

Institutional Initiatives and Challenges in the Governance and Management of Biodiversity and Ecosystem Services in Asia

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Replace photo by kaeng krachen



Outline

- Introduction
- Biodiversity in Asia – highlights
- Key issues
- Institutional initiatives and achievements
- Governance challenges
- Options and opportunities for decision makers
- Directions for future research

Biodiversity, Ecosystem, and Ecosystem Services

- **Biodiversity** → the variability among living organisms and the ecological complexes of which they are part.
- **Ecosystem** → a biological community (comprising of producers, consumers and decomposers) together with associated physical environment.
- **Ecosystem services** →
 - the benefits people obtain from ecosystems (MEA 2005)
 - the direct and indirect contributions of ecosystems to human well-being (TEEB 2010).

The concept is evolving → from “Ecosystem Services” to “Nature’s Contributions to People”

Types of Ecosystem Services

Provisioning Services food, fiber and fuel; genetic resources; bio-chemicals; fresh water	Regulating Services climate regulation; pest and hazard protection; erosion regulation, disease control; invasion resistance; water purification
Cultural Services recreation and aesthetic values; spiritual values; knowledge systems; education and inspiration	Supporting Services primary production; provision of habitat; pollination; seed dispersal; nutrient cycling; soil formation/retention; production of atmospheric oxygen; water cycling

Example of ecosystem's Regulating Service:

Mangrove forest saved a village from typhoon *Haiyan*

<http://newsinfo.inquirer.net/649122/how-a-forest-of-mangroves-saved-a-village-from-yolanda#ixzz41YWSpknI>

The tale of two villages in the municipality of Giporlos, Eastern Philippines

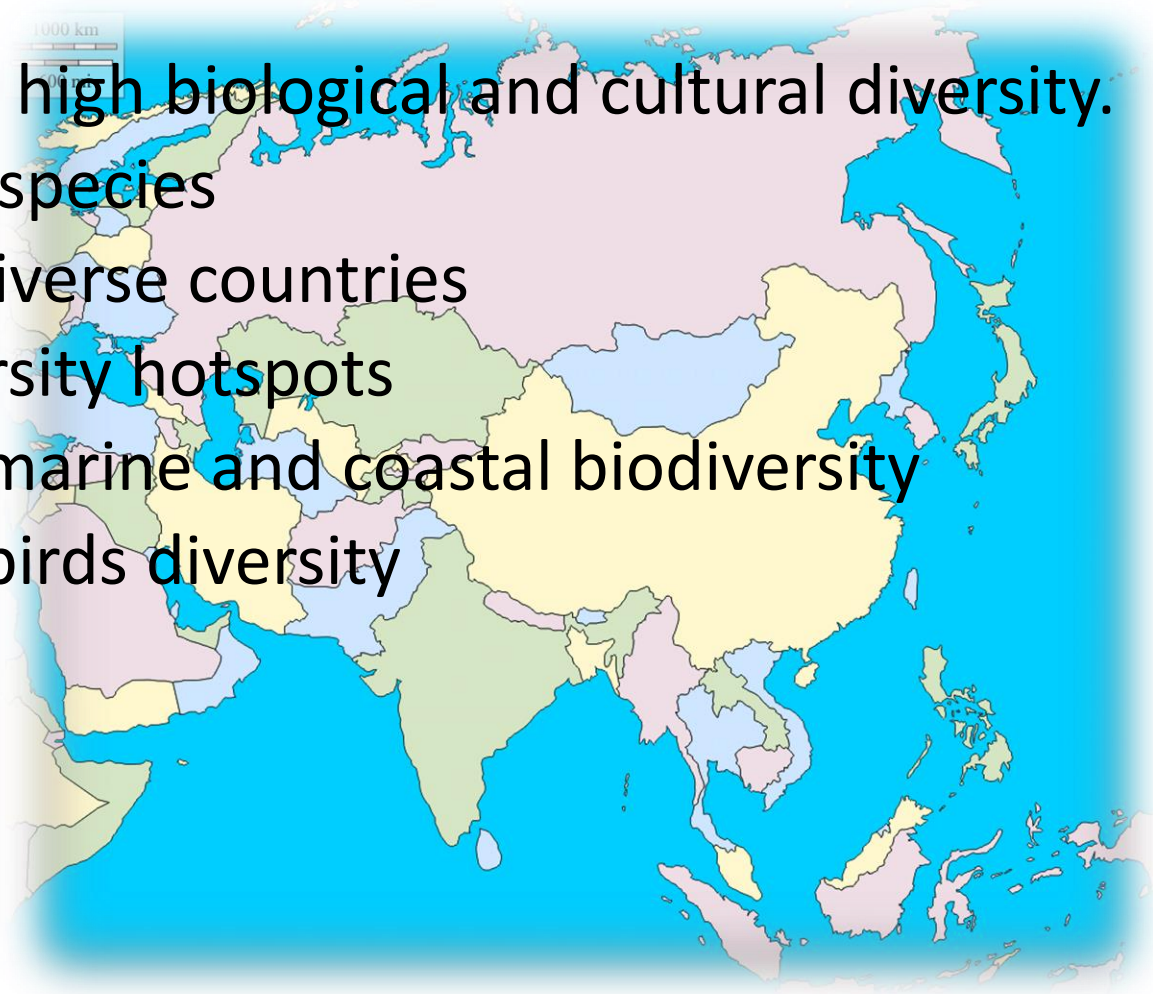


The village Parina located in between 2 mangrove forests was saved when another nearby village Bacjao located outside of the mangrove area and was completely destroyed

Biodiversity in Asia

Asia has very high biological and cultural diversity.

- ✓ Unique species
- ✓ Mega-diverse countries
- ✓ Biodiversity hotspots
- ✓ Rich in marine and coastal biodiversity
- ✓ Rich in birds diversity

