

ICIMOD

Biodiversity in the Hindu Kush Himalaya: Status, challenges, progress and interventions

Asia Pacific Biodiversity Observation Network (APBON)

12th Workshop

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Outline

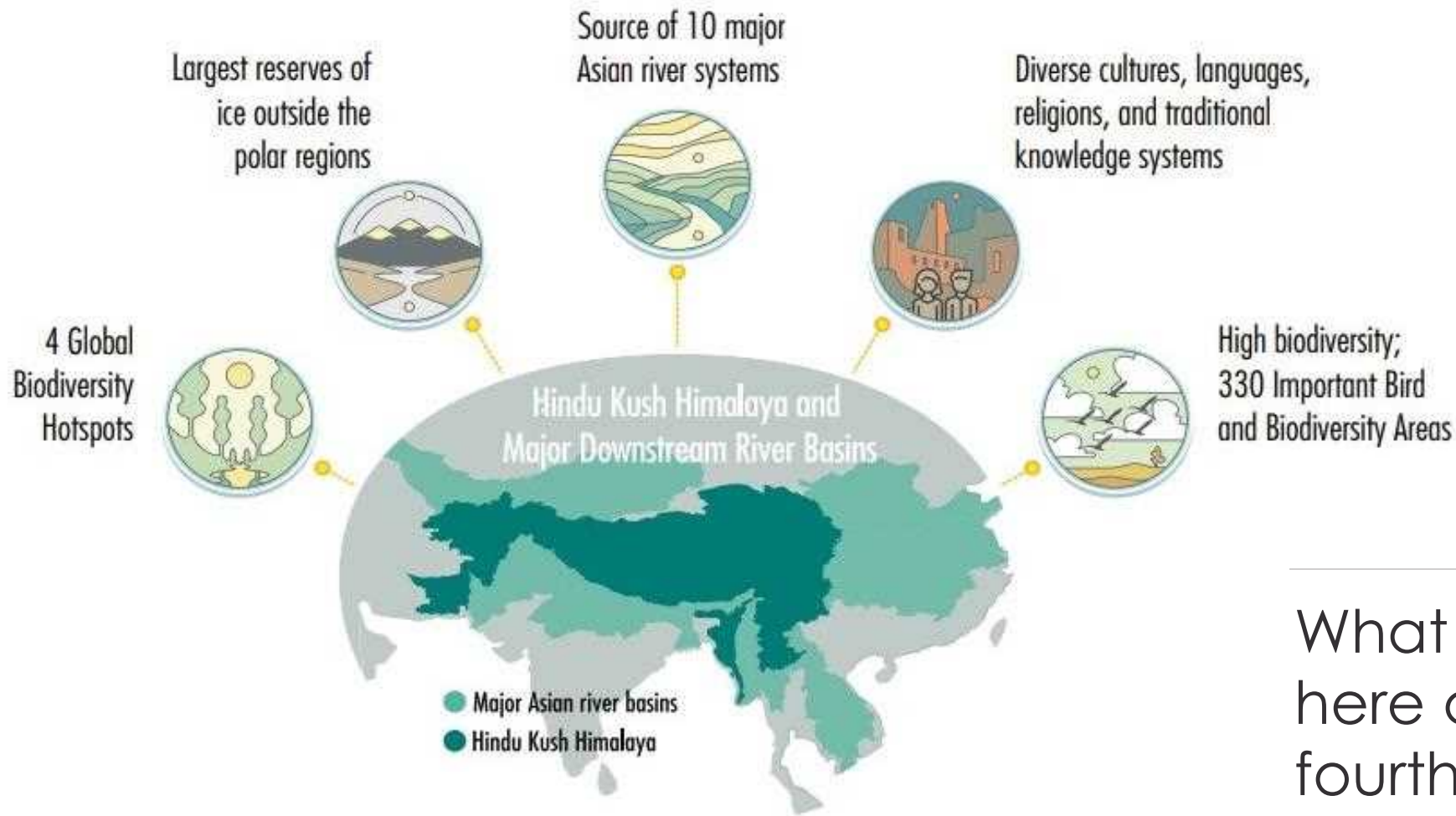
1. **Background: Region, countries, upstream-downstream links**
2. **Biodiversity in the region: Status and trends**
3. **Threats and challenges**
4. **Biodiversity Aichi Targets**
5. **Gaps**
6. **Interventions**



Hindu Kush Himalaya (HKH) region



- Afghanistan 
- Bangladesh 
- Bhutan 
- China 
- India 
- Myanmar 
- Nepal 
- Pakistan 



What happens here affects one-fourth of the world

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

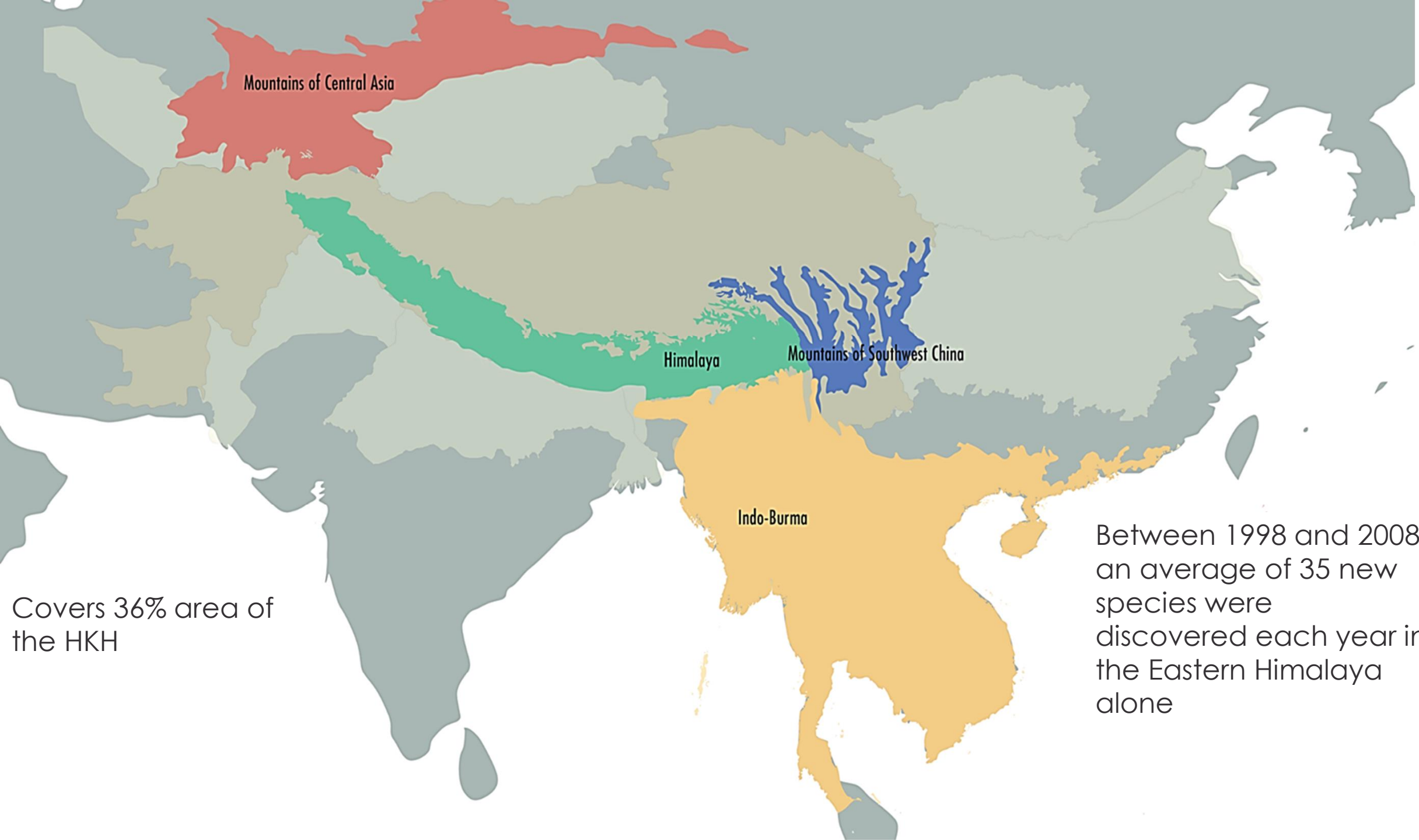
> 35%
of the world population benefits indirectly from HKH resources and ecosystem services



Biodiversity in the Hindu Kush Himalaya: Status

Country	Floral diversity	Faunal diversity				
	Angiosperms	Mammals	Birds	Reptiles	Amphibians	Fish
Afghanistan	3,500–4,500	137–150	428–515	92–112	6–8	101–139
Bangladesh	3,723	128	650	154	49	712
Bhutan	5,603	200	700	124	61	91
China	34,984	556	1,300	1,186	380	279
India	17,926	423	1,233	526	342	3,022
Myanmar	11,800	251	1,000	279	82	350
Nepal	6,973	208	867	123	117	230
Pakistan	5,757	38	198	696	177	22





