



Conference on Biodiversity and development, a global heritage

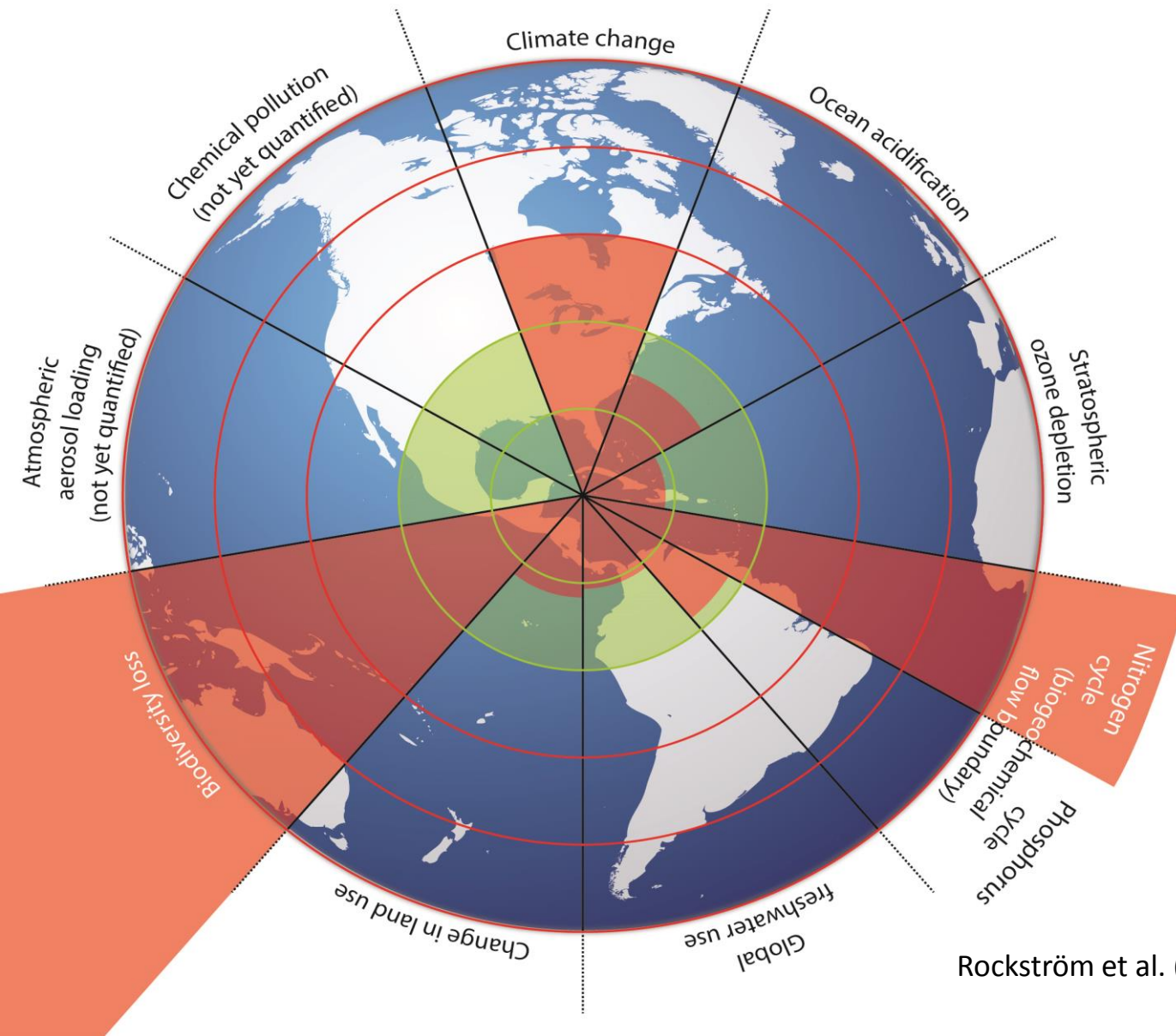
Agro-biodiversity & eco-agriculture

A good marriage or
... a second best option?