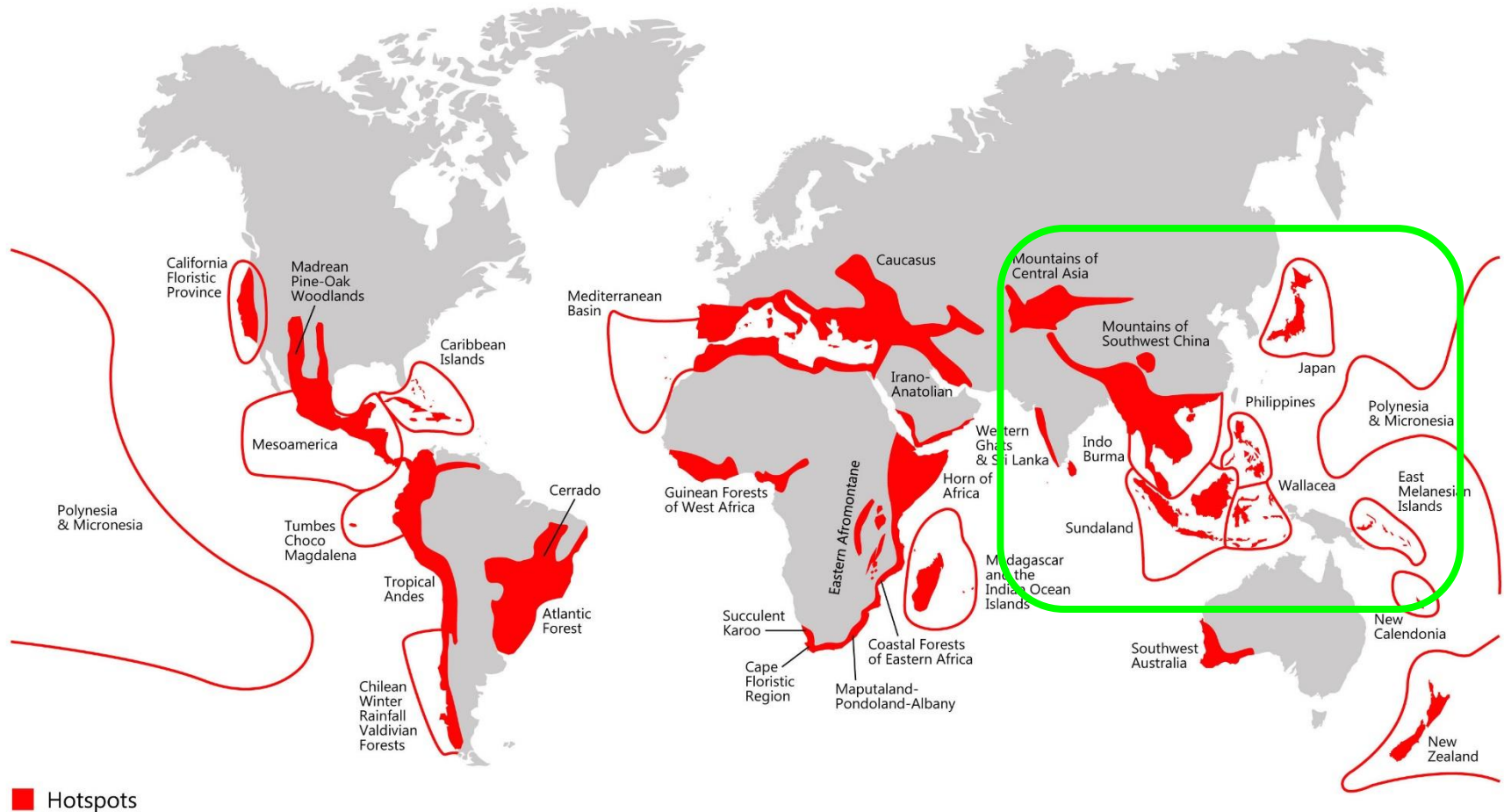


Asia is home to some unique species



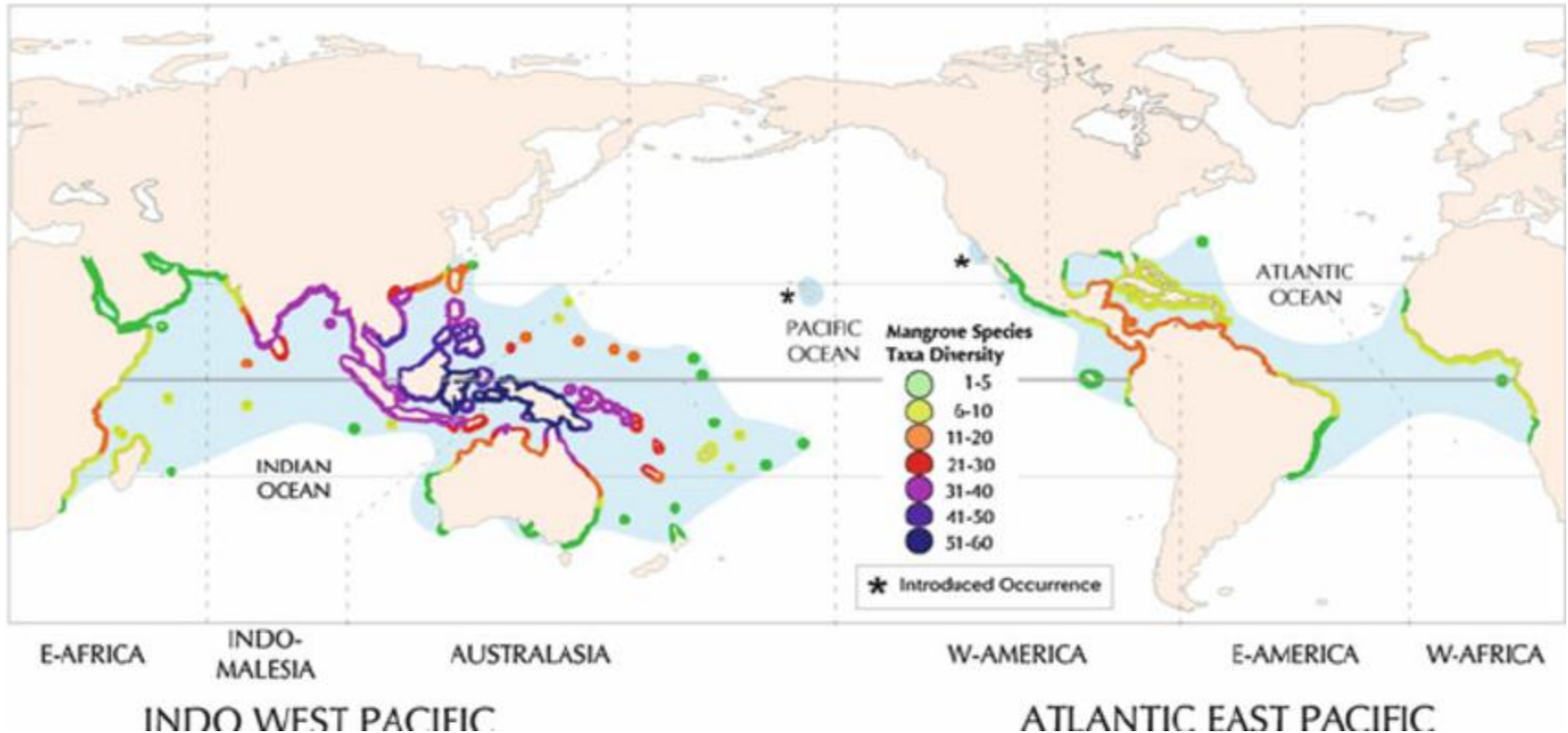
A world map with countries colored in green or grey. A red circle highlights a specific region in East and Southeast Asia. The countries within this circle are labeled: China, India, Philippines, Malaysia, Indonesia, and PNG. Other countries shown in green include the United States, Mexico, Canada, Brazil, Australia, and several countries in Africa and South America. The rest of the world's landmasses are shown in grey.

13 of World's 35 Biodiversity Hot Spots are in Asia



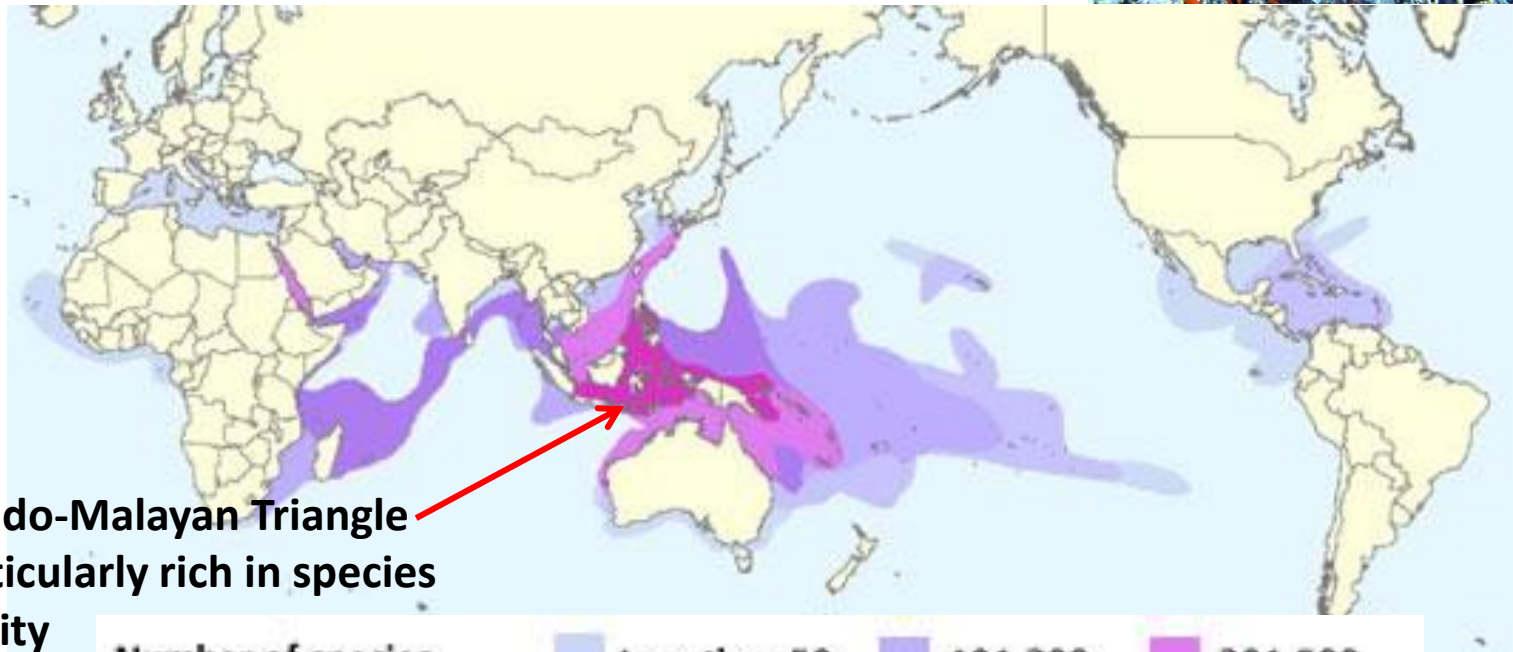
Hotspots → the richest and most threatened reservoirs of plant and animal life on Earth

Southeast Asia Harbors the Largest Extent (35%) of and Most Species-Diverse Mangrove Forests on Earth



SE Asia mangroves sustain 51 of the world's 70 mangrove species, including many endemic species.