Mountains of Central Asia

Himalaya

Mountains of Southwest China

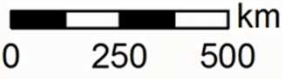
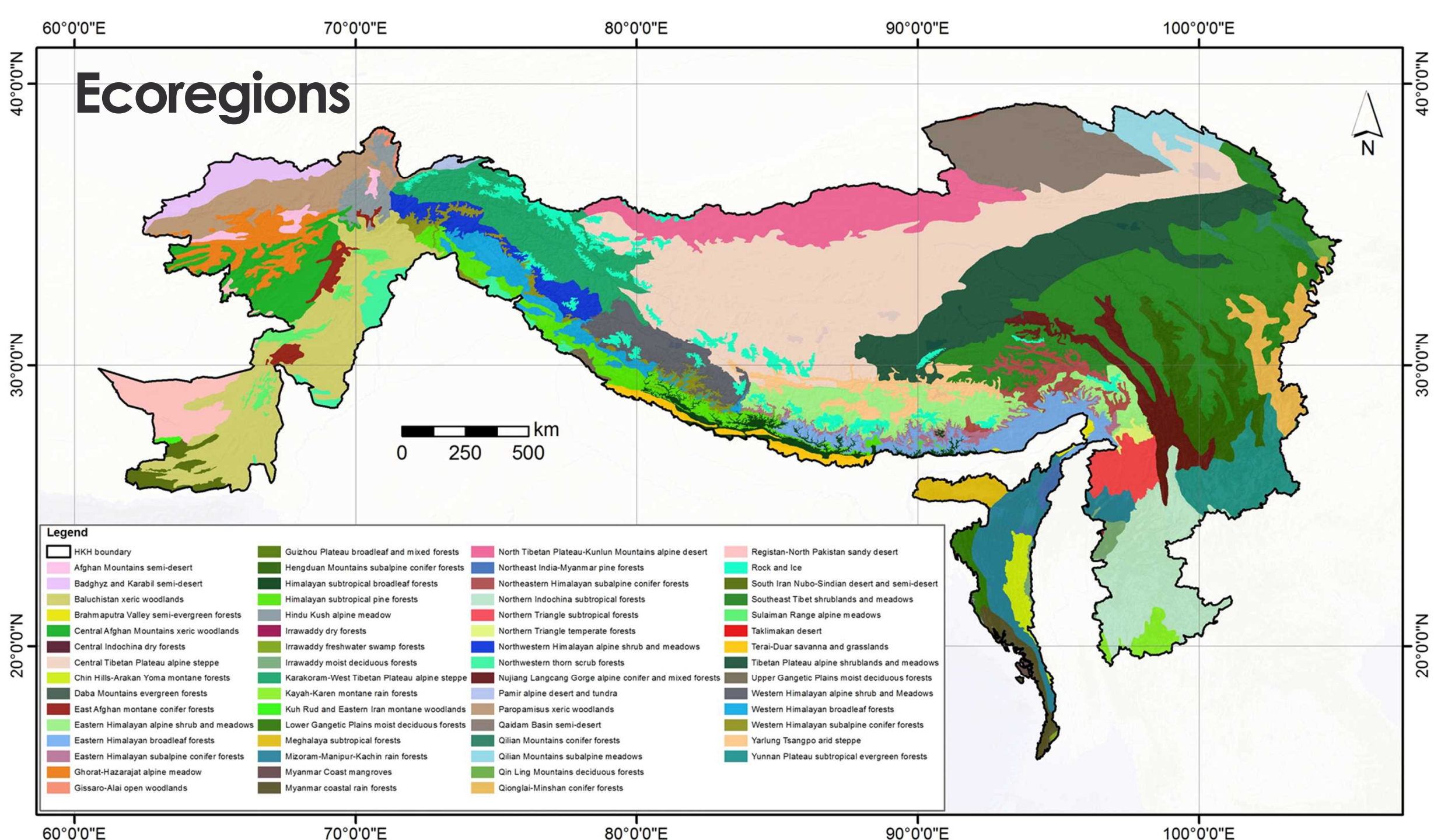
Indo-Burma

Covers 36% area of the HKH

Between 1998 and 2008, an average of 35 new species were discovered each year in the Eastern Himalaya alone

