



Unsustainable consumption of the natural forests and the wildlife of Southeast Asia

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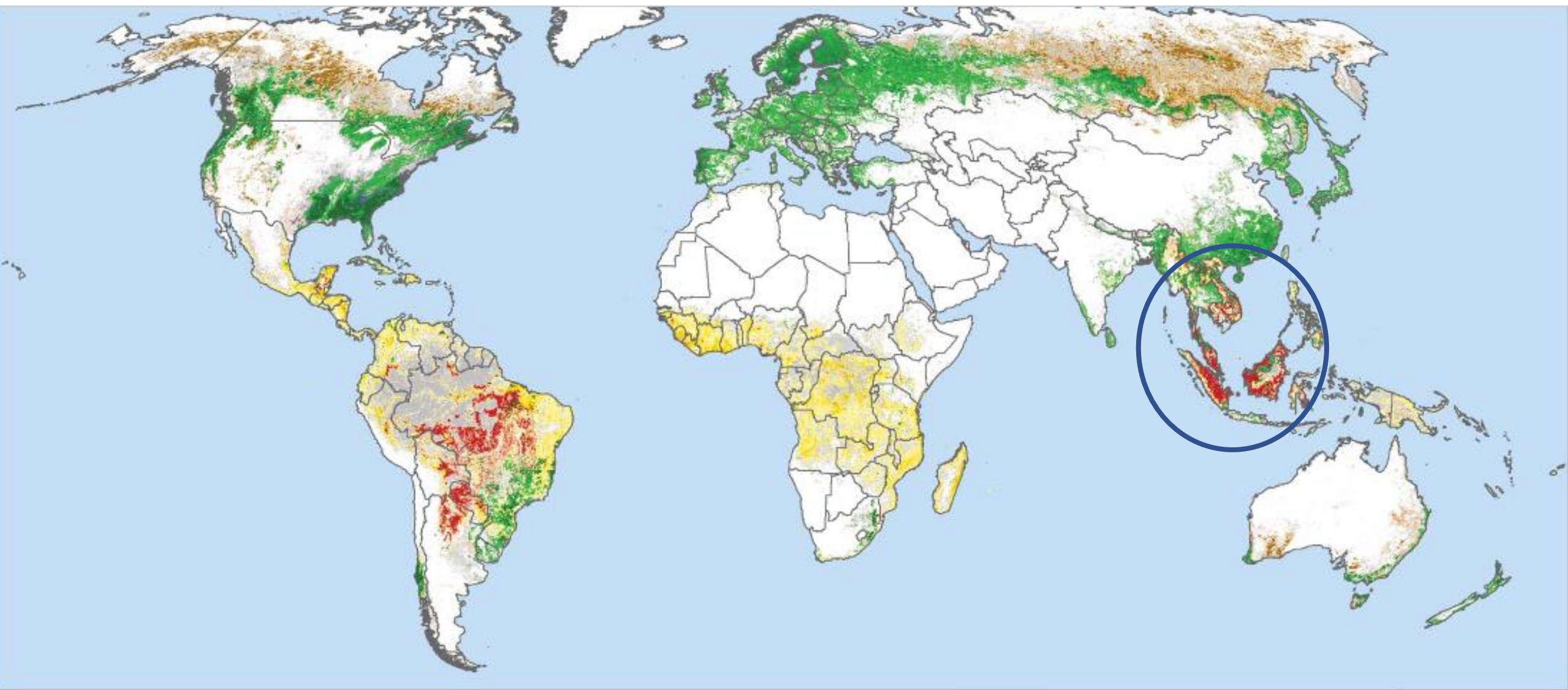
King Mongkut's University of Technology Thonburi
Bangkok, Thailand

Outline

- This talk is a reminder that forests and their wildlife are in great danger in Southeast Asia
- Goal: a brief overview of the trends in Southeast Asia in terms of forest loss and wildlife loss
- Provide ideas for how to slow these losses

Forest loss

- Globally, there has been a $27(\pm 5)\%$ permanent loss in forest cover in the past 20 years driven by commodity production
- Rates of deforestation and the reasons for these losses differ among regions
- Southeast Asia



■ Commodity Driven Deforestation ■ Shifting Agriculture ■ Forestry ■ Wildfire ■ Urbanization ■ Zero or Minor Loss