Southeast Asian Coral Reefs are the Most Species-rich Marine Ecosystems on Earth



The Indo-Malayan Triangle is particularly rich in species diversity

Number of species

Less than 50

50-100

101-200

201-300

301-500

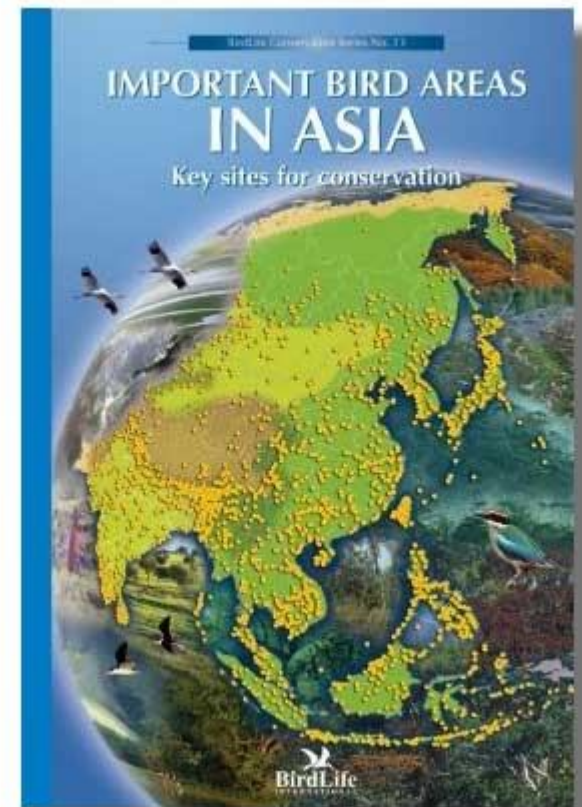
Over 500

Of the 10 richest centers of coral reef **endemism**, 4 (Philippines, Sunda Islands, South Japan, North Indian Ocean) are in Asia

Asia is Rich in Birds

27% of the world's Important Bird Areas (IBAs) are found in the AP region (BirdLife International 2015)

Region	Number of IBAs
Asia	500 (12%)
Central Asia	273 (6%)
Middle East	374 (9%)
Total in Asia	1147 (27%)
World Total	4308



Key Issues

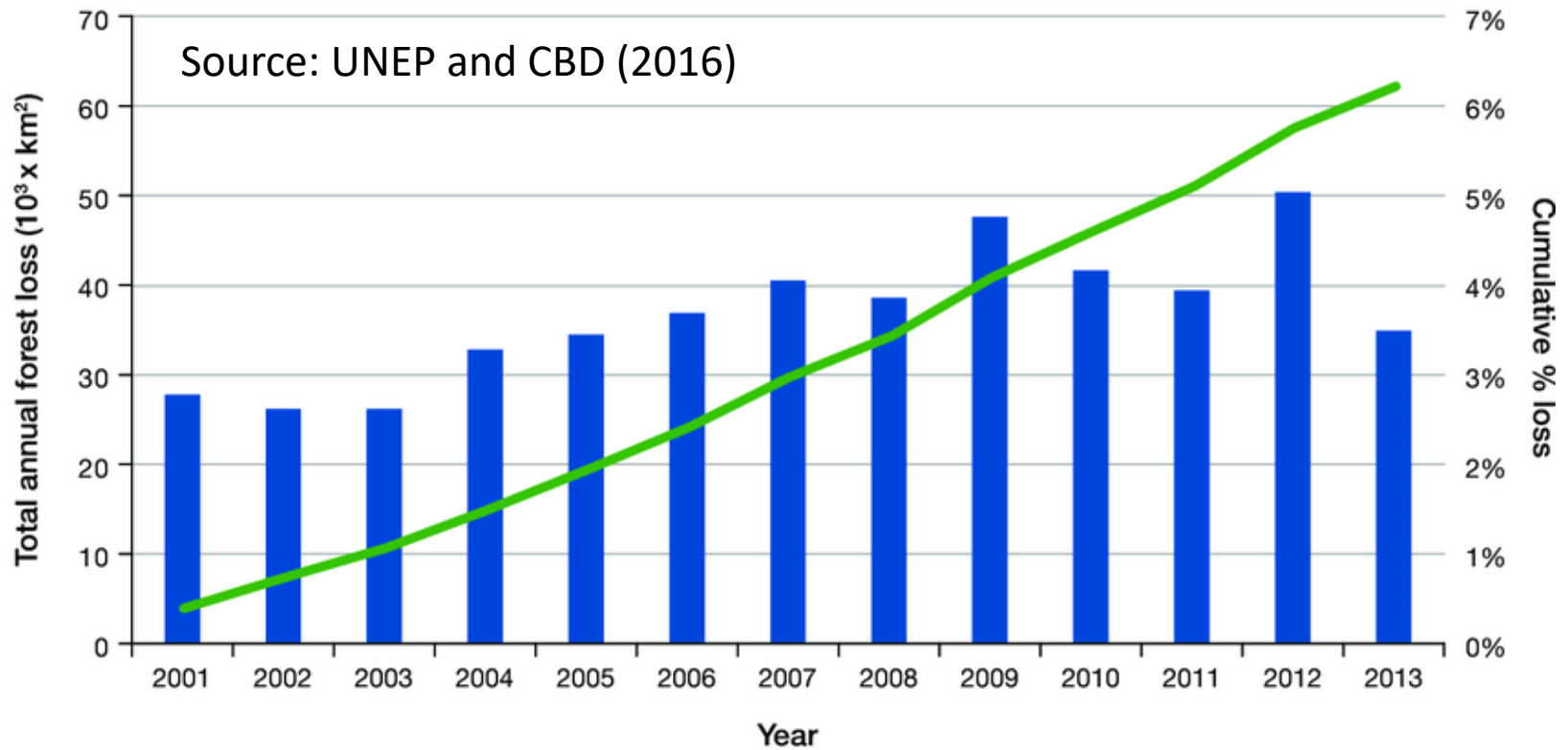
- **Habitat loss and degradation**

- ✓ Forests
- ✓ Wetlands
- ✓ Marine (coral reefs)
- ✓ Coastal (mangroves)
- ✓ Overall environment

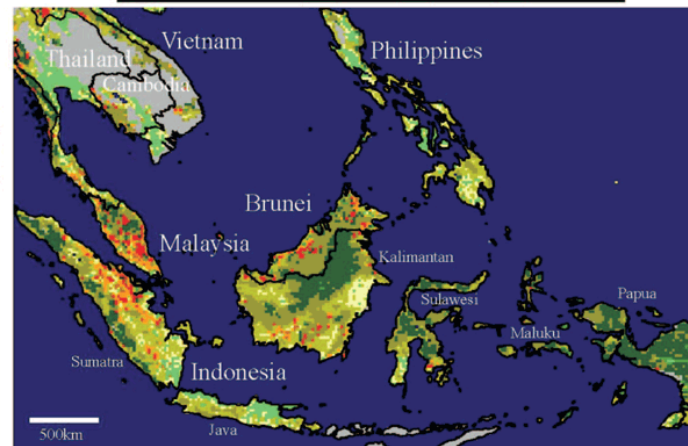
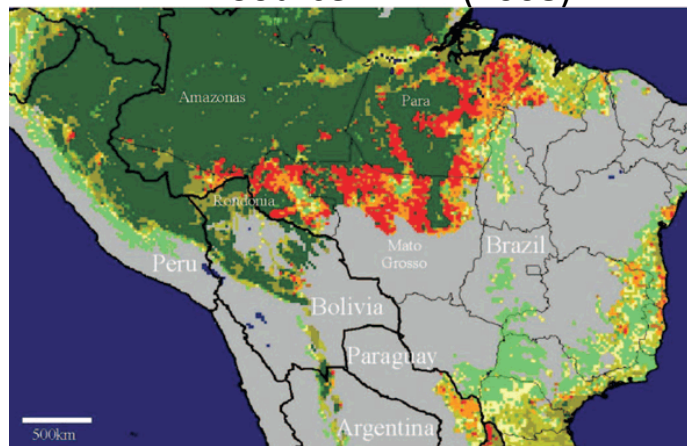
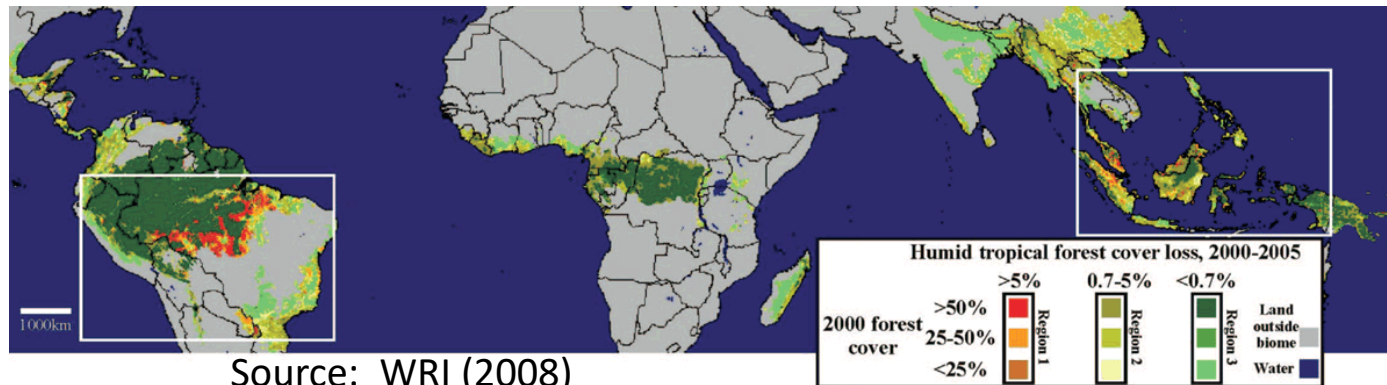
thereby causing serious decline in the biodiversity.