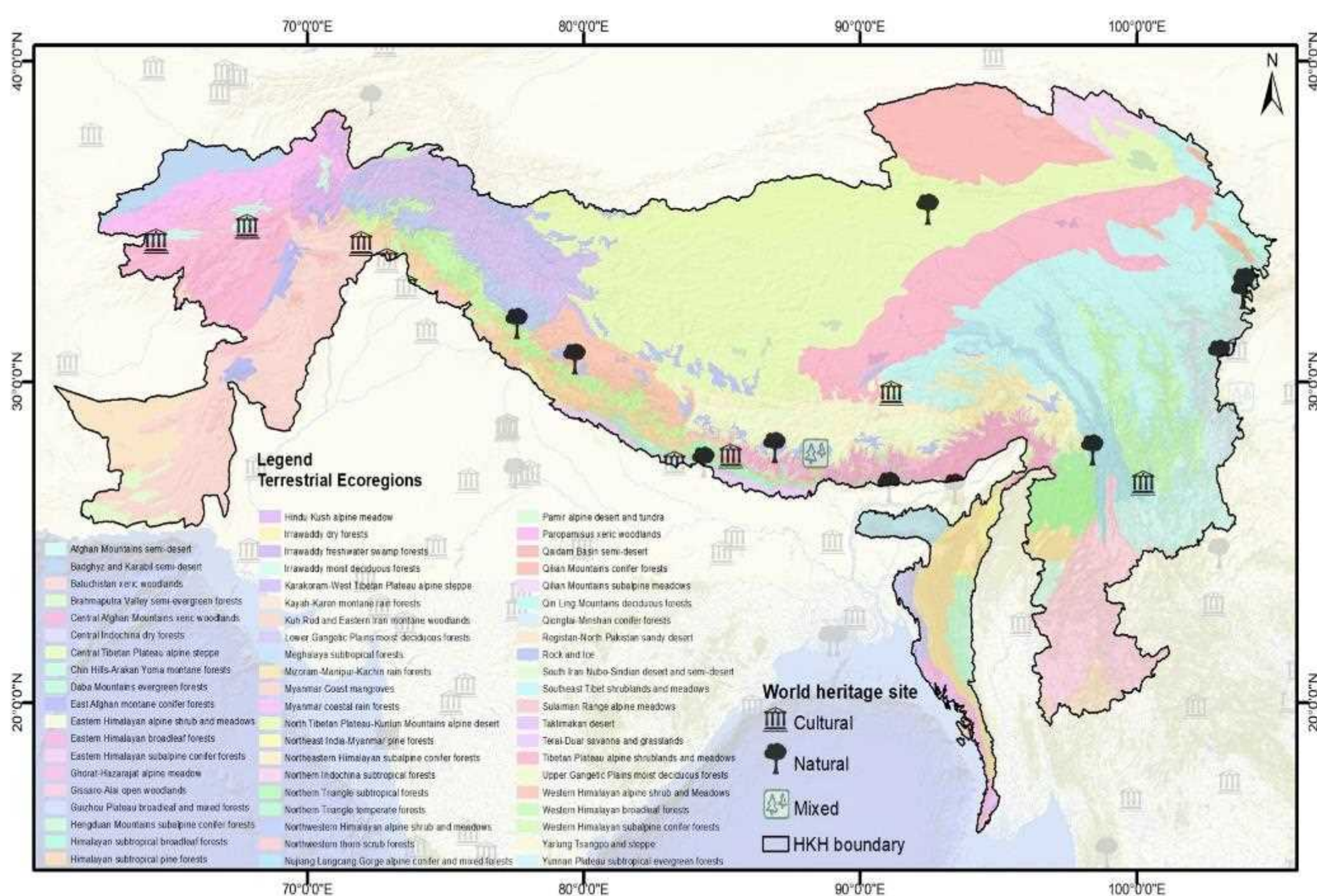


Ecoregions



Legend		
HKH boundary	Guizhou Plateau broadleaf and mixed forests	North Tibetan Plateau-Kunlun Mountains alpine desert
Afghan Mountains semi-desert	Hengduan Mountains subalpine conifer forests	Northeast India-Myanmar pine forests
Badghyz and Karabil semi-desert	Himalayan subtropical broadleaf forests	Northeastern Himalayan subalpine conifer forests
Baluchistan xeric woodlands	Himalayan subtropical pine forests	Northern Indochina subtropical forests
Brahmaputra Valley semi-evergreen forests	Hindu Kush alpine meadow	Northern Triangle subtropical forests
Central Afghan Mountains xeric woodlands	Irrawaddy dry forests	Northern Triangle temperate forests
Central Indochina dry forests	Irrawaddy freshwater swamp forests	Northwestern Himalayan alpine shrub and meadows
Central Tibetan Plateau alpine steppe	Irrawaddy moist deciduous forests	Northwestern thorn scrub forests
Chin Hills-Arakan Yoma montane forests	Karakoram-West Tibetan Plateau alpine steppe	Nujiang Langcang Gorge alpine conifer and mixed forests
Daba Mountains evergreen forests	Kayah-Karen montane rain forests	Pamir alpine desert and tundra
East Afghan montane conifer forests	Kuh Rud and Eastern Iran montane woodlands	Paropamisus xeric woodlands
Eastern Himalayan alpine shrub and meadows	Lower Gangetic Plains moist deciduous forests	Qaidam Basin semi-desert
Eastern Himalayan broadleaf forests	Meghalaya subtropical forests	Qilian Mountains conifer forests
Eastern Himalayan subalpine conifer forests	Mizoram-Manipur-Kachin rain forests	Qilian Mountains subalpine meadows
Ghorat-Hazarajat alpine meadow	Myanmar Coast mangroves	Qin Ling Mountains deciduous forests
Gissaro-Alai open woodlands	Myanmar coastal rain forests	Qionglai-Minshan conifer forests
		Registan-North Pakistan sandy desert
		Rock and Ice
		South Iran Nubo-Sindian desert and semi-desert
		Southeast Tibet shrublands and meadows
		Sulaiman Range alpine meadows
		Taklimakan desert
		Terai-Duar savanna and grasslands
		Tibetan Plateau alpine shrublands and meadows
		Upper Gangetic Plains moist deciduous forests
		Western Himalayan alpine shrub and Meadows
		Western Himalayan broadleaf forests
		Western Himalayan subalpine conifer forests
		Yarlung Tsangpo arid steppe
		Yunnan Plateau subtropical evergreen forests






17 World Heritage Sites covering 11 ecoregions in HKH

Cultural – 6

Natural – 10

Mixed - 1

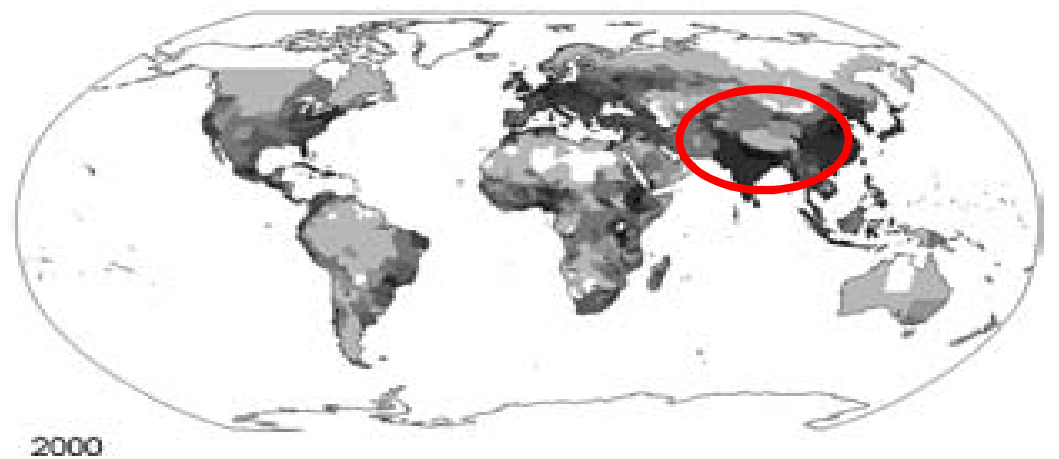
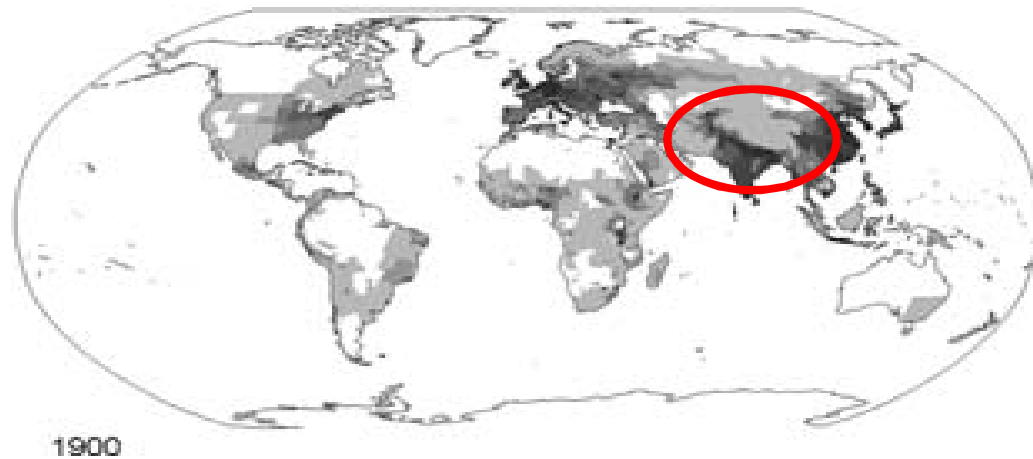
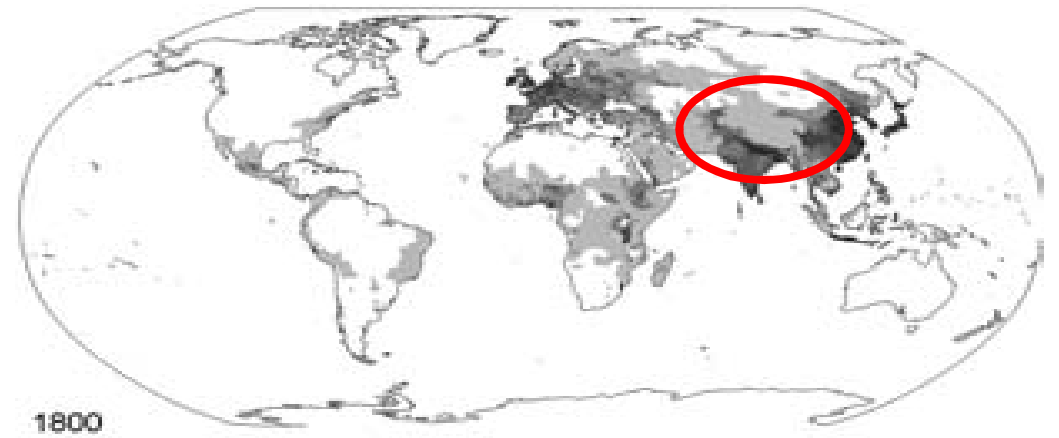
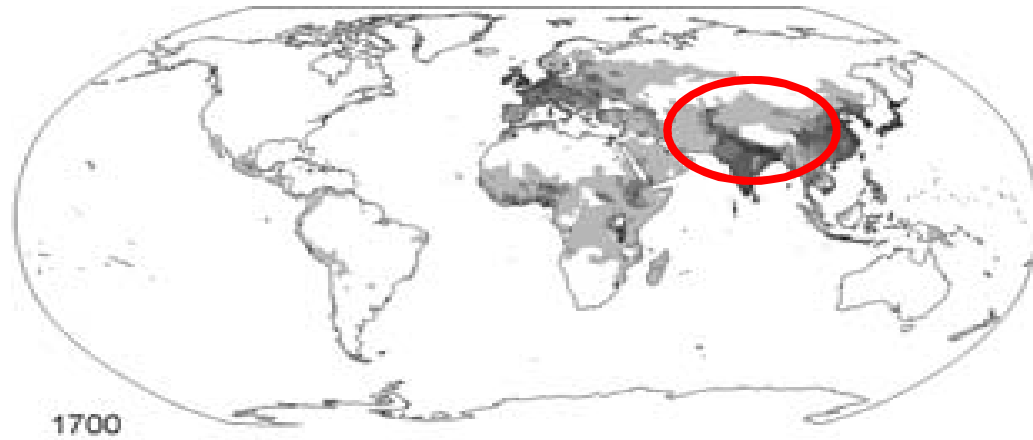