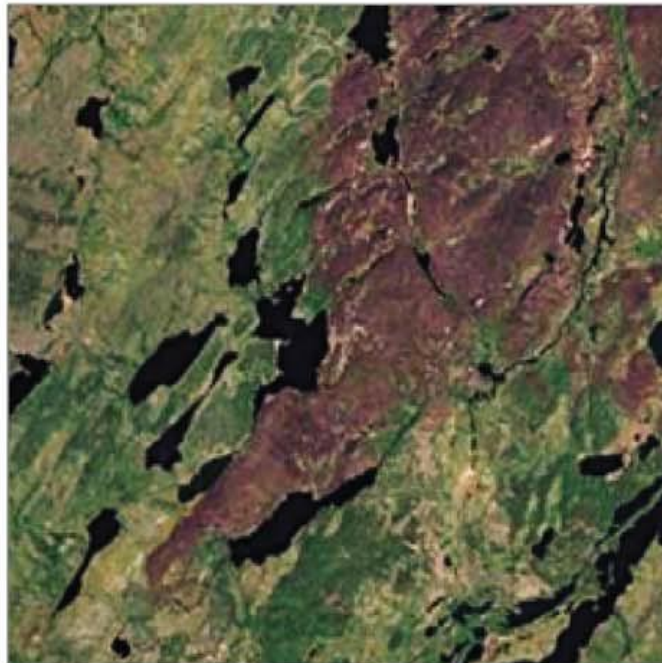
Commodity-driven Deforestation



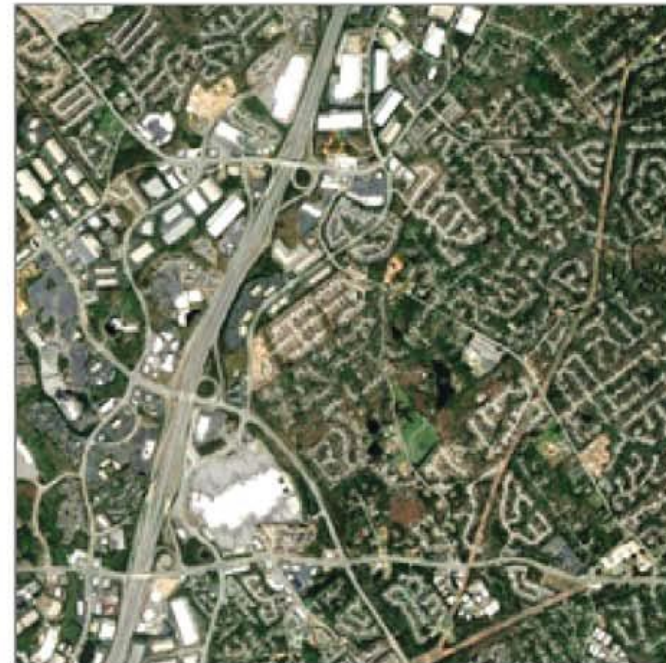
Shifting Agriculture



Forestry



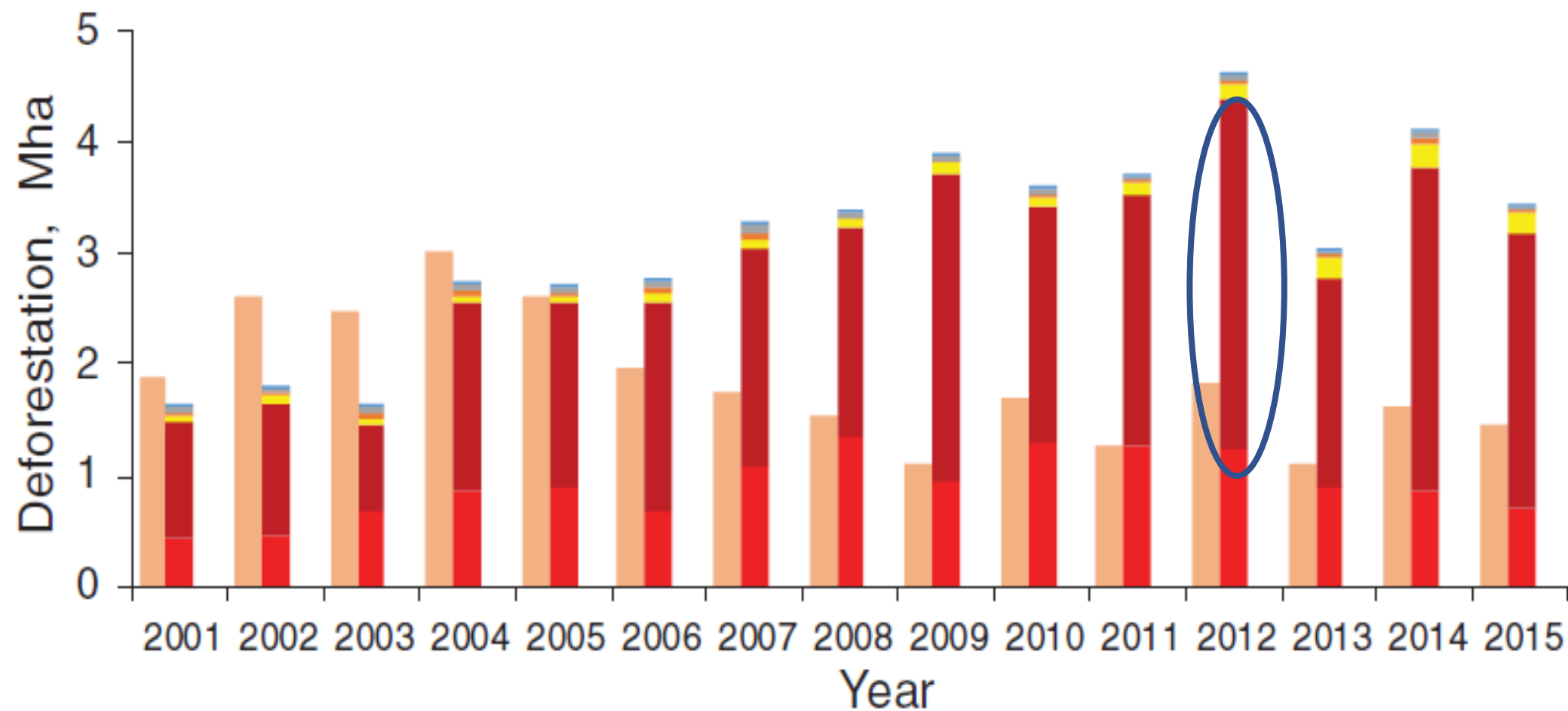
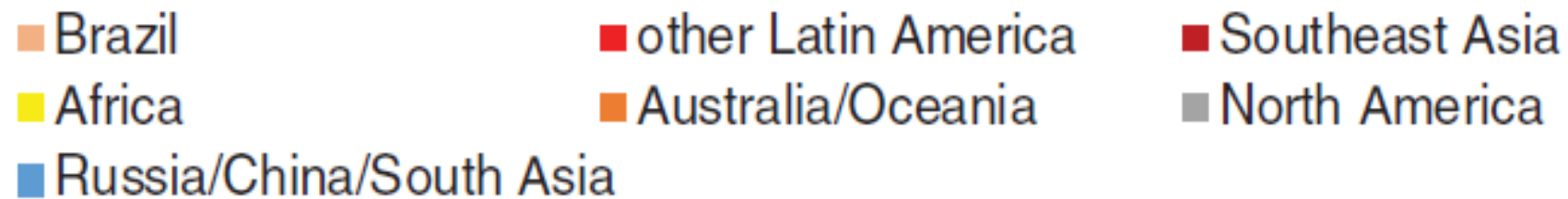
Wildfire



Urbanization






Region	Deforestation	Shifting Agriculture	Forestry	Wildfire	Urbanization
North America	2 ± 1%	1 ± 1%	48 ± 11%	48 ± 11%	1 ± 1%
Latin America	64 ± 8%	24 ± 7%	9 ± 3%	<1 ± <1%	<1 ± <1%
Europe	None	<1 ± <1%	95 ± 5%	5 ± 5%	None
Africa	2 ± 1%	93 ± 3%	4 ± 2%	<1 ± <1%	1 ± 2%
Russia/China/ South Asia	2 ± 2%	1 ± 1%	38 ± 12%	59 ± 12%	<1 ± <1%
Southeast Asia	61 ± 13%	20 ± 10%	14 ± 6%	2 ± 6%	<1 ± <1%
Australia/Oceania	8 ± 6%	10 ± 4%	19 ± 9%	62 ± 14%	<1 ± <1%