- Emergence of new threats → **climate change, invasive alien species.**

Forest loss trends in the Asia-Pacific

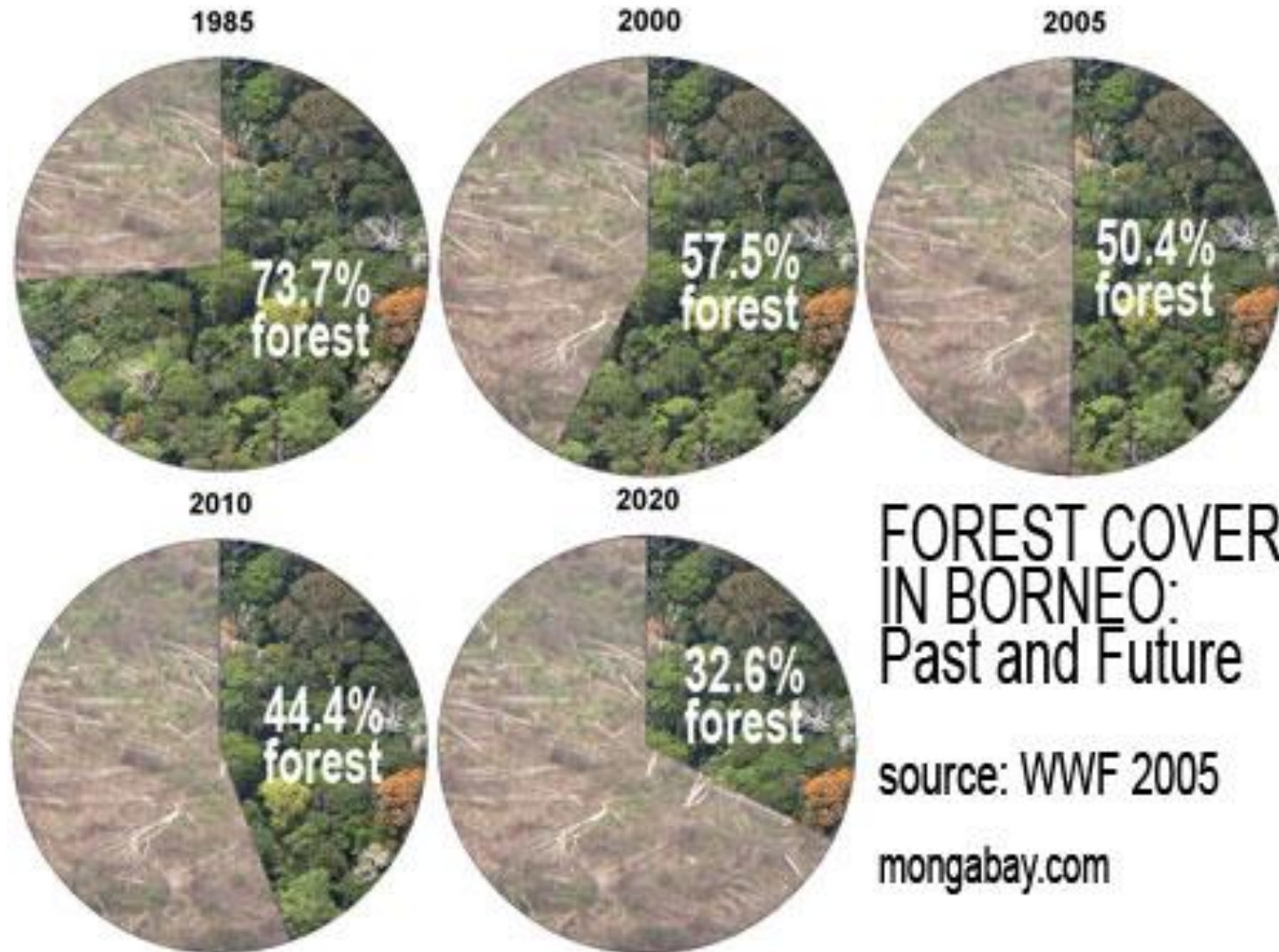


Tropical Deforestation “Hotspots”



Of the world's 10 most threatened forest hotspots, 4 are in Asia (Indo-Burma, Sundaland, Philippines, Mountains of South-west China) (Conservation International 2011)

Forest Cover Change in Borneo

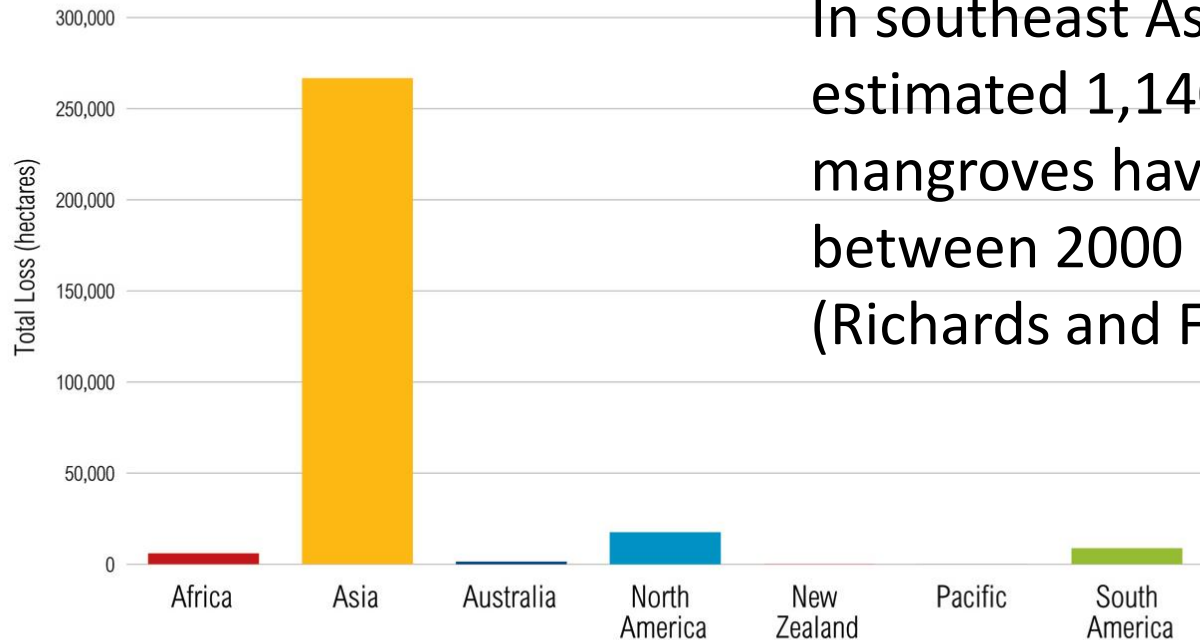


Loss/Degradation of Wetlands, Coastal and Marine Ecosystems

- ❖ Wetlands, mangroves, and coral reefs - are all being destroyed at alarming rates, either for profit or to make room for housing, agriculture, ports and other human activities.
- “Dramatic Loss” of Global Wetlands (Ramsar Secretariat, 2015)**
- ❖ **88% of SE Asia’s coral reefs are threatened; 50% are at high or very high levels of threat due to human activities (WRI 2011).**
- ❖ **Over 85% of the reefs in Malaysia and Indonesia are threatened; 70% in Philippines are destroyed or at high risk of destruction (WRI 2011).**

Loss of Mangrove Forests

Tree Cover Loss in Mangroves by Region, 2000-2012



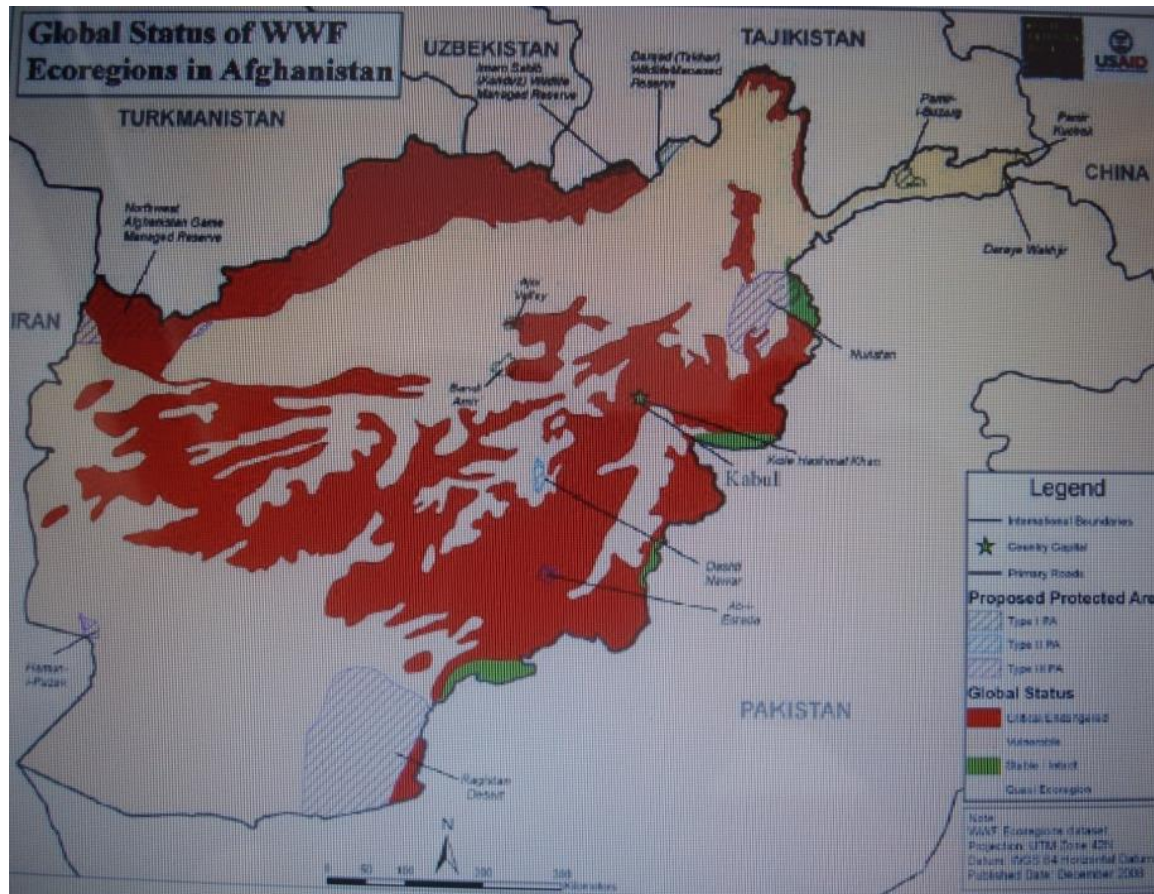
In southeast Asia alone, an estimated 1,140 km² of mangroves have been lost between 2000 and 2012 (Richards and Friess 2016).