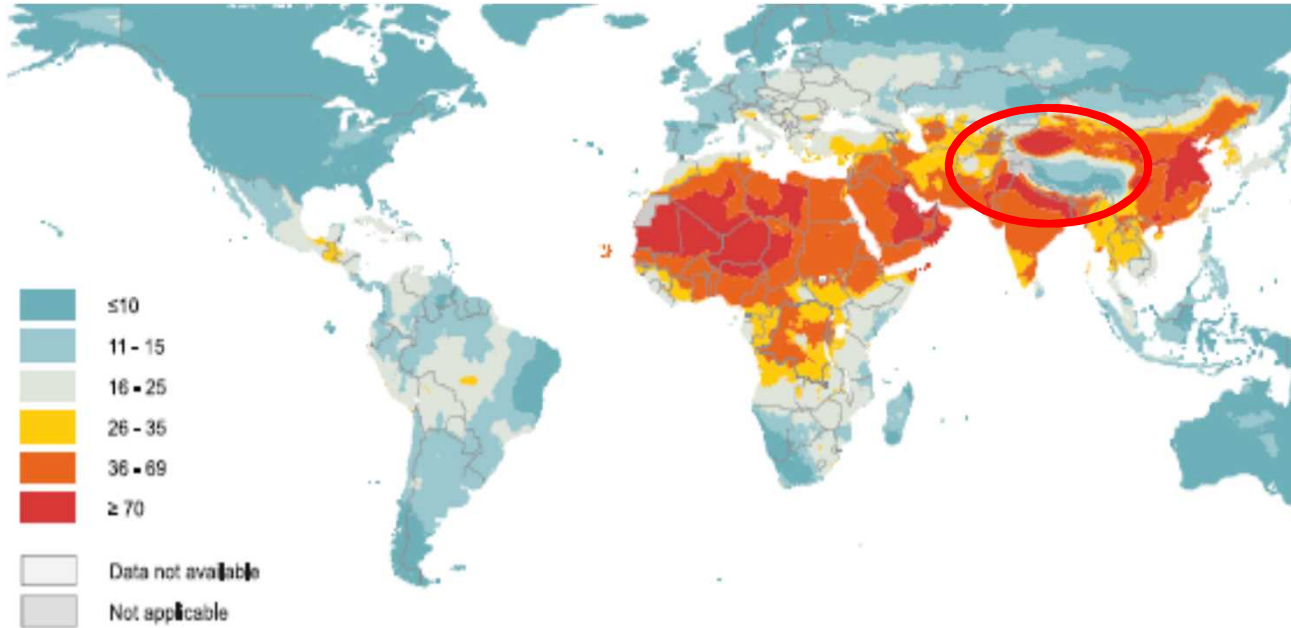
Threats and Challenges



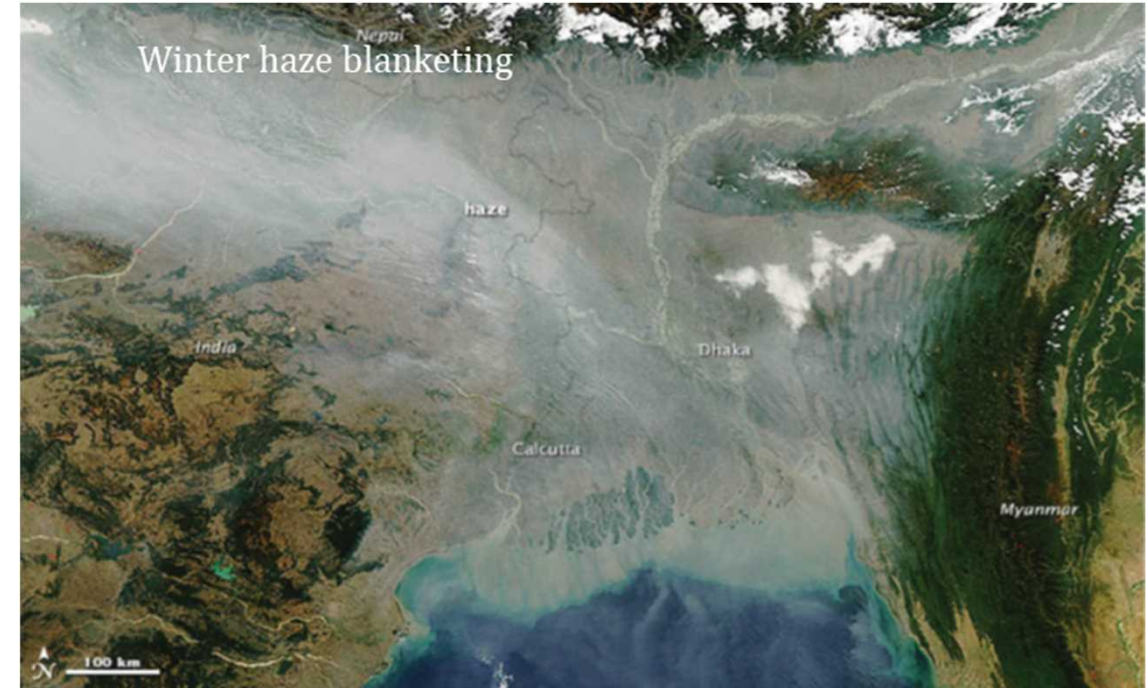
Demographic change



Pollution - Air



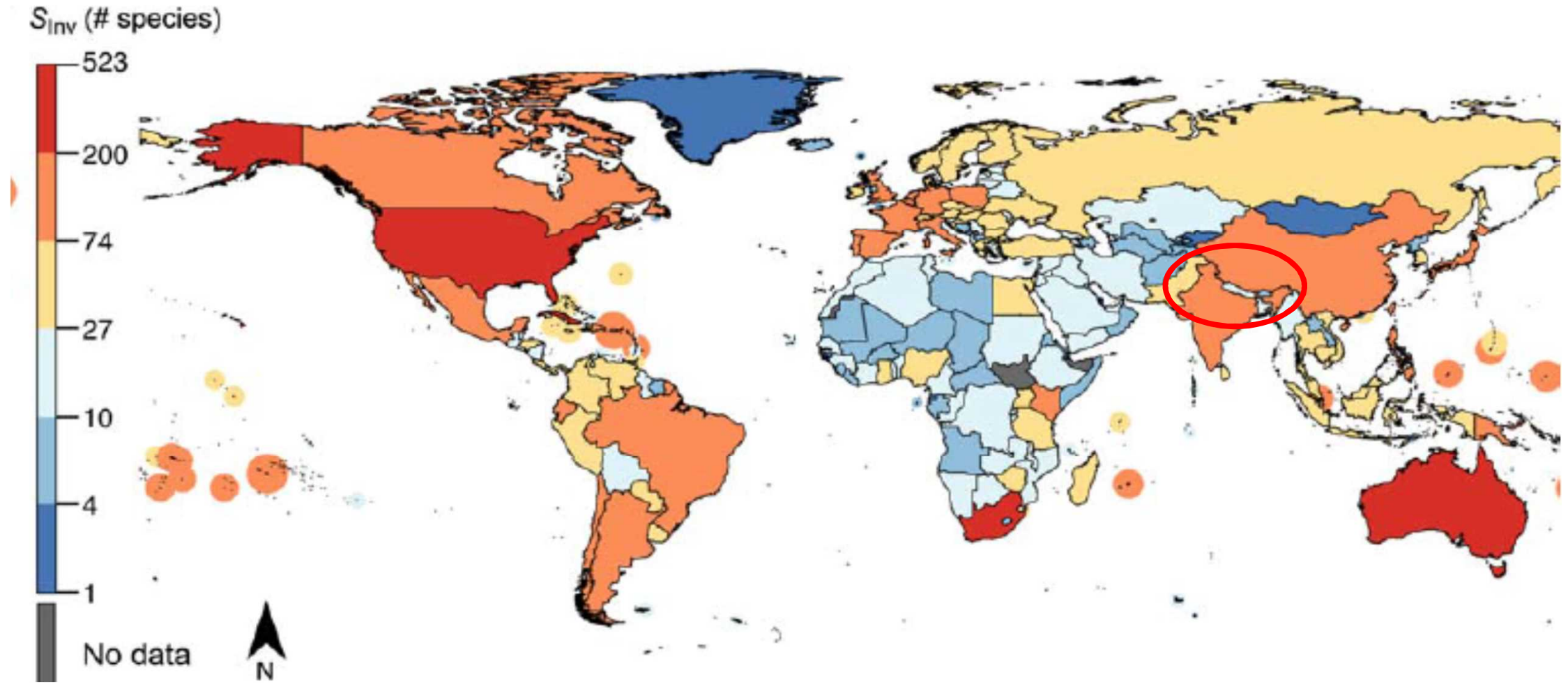
WHO 2016



Saikawa et al., 2019



Invasive species



Even 1.5 Degrees is Too Hot for the HKH

and amplified by elevation dependent warming

Source: HIMAP climate change chapter and Kraaijenbrink et al. 2017, Nature

HKH will warm more compared to global mean and warm more rapidly at higher elevations