B



Loss and vulnerability of lowland forests in mainland Southeast Asia

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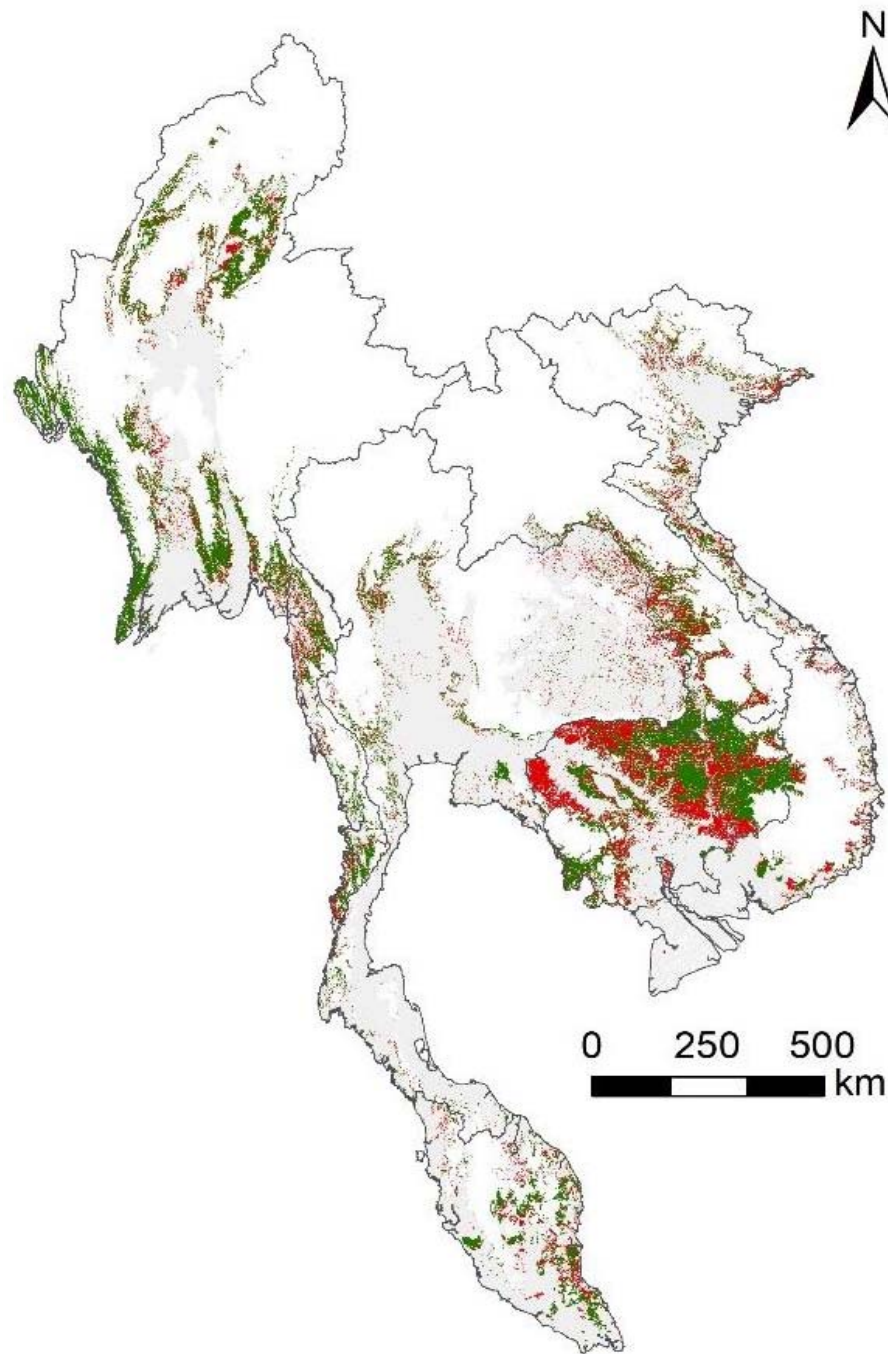
Lowland forest Loss in mainland Southeast Asia

- By 2018, ~50% ($>120,000 \text{ km}^2$) of lowland forest present in 1998 was lost due to human activities
- Also, 50% of lowland forest inside protected areas ($\sim 11,000 \text{ km}^2$) was also lost during this 20-year period
- At the country scale, Cambodia had the greatest deforestation ($>47,500 \text{ km}^2$) during this 20-year period