Source: <http://bit.ly/1ztb5Zl>

 WORLD RESOURCES INSTITUTE

Afghanistan is under very high risk of human-induced desertification

About 38% of land area is comprised of ecoregions that are Endangered, 61% Vulnerable, and only 1% Stable (IRA/MoAIL, 2009).



Invasive alien species – a new threat



Mikania micrantha



Parthenium hysterophorus



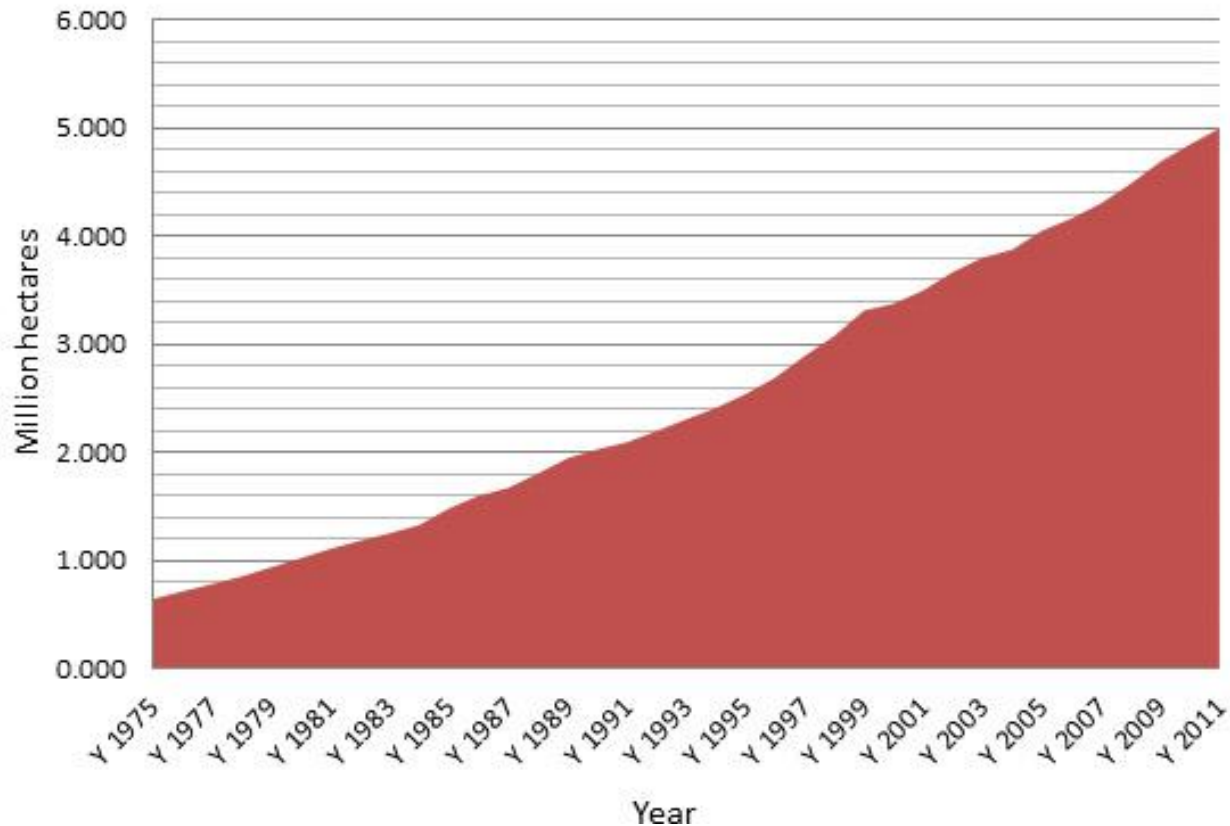
Eichhornia crassipes

Underlying Causes of Biodiversity Loss

- **Rapid growth of human population, and rapid economic development** → encroachment to forests, wetlands, coastal areas for agriculture, settlement and industrial purposes.
- **Drive to globalization** (e.g. conversion of forests to cash crop plantations - palm, pulp and paper; mangrove forests to shrimp farming)
- **Institutional weakness** (e.g. design-related problems; erosion of traditional practices)
- **Subsidies** (e.g. forest concessions; cheap land, credits)
- **Ineffective implementation of policy**
- **Poor governance** (e.g. unsustainable logging; corruption)
- **Insufficient technical and financial capacities**

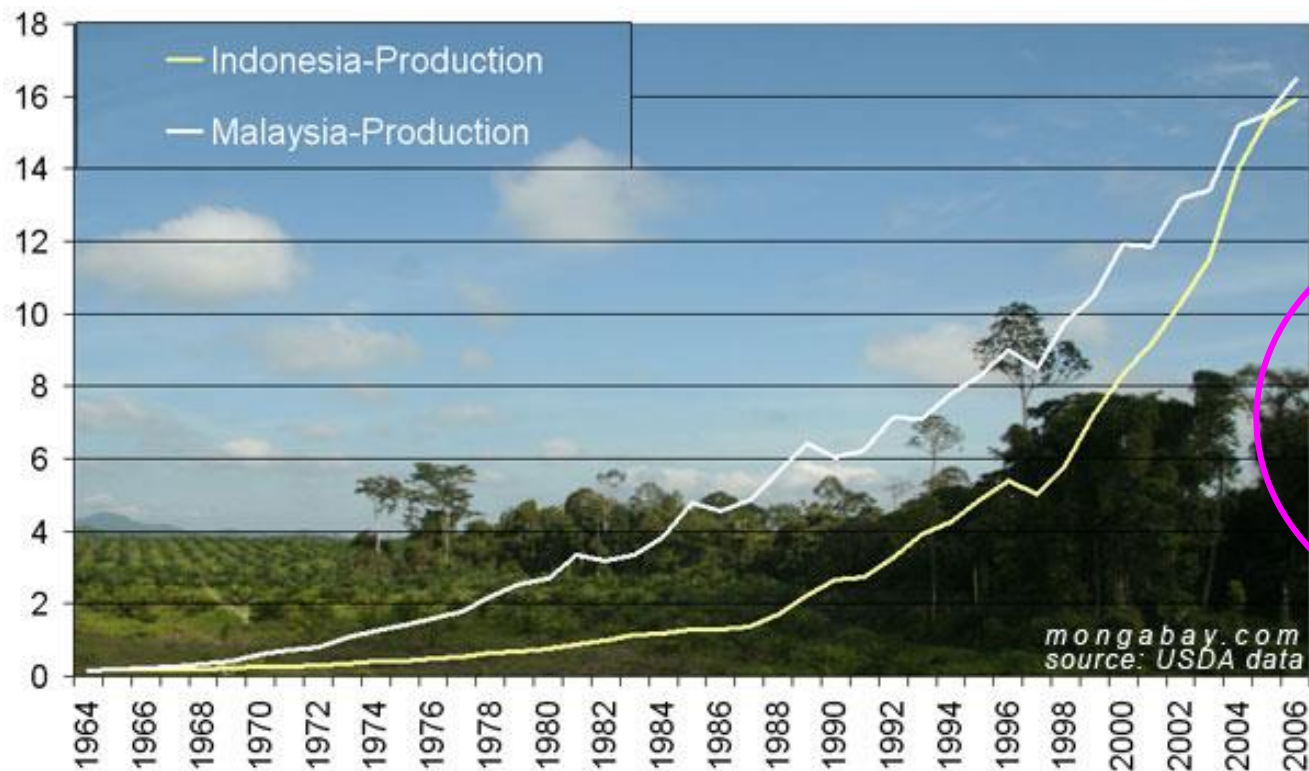
Oil Palm Plantation is a Major Driver of Deforestation in Tropical Asia

Southeast Asia lost 12.9% forest during 1990-2015 (FAO/RECOFTC 2016)



Area under oil palm plantation in Malaysia (Source: Malaysian Palm Oil Board)

Trends of Palm Oil Production (million Metric Tons) in Indonesia and Malaysia



Estimated Palm Oil Production in 2014 (mil. MT)

