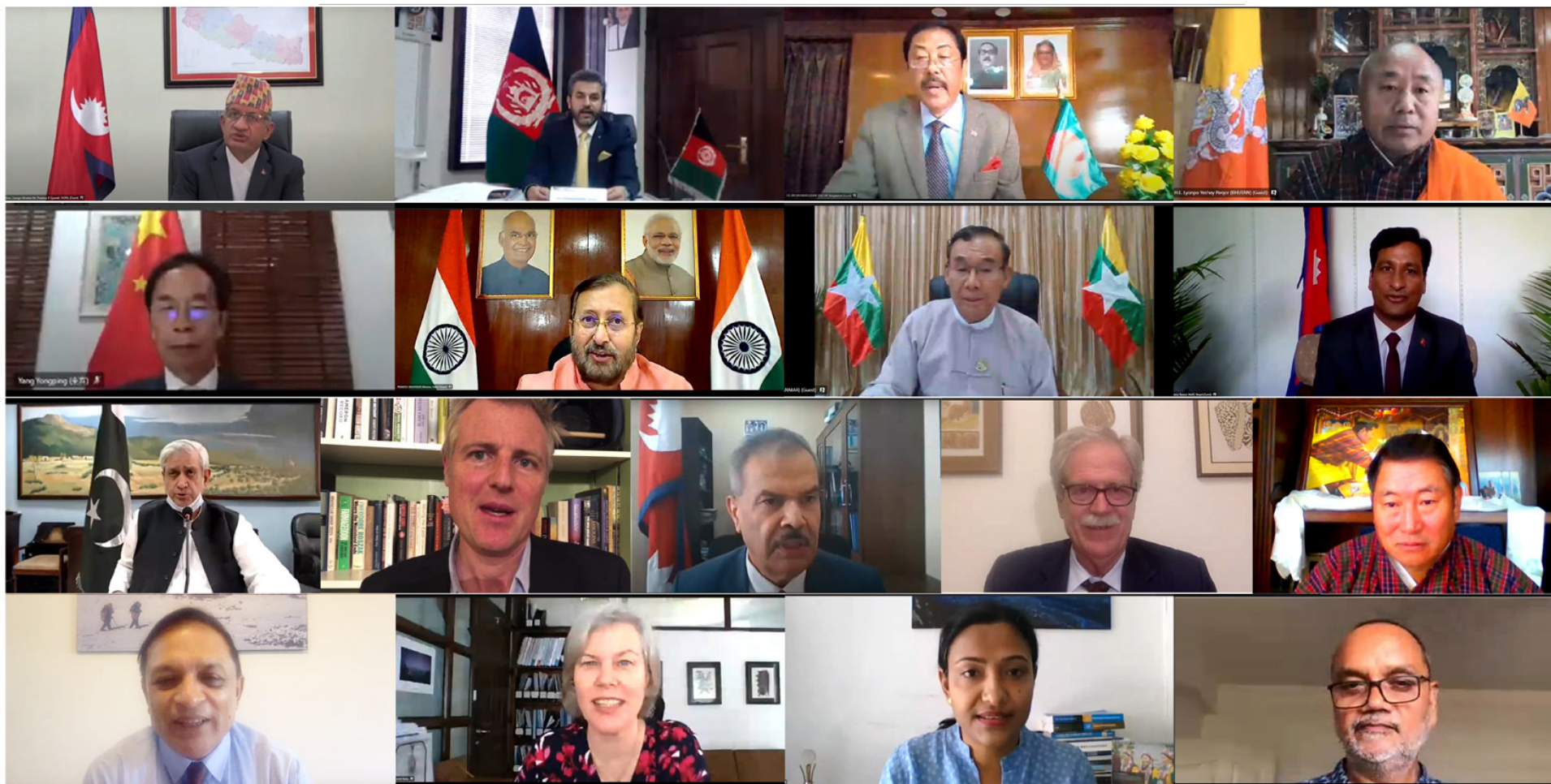
MYANMAR



NEPAL



PAKISTAN



Thank you

Protect the pulse