1998-2018

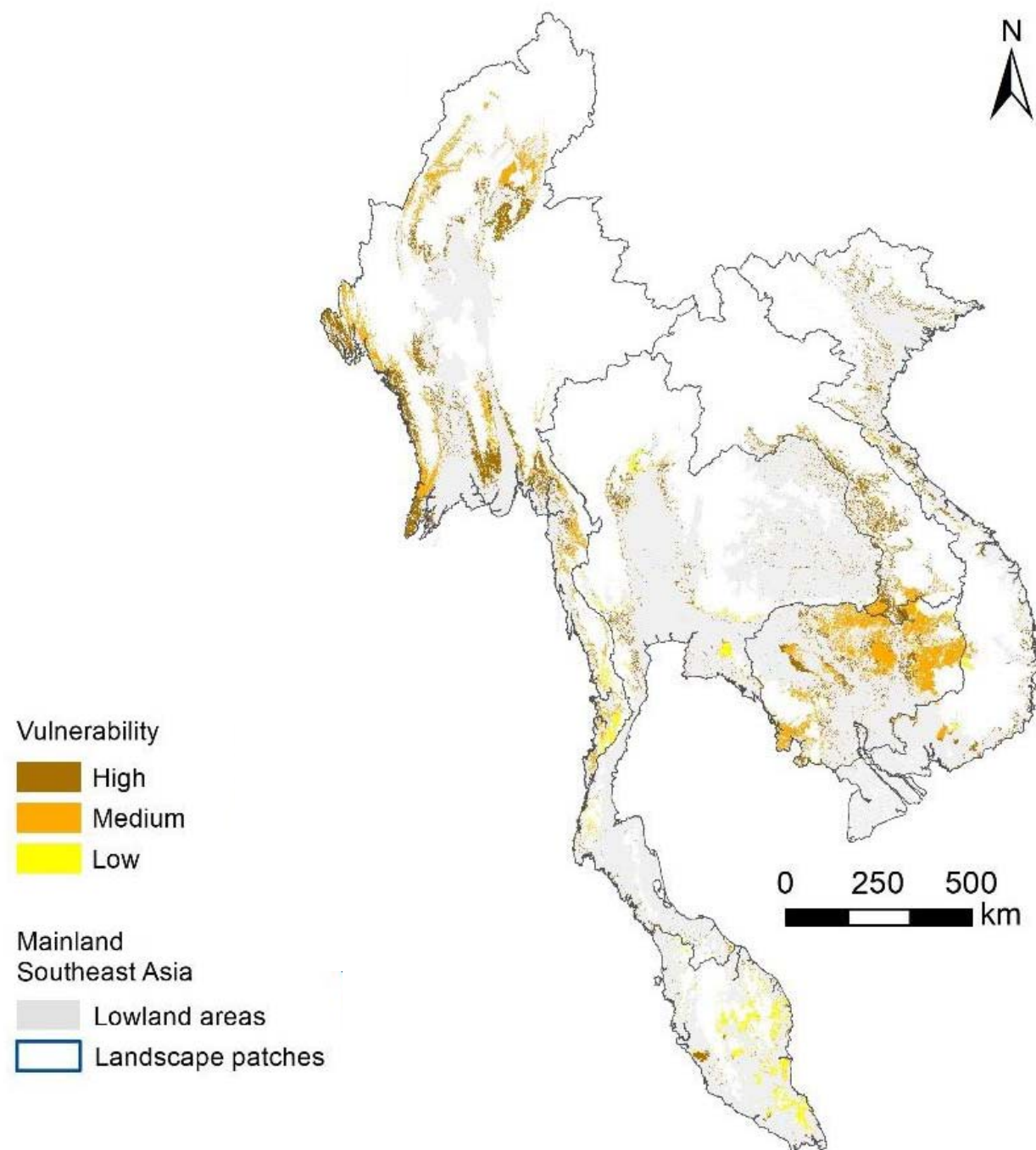
Lowland forest loss, km² (%)

Vietnam	17,529 (66)
Thailand	14,729 (63)
Cambodia	47,563 (54)
Laos	11,690 (49)
Peninsular Malaysia	9,193 (48)
Myanmar	26,777 (35)
Total	127,481 (50)