Bruno Verbist
KLIMOS

Brussels, 26-11-2015

The global ecocrisis



Trespassing the safe operating space for humanity for key factors of planetary stability

A 6th mass extinction? !

REVIEW

(Barnosky et al. 2011_Nature 471)

doi:10.1038/nature09678

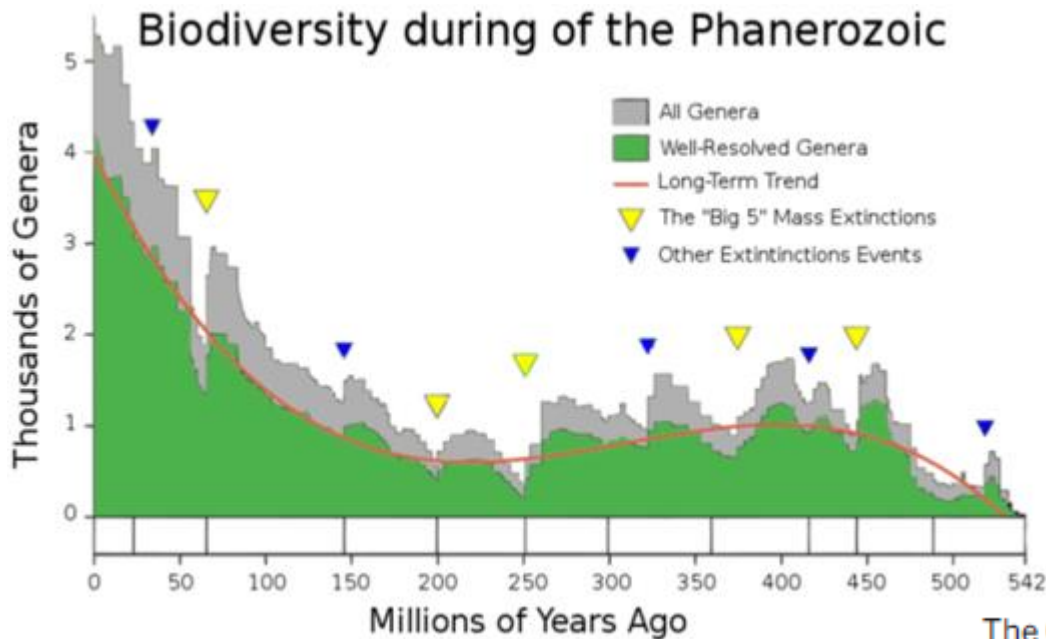
Has the Earth's sixth mass extinction already arrived?

Anthony D. Barnosky^{1,2,3}, Nicholas Matzke¹, Susumu Tomiya^{1,2,3}, Guinevere O. U. Wogan^{1,3}, Brian Swartz^{1,2}, Tiago B. Quental^{1,2†}, Charles Marshall^{1,2}, Jenny L. McGuire^{1,2,3†}, Emily L. Lindsey^{1,2}, Kaitlin C. Maguire^{1,2}, Ben Mersey^{1,4} & Elizabeth A. Ferrer^{1,2}

Palaeontologists characterize mass extinctions as times when the Earth loses more than three-quarters of its species in a geologically short interval, as has happened only five times in the past 540 million years or so. Biologists now suggest that a sixth mass extinction may be under way, given the known species losses over the past few centuries and millennia. Here we review how differences between fossil and modern data and the addition of recently available palaeontological information influence our understanding of the current extinction crisis. Our results confirm that current extinction rates are higher than would be expected from the fossil record, highlighting the need for effective conservation measures.

Mass extinction: loss of > 75% of species in a geologically short interval

The 'Big 5' mass extinction events



The Ordovician event⁶⁴⁻⁶⁶ ended ~443 Myr ago; within 3.3 to 1.9 Myr 57% of genera were lost, an estimated 86% of species.