Indonesia 33

Malaysia 19.8

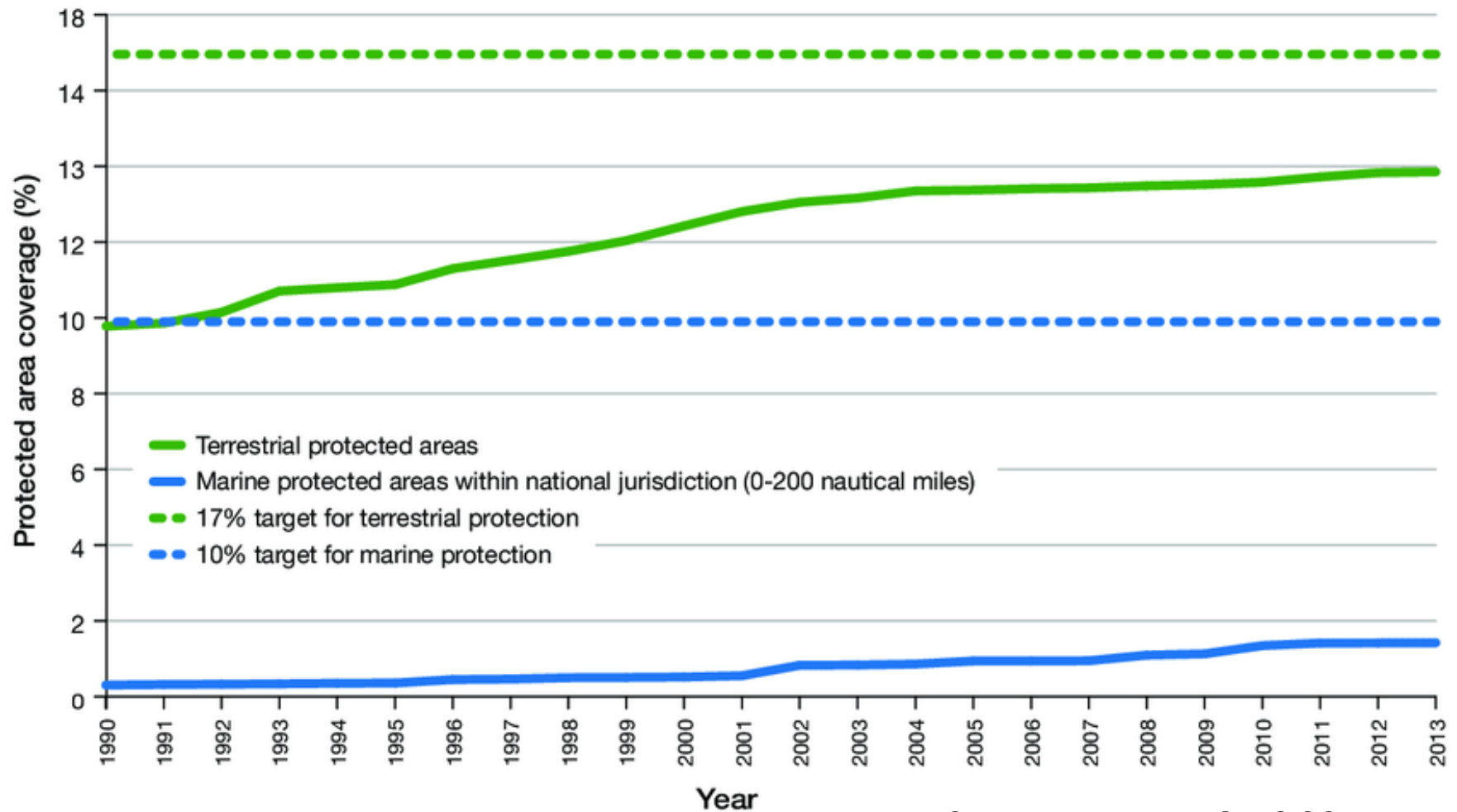
Thailand 0.2

<http://www.indonesia-investments.com/business/commodities/palm-oil/item166>

Institutional Initiatives and Achievements

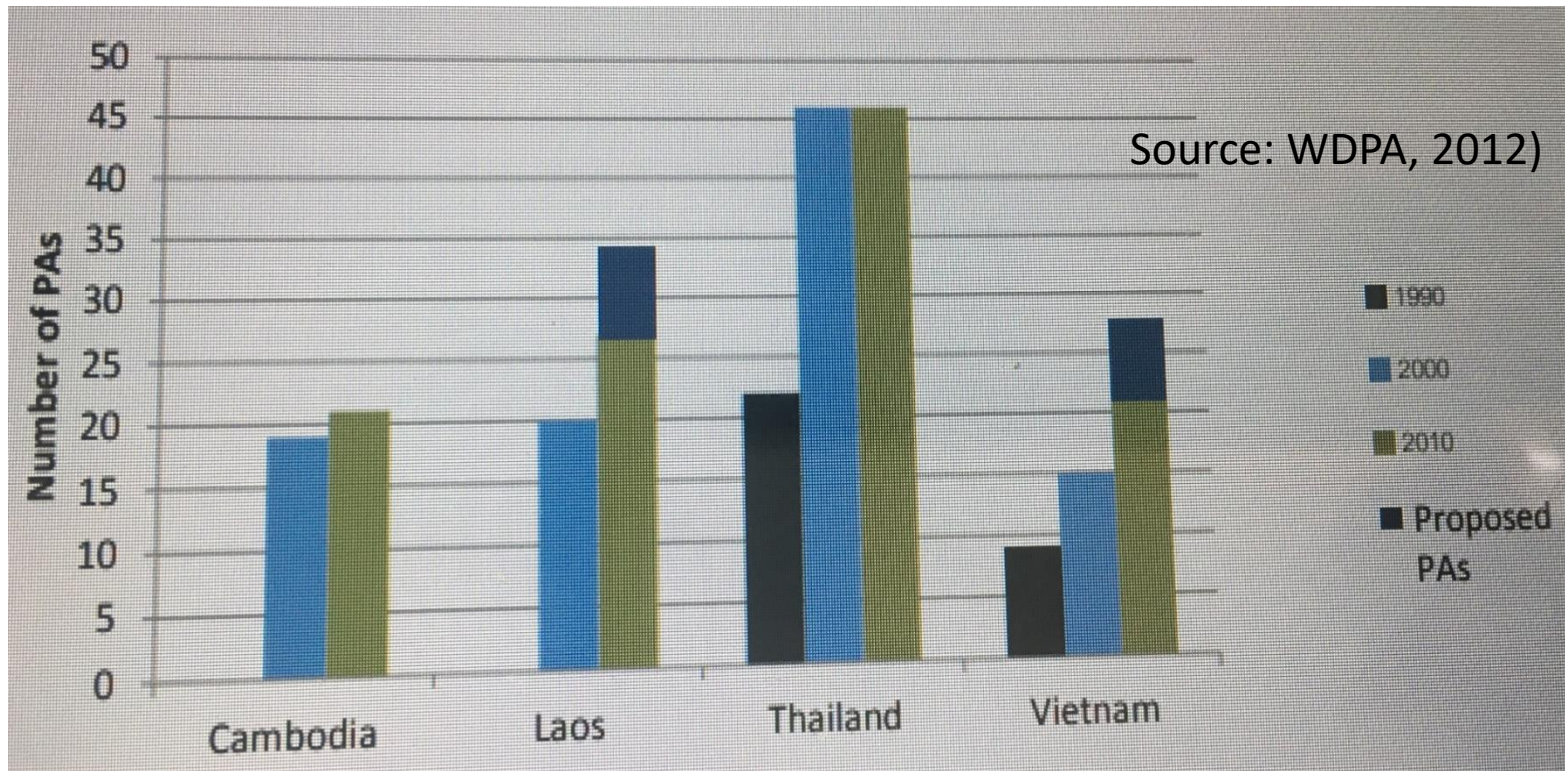
- Expansion of Protected Areas
- Promotion/expansion of community-based and co-management of forests and Protected Areas
- Regional initiatives
- International initiatives
- Traditional/indigenous systems
- Awareness raising campaigns