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

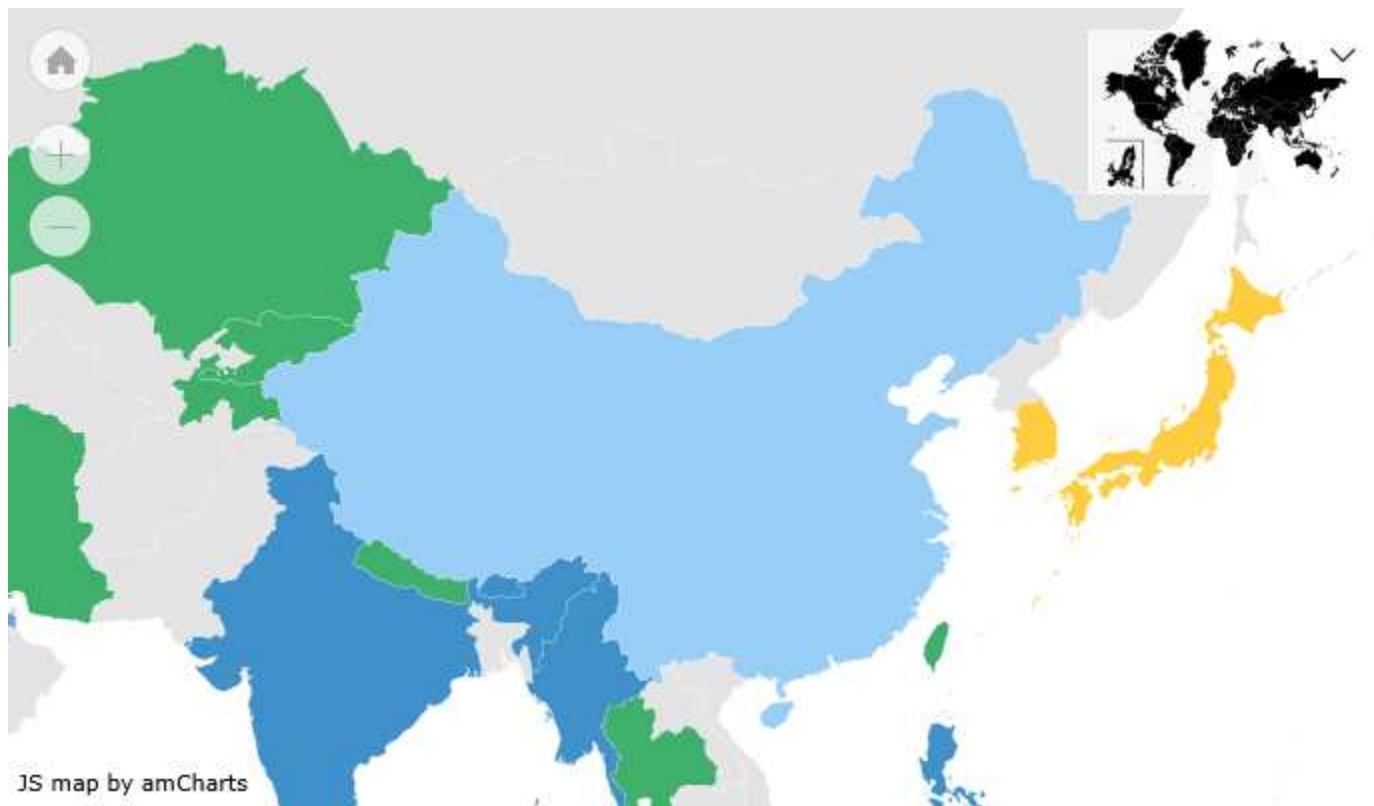
For areas above 2,000m, if 1.5°C EOC then:

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

A scenic mountain landscape featuring a river with white water rapids flowing over large, smooth, grey boulders. In the middle ground, a person wearing a hat and carrying a large white sack on their back is walking across a simple bridge made of several large logs. The background shows a dense forest of green coniferous trees on the left and steep, rocky mountain slopes on the right under a bright blue sky with scattered white clouds.

Status of Aichi Biodiversity Targets

Target 11 by country



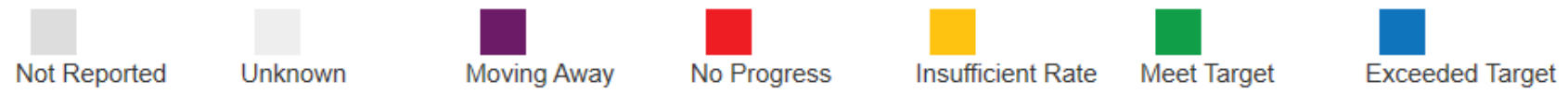
Afghanistan	Insufficient
Bangladesh	On track
Bhutan	Exceeded
China	On track
India	Can exceed
Myanmar	Insufficient
Nepal	Exceeded
Pakistan	Insufficient



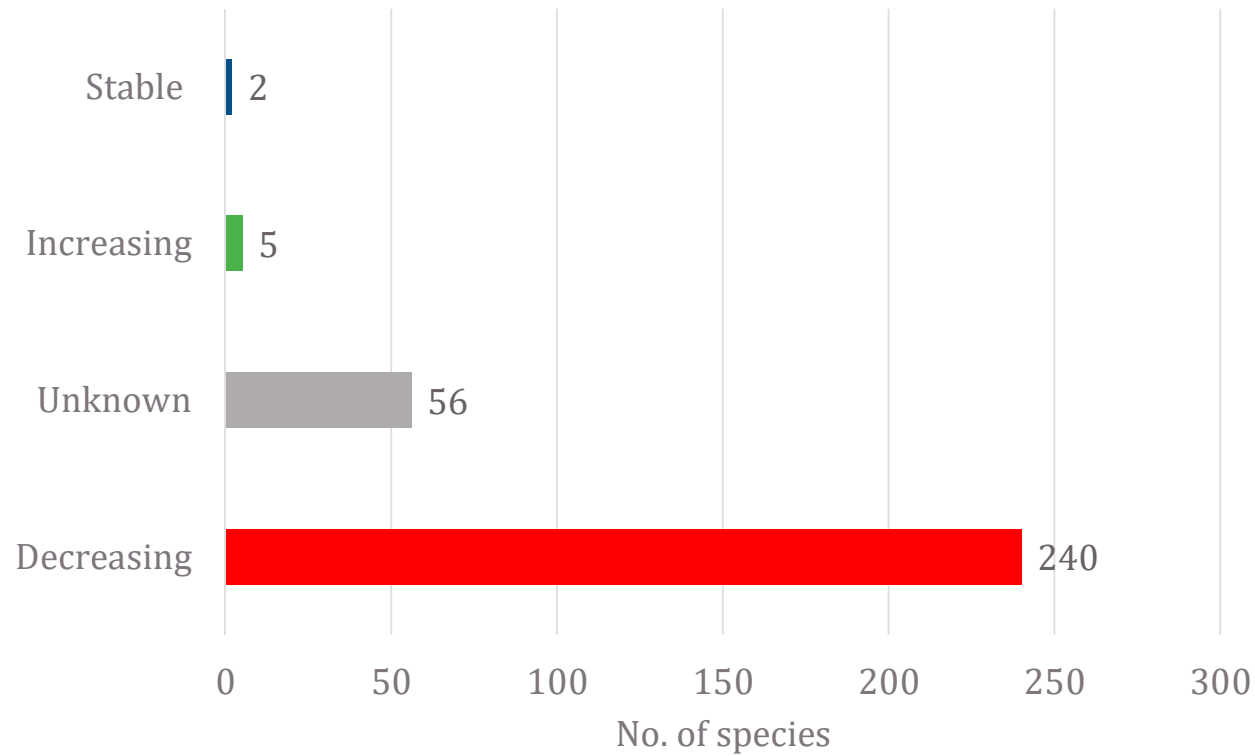
Aichi Target 12



CBD (2020)



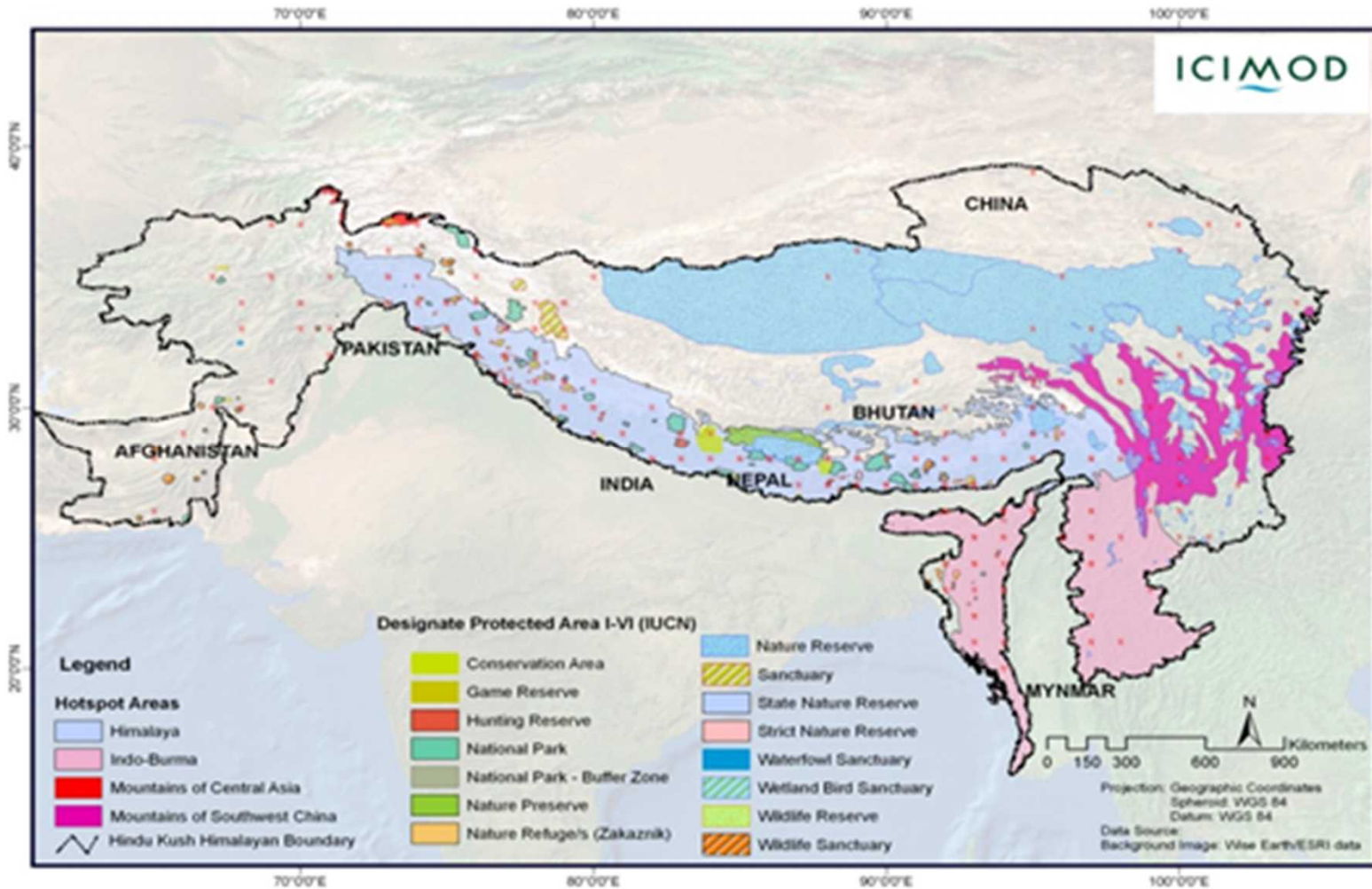
Critically Endangered Species (IUCN Red List 2020)