★ Extinction is not new

The Devonian event^{4,64,67-70} ended ~359 Myr ago; within 29 to 2 Myr 35% of genera were lost, an estimated 75% of species.

★ Over 95% of the species that ever existed have gone extinct.

The Permian event^{54,71-73} ended ~251 Myr ago; within 2.8 Myr to 160 Kyr 56% of genera were lost, an estimated 96% of species.

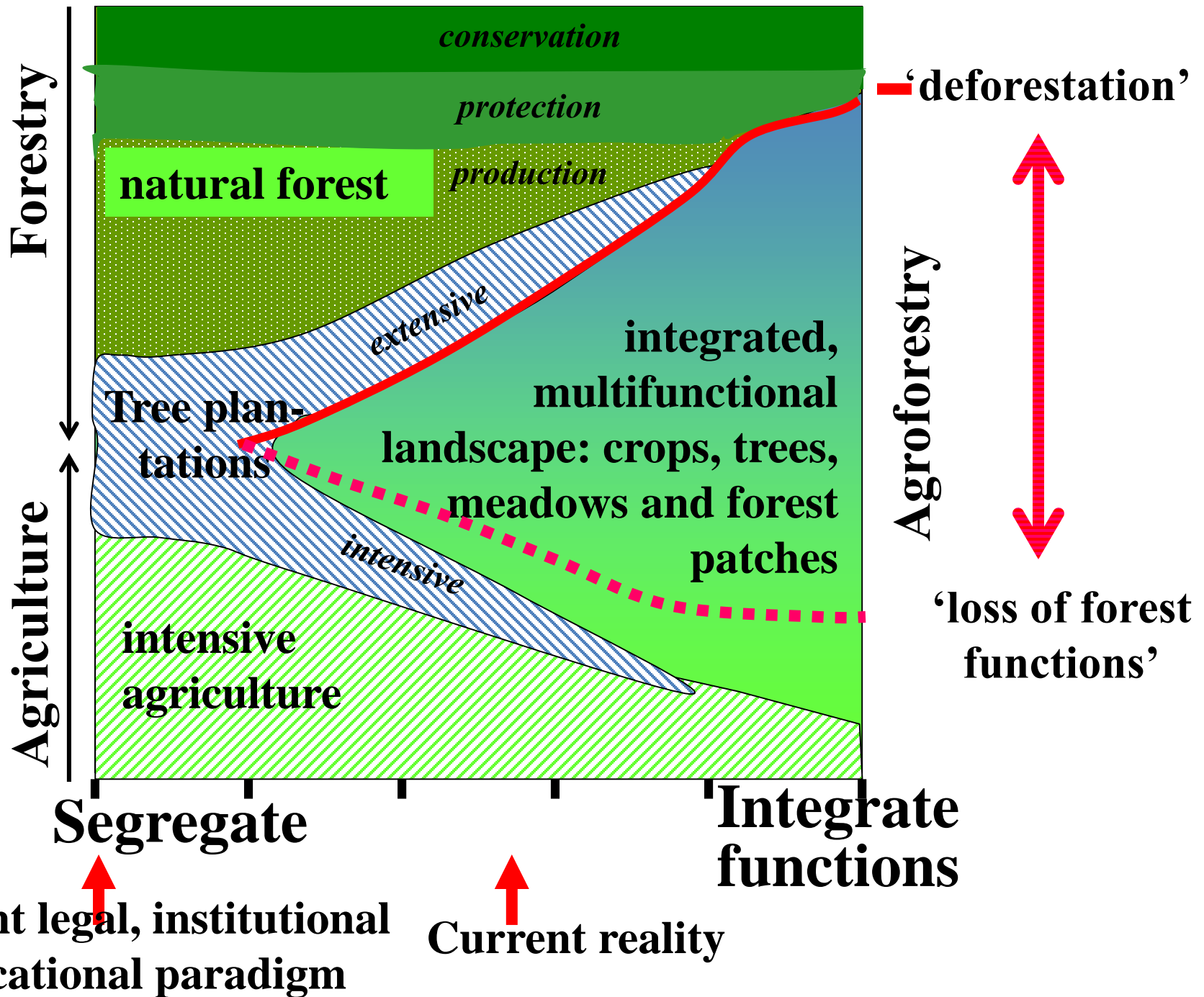
Long restoration times

The Triassic event^{74,75} ended ~200 Myr ago; within 8.3 Myr to 600 Kyr 47% of genera were lost, an estimated 80% of species.