Protected Area trends in Asia-Pacific

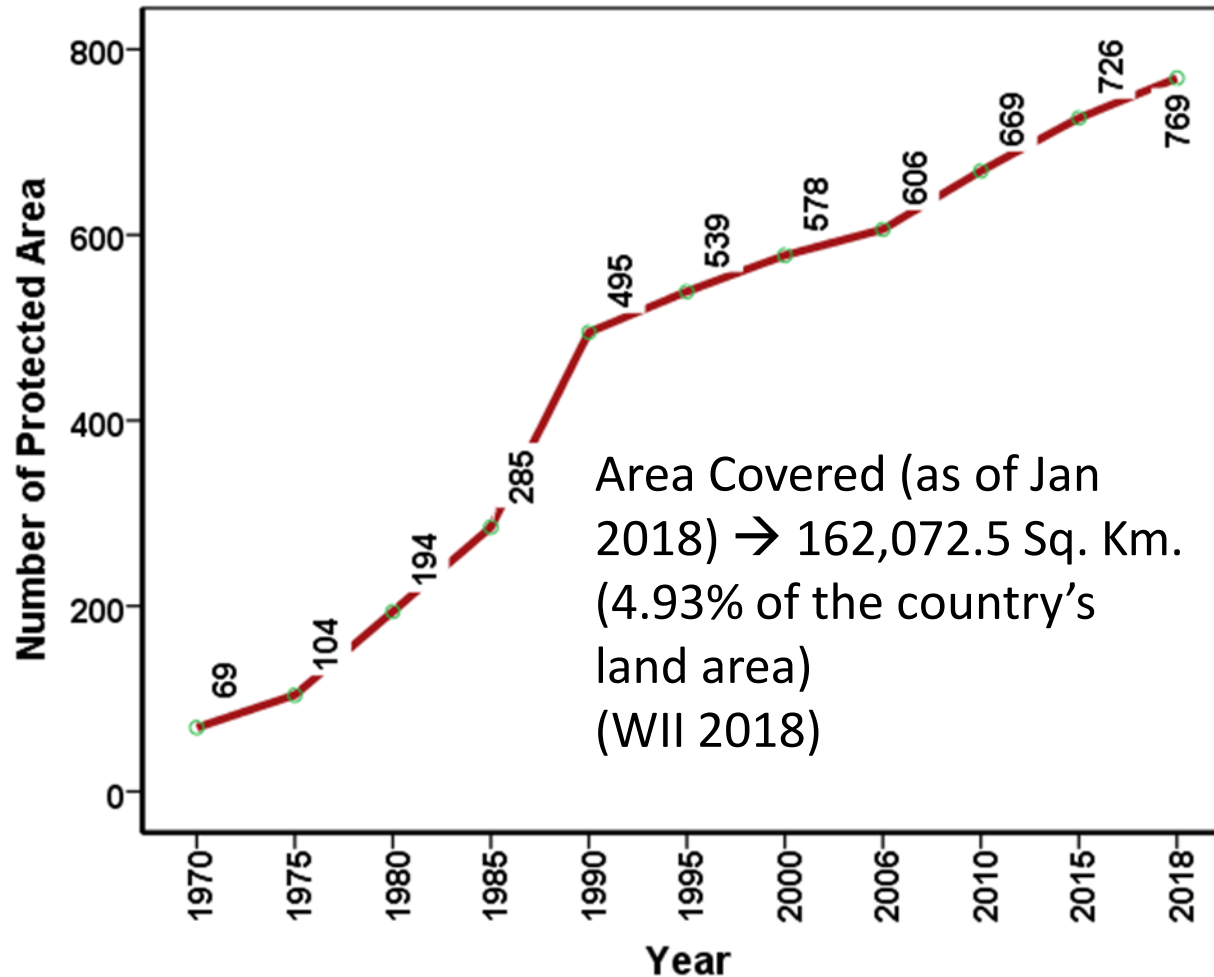


Source: UNEP-WCMC 2014.

Growth of PA in Lower Mekong Region (as % of national land area)

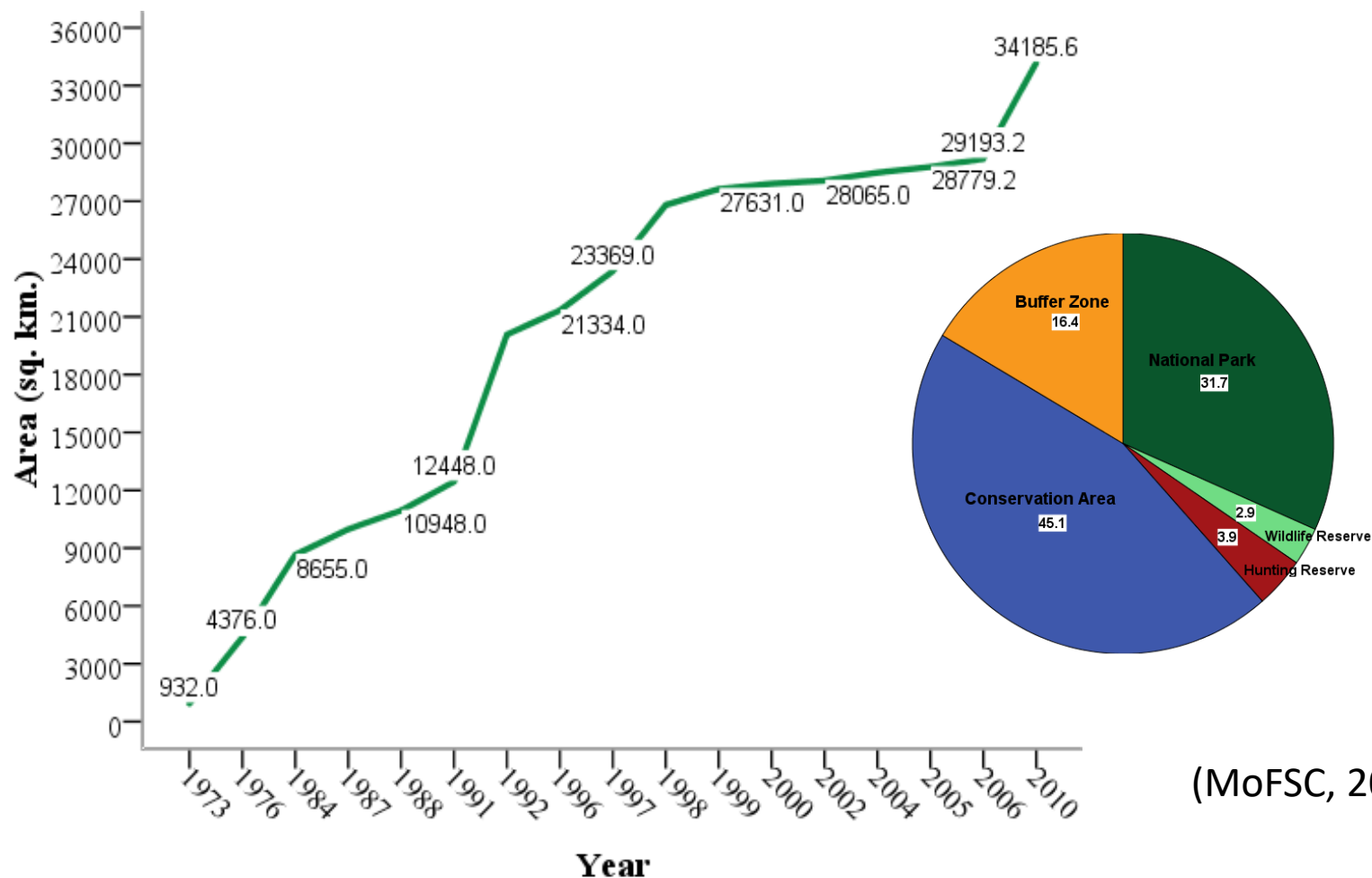


Growth of Protected Area in India



Growth of Protected Area in Nepal

>32 times increase in between 1973 and 2010



Afghanistan's first Protected Area

Band-e-Amir (41,000 ha; 2900-3832 m) is the country's only formally recognized PA. Declared as the first NP in April 2009



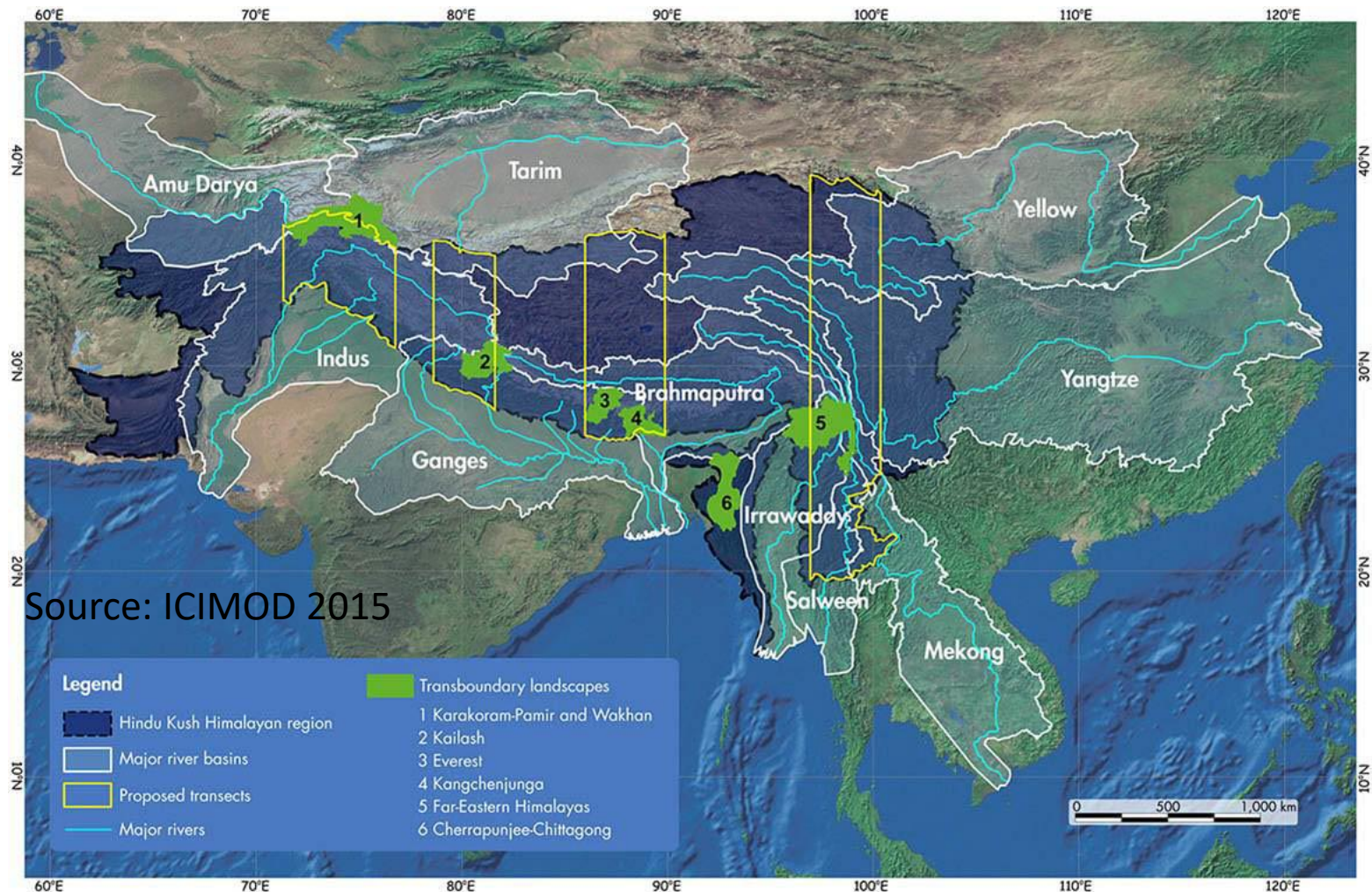
Community Based and Co-management Initiatives