Decreasing Unknown Increasing Stable



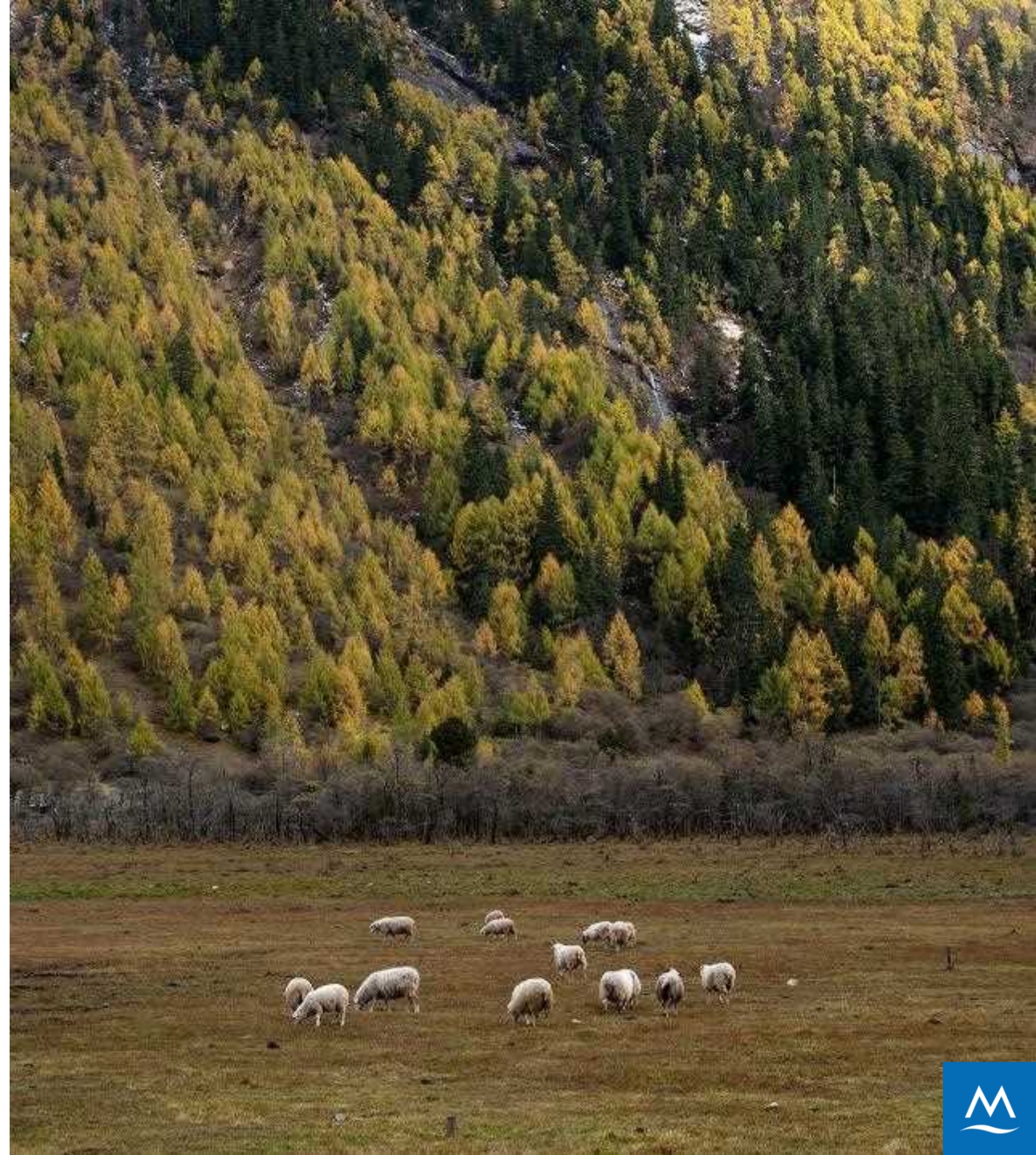
Gaps



- **Small-sized PAs: 31% <50sq.km ; 19% (51-100 sq.km)**
- **Isolated protected areas**
- **Limited ecological representation in PAs networks**
 - Hotspots: 43%
 - Global 200 Ecoregions: 40%
 - IBA: More than 80%

Region needs attention

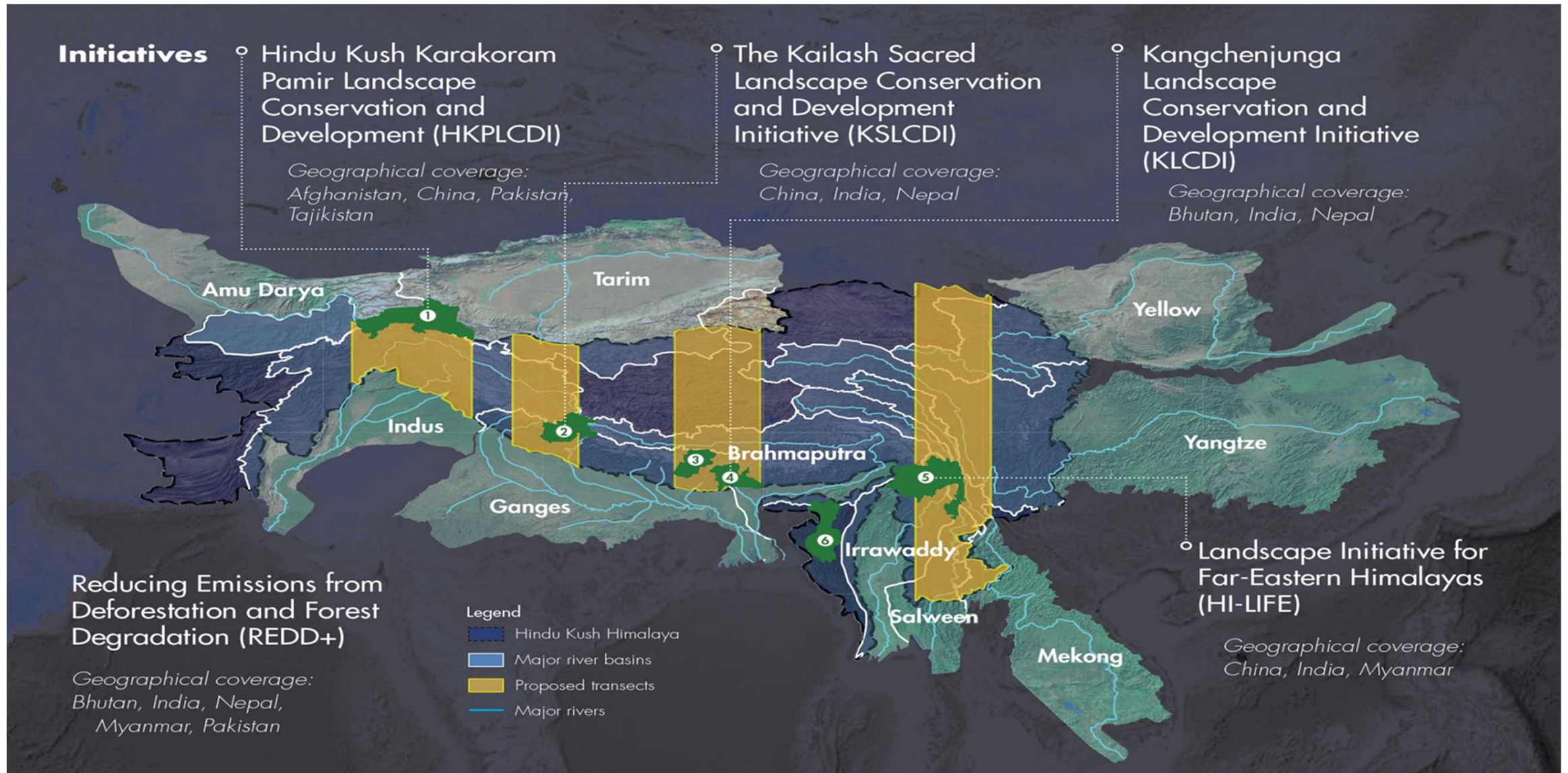
- **An area of imminent extinction**, especially Indo-Burma and the mountains of southwest China (Ricketts et al., 2005)
- Reported on the **List as 'crisis ecoregions'** (Brooks et al., 2006)
- 70 to 80% original habitat in the biodiversity hotspots of the HKH **already lost** (relative to 1500)
- **One-fourth of endemic species** in the Indian Himalaya could be wiped out by 2100
- By 2100, **loss of original habitat** by 80-86% (Jantz et al., 2015).