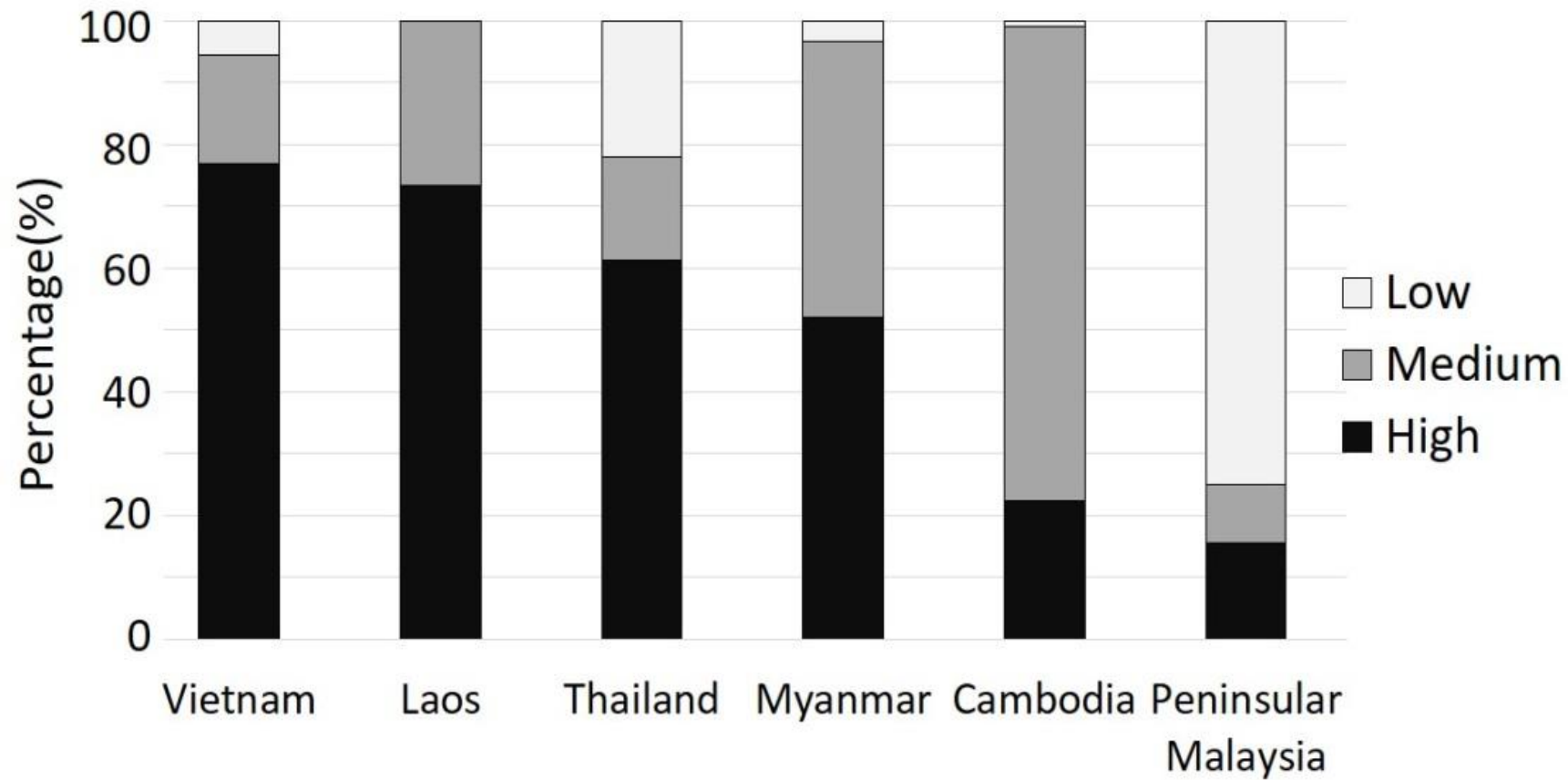


Forest loss

- Forest remaining
- Forest loss
- Lowland areas
- Landscape patches



Vulnerability



Percentage of remaining lowland forest by vulnerability level

Wildlife trends in Southeast Asia

- Snaring crisis
- Primate extinction crisis
- Bears
- Rabbits
- Tigers & other cats
- Gurney's pitta critically endangered...
- Many others

(Photo by Kanit Khanikul)





Number of species in each taxon in different categories and coverage by protected areas

	Mammal	Bird	Amphibian
Endemic Species	122	183	213
Threatened	37	21	37
Data Deficient	39	0	111
Refined Range <20,000km²	61	42	182
Refined Range <5,000km²	44	24	144
Species of Concern	79	49	184
Average % protection	24±22	20±14	32±34
No Protection	14	2	39
Data Deficient with no protection	10	0	34

doi:10.1371/journal.pone.0160566.t001

Li et al. 2016

- “...forest ecosystems are being reduced to their carbon content and that, despite the rhetoric of biodiversity co-benefits, fauna is not treated as a functional component of forests.”

Krause, T., & Nielsen, M. R. (2019). Not seeing the forest for the trees: the oversight of defaunation in REDD+ and global forest governance. *Forests*, 10(4), 344.