The Cretaceous event^{58-60,76-79} ended ~65 Myr ago; within 2.5 Myr to less than a year 40% of genera were lost, an estimated 76% of species.

(Barnosky et al. 2011_Nature 471)

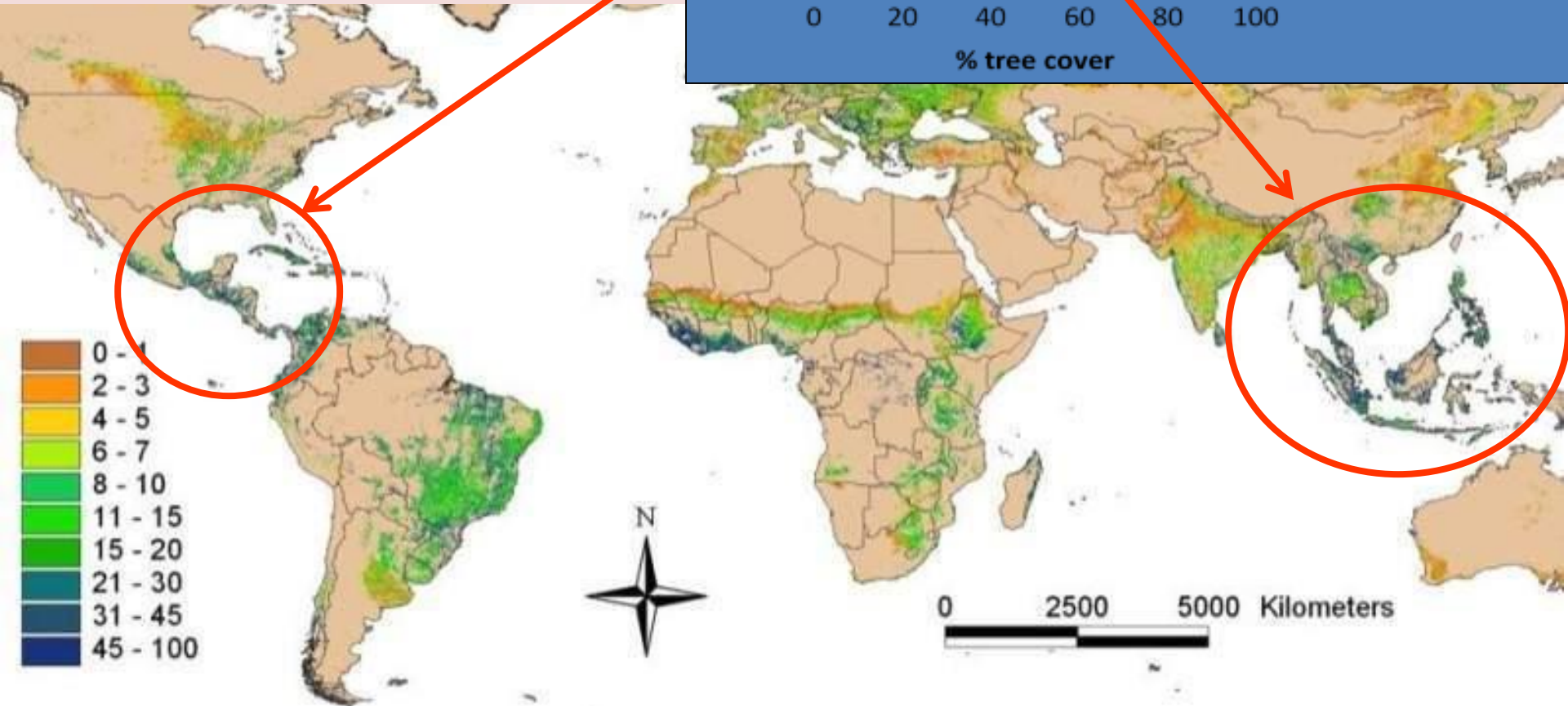
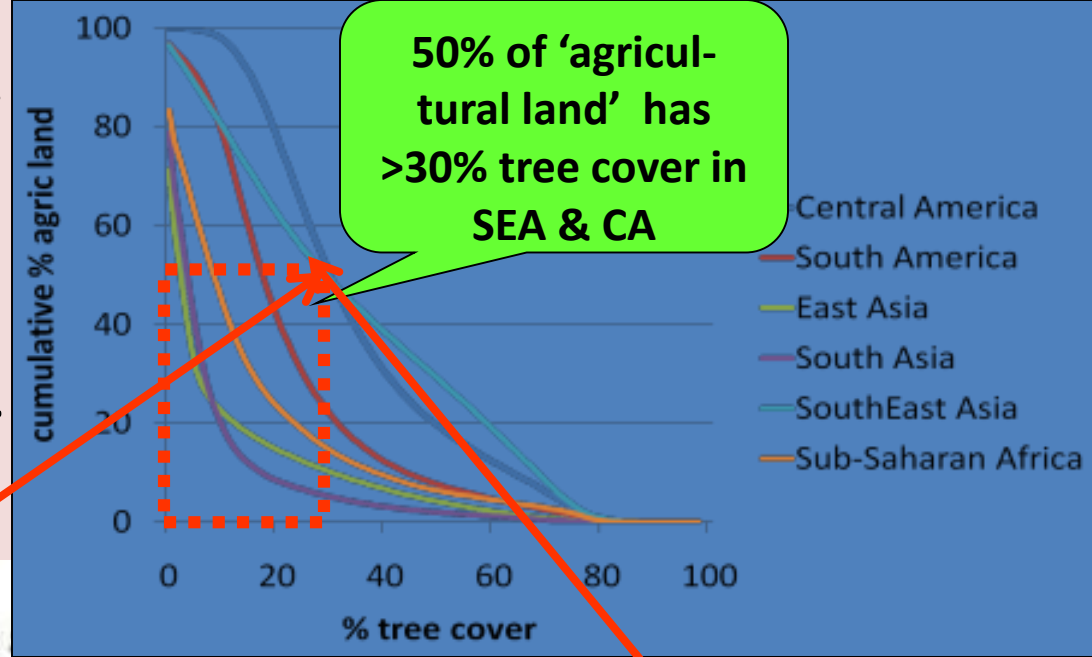