A photograph of a lush, green forest. The trees are tall and have dense foliage. Sunlight filters through the canopy, creating dappled light on the forest floor. The ground is covered in green grass and small plants. The overall scene is vibrant and natural.

Interventions

Transboundary landscapes and transects



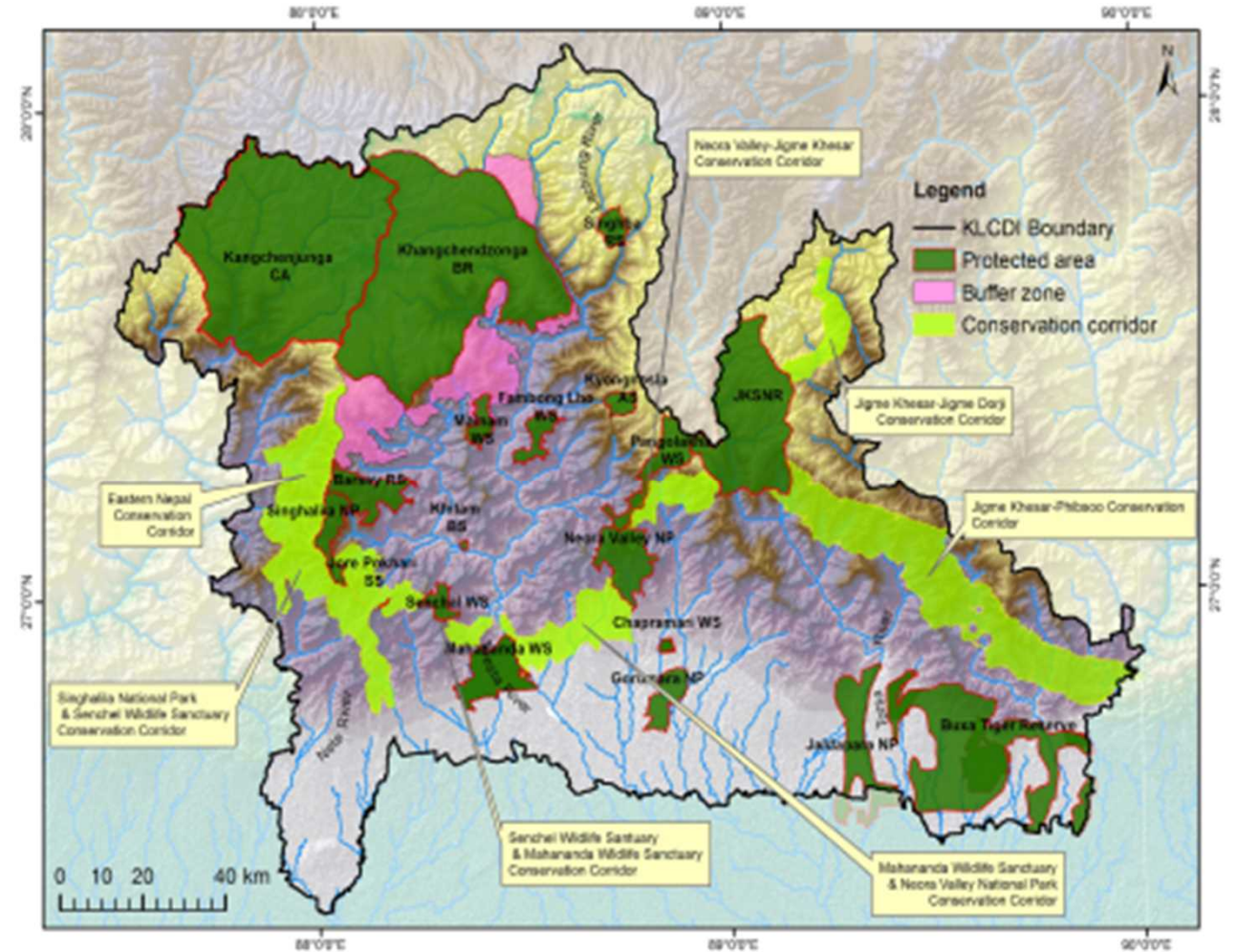
Regional cooperation

- Enhancing and strengthening partnerships across scales
- Addressing critical issues and emerging challenges that cross boundaries
- Interventions are tailored to country specific demands
- e.g. exchange of yak germplasm, human-wildlife conflict, data sharing



Corridors and connectivity

- Identifying corridors: 6 corridors connecting 14 PAs in (stakeholders, field)
- Connecting isolated protected areas
- Expanding habitats for species
- Alternative livelihoods options for people

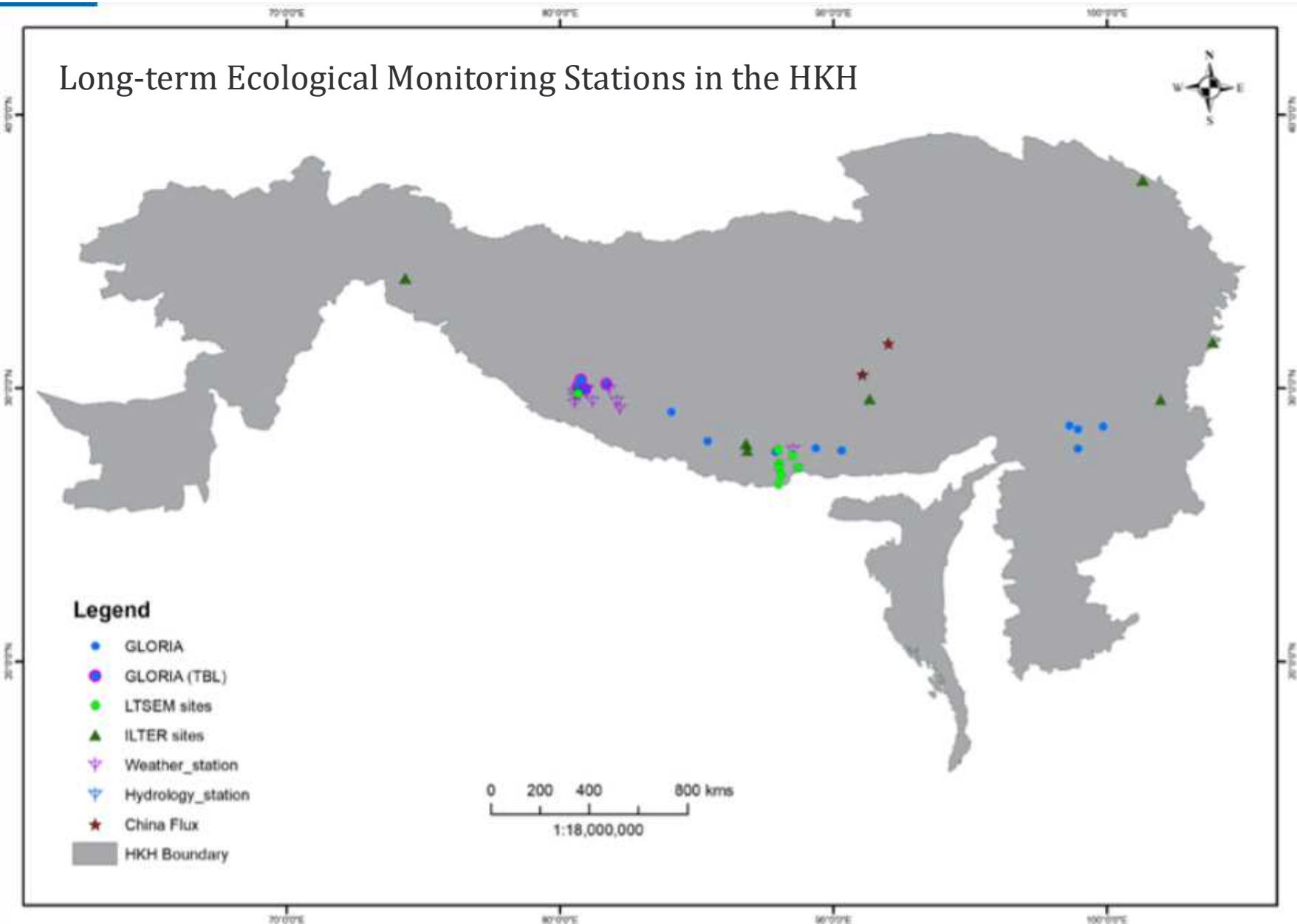


Nature-based Solutions

- Promoting mountain niche products
- Ecotourism i.e. Homestays
- Springshed management
- Traditional knowledge
- Local food systems