Wildlife

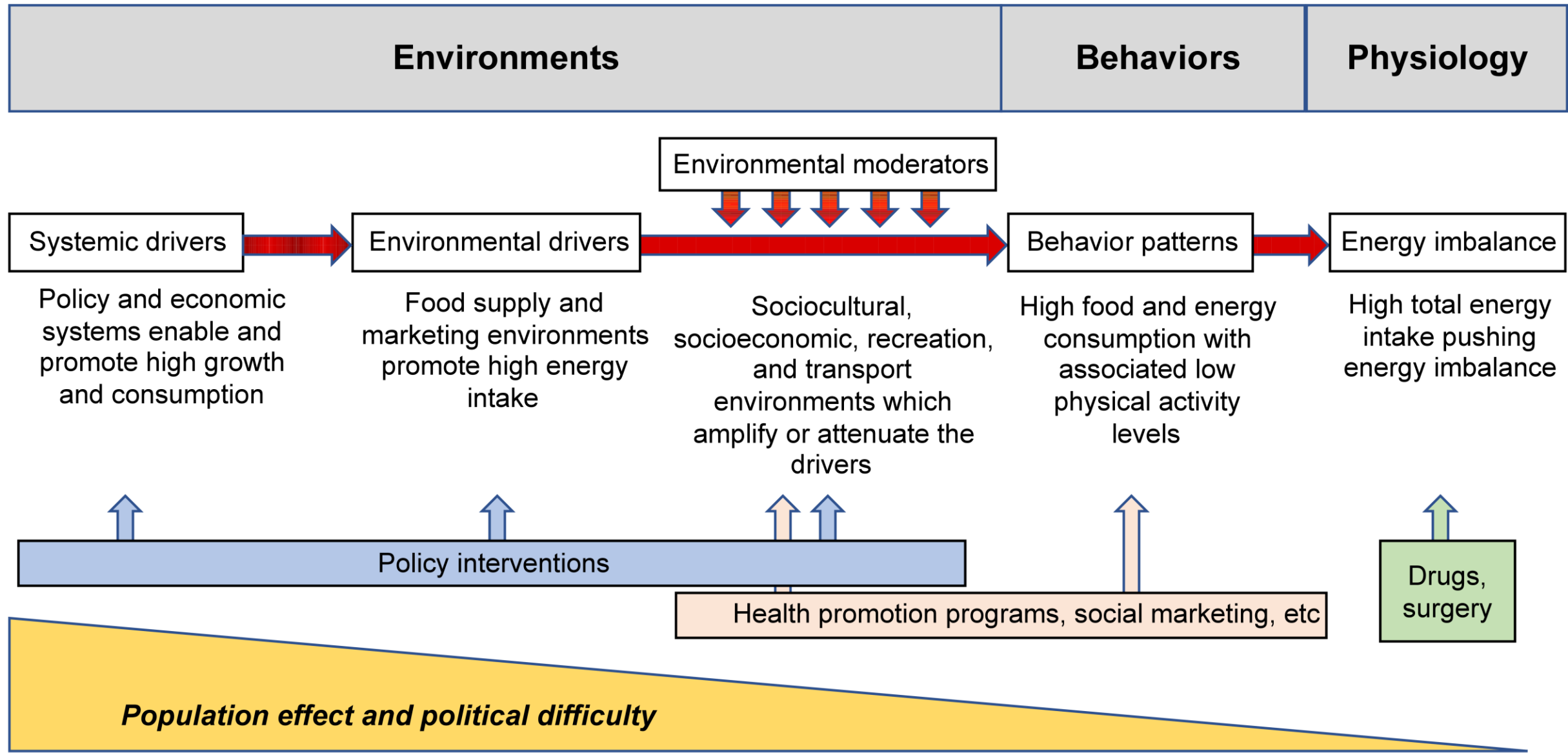
- Ranges for many species are shrinking and many species are also threatened by climate change in addition to forest loss and hunting/poaching

- From a forest and biodiversity perspective, current economic activity in Southeast Asia is clearly *not* sustainable