Continuously evolving institutions and governance systems have influenced unprecedented changes in terrestrial as well as marine ecosystems. **Some examples:**

- **Nepal's Community Forestry** - forest cover increased from 29% in 1994 to 40.36% in 2014 (DFRS 2015).
- Participatory forestry in other countries – e.g. Philippines, Vietnam, India, Indonesia, Laos, Thailand
- Philippines - **Indigenous community conservation areas** established under the Indigenous Peoples Rights Act 1997.
- The **Tagal system in Sabah, Malaysia** is an example of successful case of co-management of inland fisheries (FAO 2005).

Regional Initiatives (shared governance)

ICIMOD promoting *transboundary landscapes* in the HKH Region



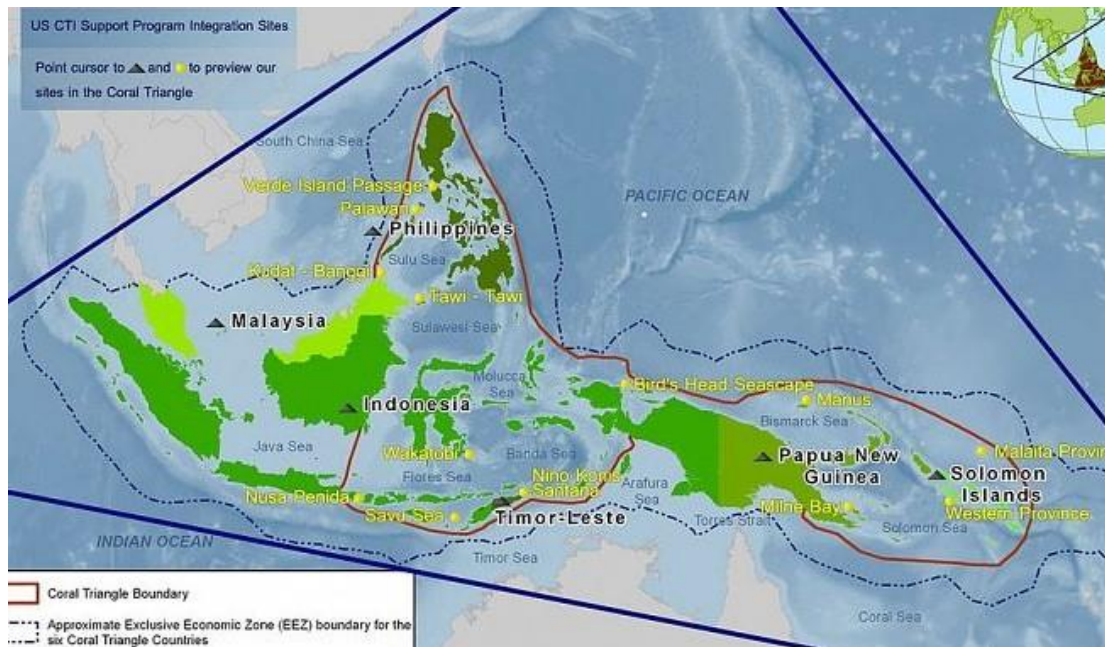
Regional Initiatives (cont.)

The six countries in the Mekong River Basin are collaborating in the management of transboundary water and associated biodiversity and ecosystem resources through the **Mekong River Commission**.



Regional Initiatives (cont.)

- **ASEAN Centre for Biodiversity** – collaborative effort of 10 ASEAN member states (Brunei Darussalam, Cambodia, Indonesia, Lao PDR, Malaysia, Myanmar, Philippines, Singapore, Thailand, and Vietnam)
- **Coral Triangle Initiative** - partnership of 6 countries



Regional Initiatives (cont.)

- **The Bay of Bengal Large Marine Ecosystem Project** → Bangladesh, India, Indonesia, Malaysia, Maldives, Myanmar, Sri Lanka, and Thailand, are collaborating in (BOBLME 2015).
- **South Asia Vulture Conservation** – governments of Bangladesh, India, Nepal and Pakistan have joined hands in conservation of critically endangered vulture species through a regional declaration made in 2012.
- **Asian Species Action Partnership (2008)** – established with the goal of reversing the decline of critically endangered wild vertebrates in South-East Asia.
- The Indian Ocean Tuna Commission

Traditional/Indigenous Systems – some examples

- Traditional forest management system “*Saguday*” in Philippines (governed by the council of elders).
- Traditional village councils for forest management (Van Panchayats) in India.
- Traditional institutions and conservation benefits in Cambodia (The Virachey National Park case).
- Customary tenure system very common in Pacific island countries and territories (e.g. between 81-98% of the land in independent Melanesia and Polynesia is reportedly under some form of customary tenure (Govan 2011)).

Initiatives to raise awareness

**Bangladesh: 2-year National Tiger Awareness Campaign
- the Tiger Caravan - Launched on 11 February 2016**



Source: <http://www.thedailystar.net/backpage/protecting-our-pride-477520>

Initiatives to raise Awareness (cont.)



International Initiatives

- **Multilateral Environmental Agreements (MEAs)** -7 international conventions focus on biodiversity issues
- **The Critical Ecosystem Partnership Fund** - directly supports conservation efforts of indigenous peoples and local communities in conservation of biodiversity hotspots
- **The Nature Conservancy** - conservation of Orang-utan forests in Borneo, and China's (Sichuan province) innovative initiative called the "land trust reserve".
- **UNEP Regional Seas Programme** for conservation of marine animals and ecosystems
- **Satoyama and Satoumi conservation initiatives** of Japan
- **IPBES Assessment of Biodiversity and Ecosystem Services** - Strengthening the Science-Policy Interface

Governance Challenges

- Challenges **related to the attributes** of biodiversity and ecosystem services.
- **Design-related challenges.**
 - CB Institutions: “one size fits all” approach is a reason for failure in some cases (Dunning 2014).
 - Regional institutions - lack of clear mandate, geographical scope and/or capacity of the large number of international, regional and sub-regional bodies and programmes that are involved (e.g. the BOBLME).
- **Institutional weaknesses** (overlapping mandates, unclear linkages between multi-level governance, and a lack of collaboration among stakeholders Institutions)

Governance Challenges (cont.)

- Isolated efforts, while many of the problems arise from pressures outside the sector.
- Mismatch between political boundaries and ecological units appropriate for the management of ecosystem services
- Inadequate capacity of stakeholders at different levels
- Knowledge gap (e.g. climate change impacts)
- Inter and intra-generational equity and fairness
- Technology transfer (e.g. IPM; gene bank, monitoring technologies to generate updated and accurate biodiversity information as a basis for policy-making (e.g., remote sensing)).

Options for Decision Makers – Short and Medium Term

- Better implementation of existing policy instruments
- Integrating biodiversity into planning, financing, and business practices for agriculture, energy, and industry sectors.
- Better recognition of and supports to IPLCs efforts, and greater respect and support to ILK
- Collaborative and multi-stakeholder approaches
- Economic incentives to forest-dependent people
- Multi-use approach to forest management
- Research on effectiveness of different policy and governance options
- Improving financing to and capacities of poorer countries
- Improving cross-border collaboration and regional governance

Options for Decision Makers – Long Term

- Transformative governance (integrative, inclusive, informed and adaptive governance approaches)
- Ecosystem or landscape approach to governance

Directions for Future Research

- Distribution, and trends of changes in different ecosystems
- Impact of climate change on different types of ecosystems and species
- Contributions of different ecosystems to human well being
- Variation in institutions and associated outcomes
- Cross level relationships



Thank You

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