Long term Environmental and Social-ecological Monitoring



- Establish and strengthen LTESM across the landscapes
- Improve understanding of spatial and temporal changes, drivers of changes, & consequences
- Inter-disciplinary & collaborative research
- Evidence-based decision making

Source: ILTER and GLORIA

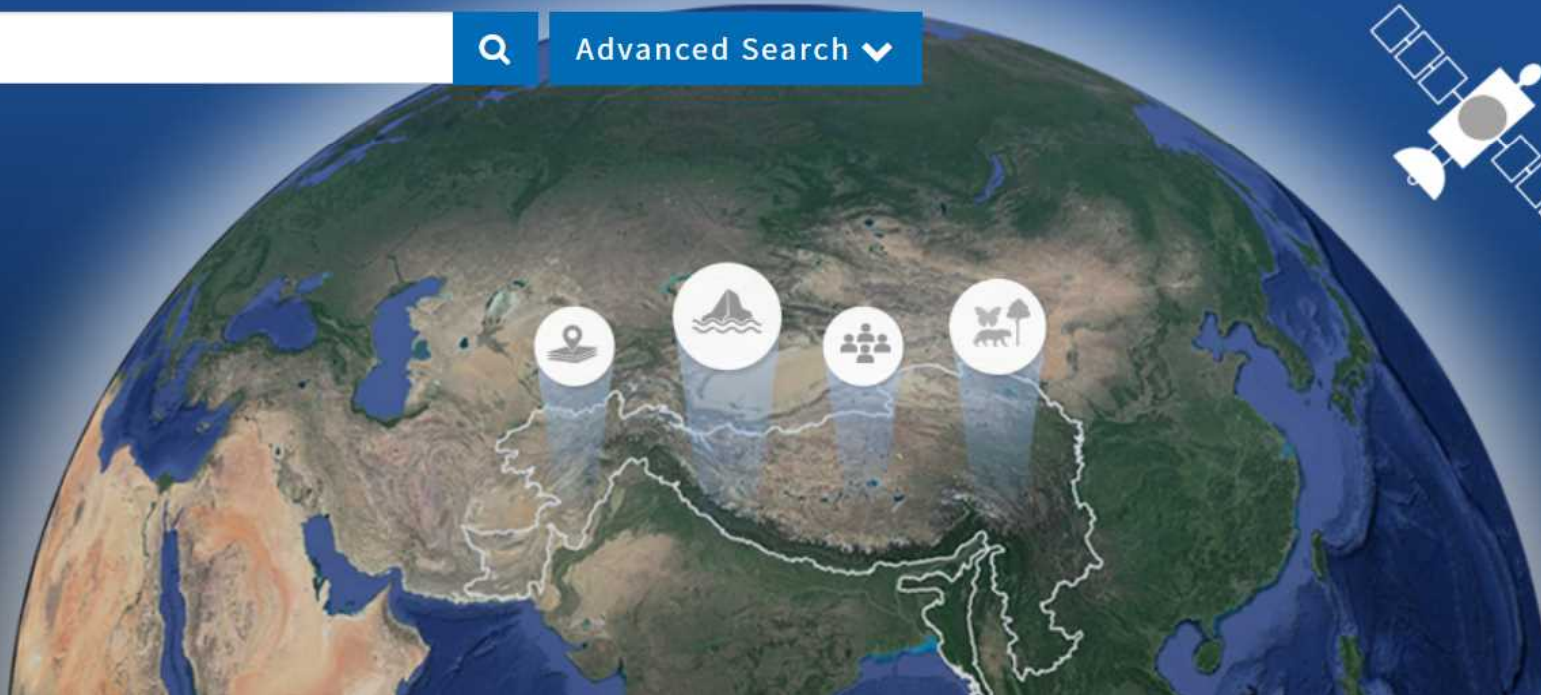


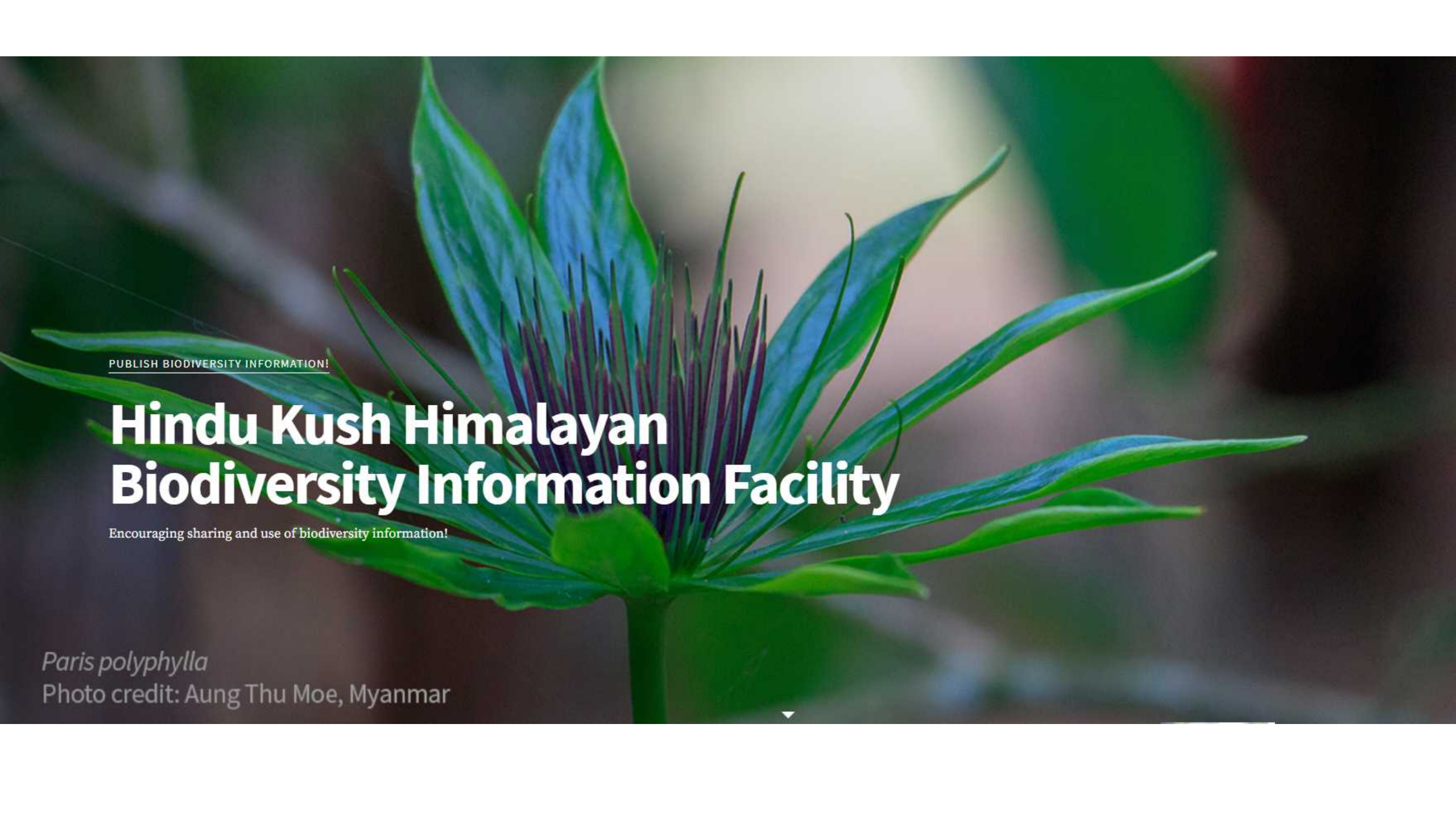
Regional Database System

A one-stop data portal for the Hindu Kush Himalaya



Advanced Search





PUBLISH BIODIVERSITY INFORMATION!

Hindu Kush Himalayan Biodiversity Information Facility

Encouraging sharing and use of biodiversity information!

Paris polyphylla

Photo credit: Aung Thu Moe, Myanmar

▼



Thank you

**Let's protect
the pulse.**