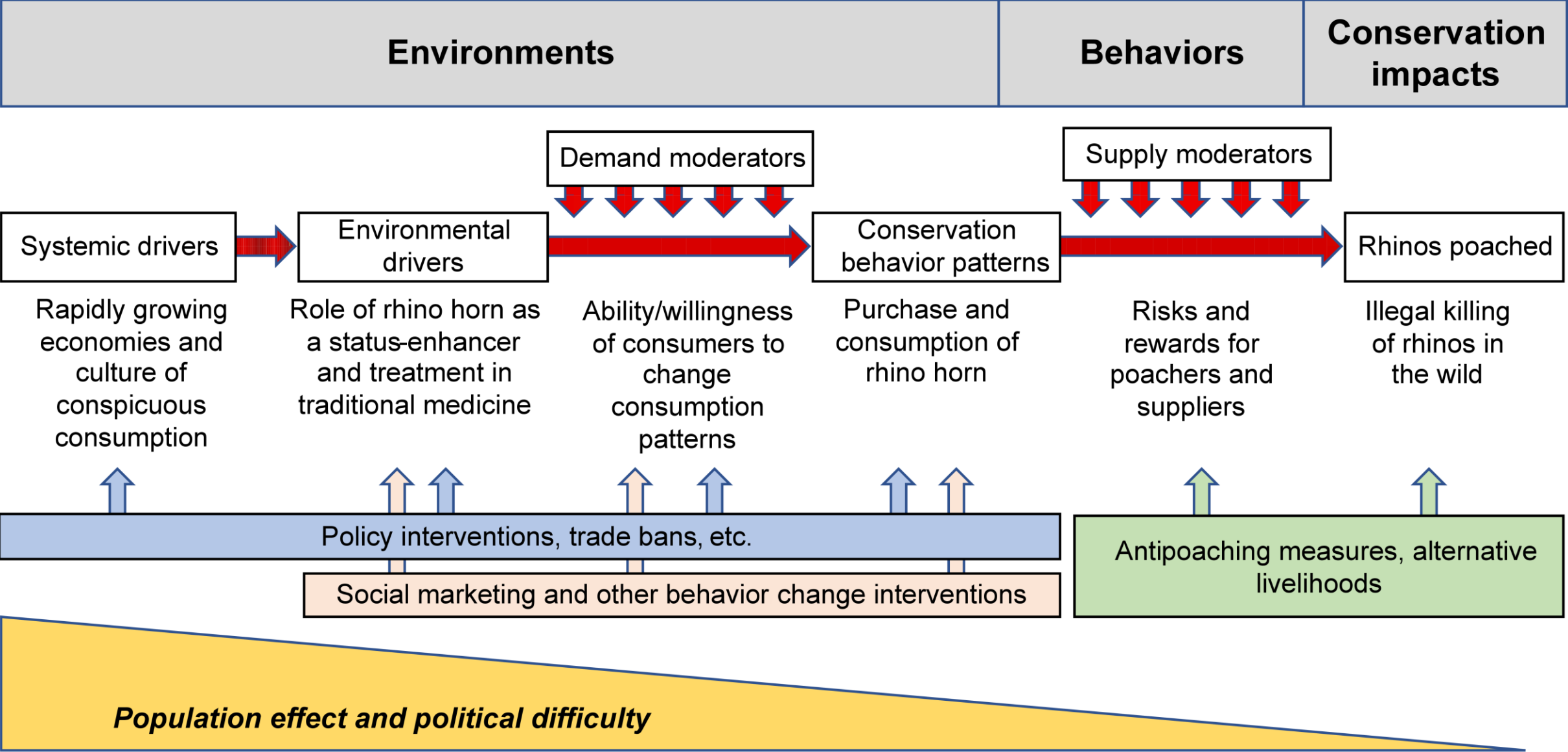
Solutions

- 1) Changing social norms, focus actions at a broader scale in addition to the local scale

(a)



(b)



Conclusions

- ~60% of forest loss in all of SE Asia can be attributed to commodity production.
- Despite corporate commitments, the rate of commodity-driven deforestation has not declined.
- To reduce commodity-driver deforestation, companies must eliminate the many hectares of conversion from supply chains each year.

For wildlife...

- Decrease demand, enforcement alone is unlikely to be effective if demand for wildlife & wildlife products remains high
- Reduce/remove commercial incentives & increase penalties

For conservation to emerge, actors need to:

- 1) recognise the need for change,
- 2) expect positive outcomes,
- 3) be able to experiment to achieve collective learning, and
- 4) have legitimate local scale governance authority.

A balance is needed between external guidance of conservation and enabling local actors to find solutions appropriate to their contexts. This delicate balance between external guidance of actions, and supporting local actors can be managed adaptively over time to support the emergence of robust conservation actions.

- Biggs, D., Ban, N. C., Castilla, J. C., Gelcich, S., Mills, M., Gandiwa, E., ... & Possingham, H. P. (2019). Insights on fostering the emergence of robust conservation actions from Zimbabwe's CAMPFIRE program. *Global Ecology and Conservation*, 17, e00538.