Current legal, institutional & educational paradigm

Current reality

Zomer, Trabucco, Coe & Place (2009) Trees on Farms: Analysis of Global Extent and Geographical Patterns of Agroforestry. ICRAF Working Paper no. 89. Nairobi, Kenya: World Agroforestry Centre. 60pp



Some gardens on Mount Elgon, Uganda



Rubber agroforests:

- 70-90% of species of natural forest
- > 3 million ha
- > 2 billion USD/yr for rubber alone

**Jambi, Sumatra,
Indonesia**

**Rubber seedlings can be
transplanted into gaps
in existing agroforests**

“Sisipan”





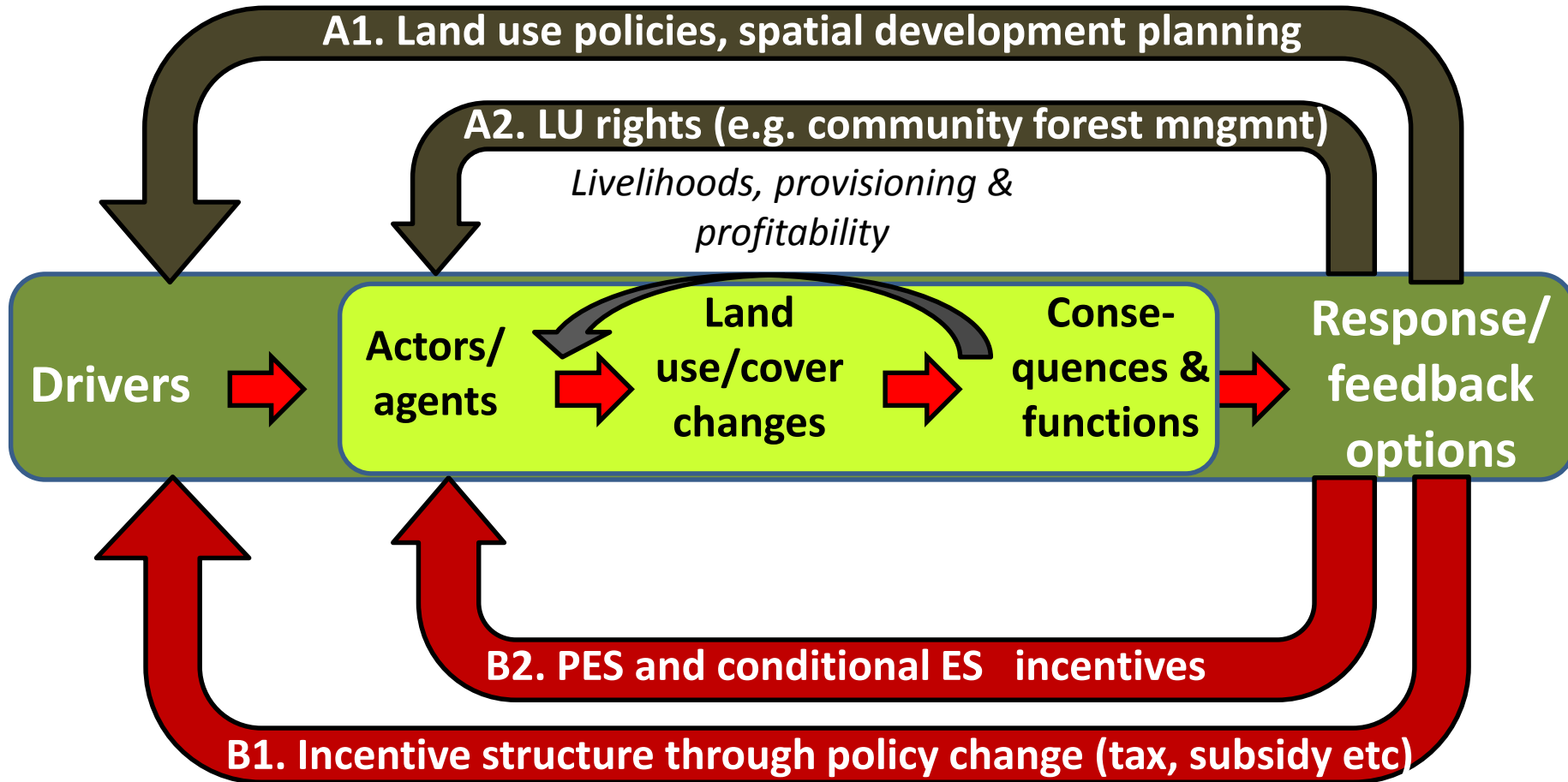
Clonal planting material successfully established with limited weeding in a system post slash & burn (CIRAD & ICRAF)



Biodiversity in the market

Reward mechanisms

Rights-based approaches



Economic incentives

Thanks for your attention

Questions?



ees.kuleuven.be/klimos

