Sparing vs. Sharing: Addressing drivers of deforestation and forest degradation

8 June 2011, Bonn

Reflections on current evidence on the “sharing” hypothesis, global (e.g. wildlife farming) and meso level evidence from multifunctional land use research in ICRAF / RUPES / PRESA landscapes - *Meine van Noordwijk*

ASB Partnership for the Tropical Forest Margins

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Sparing *versus* Sharing

- Agricultural intensification

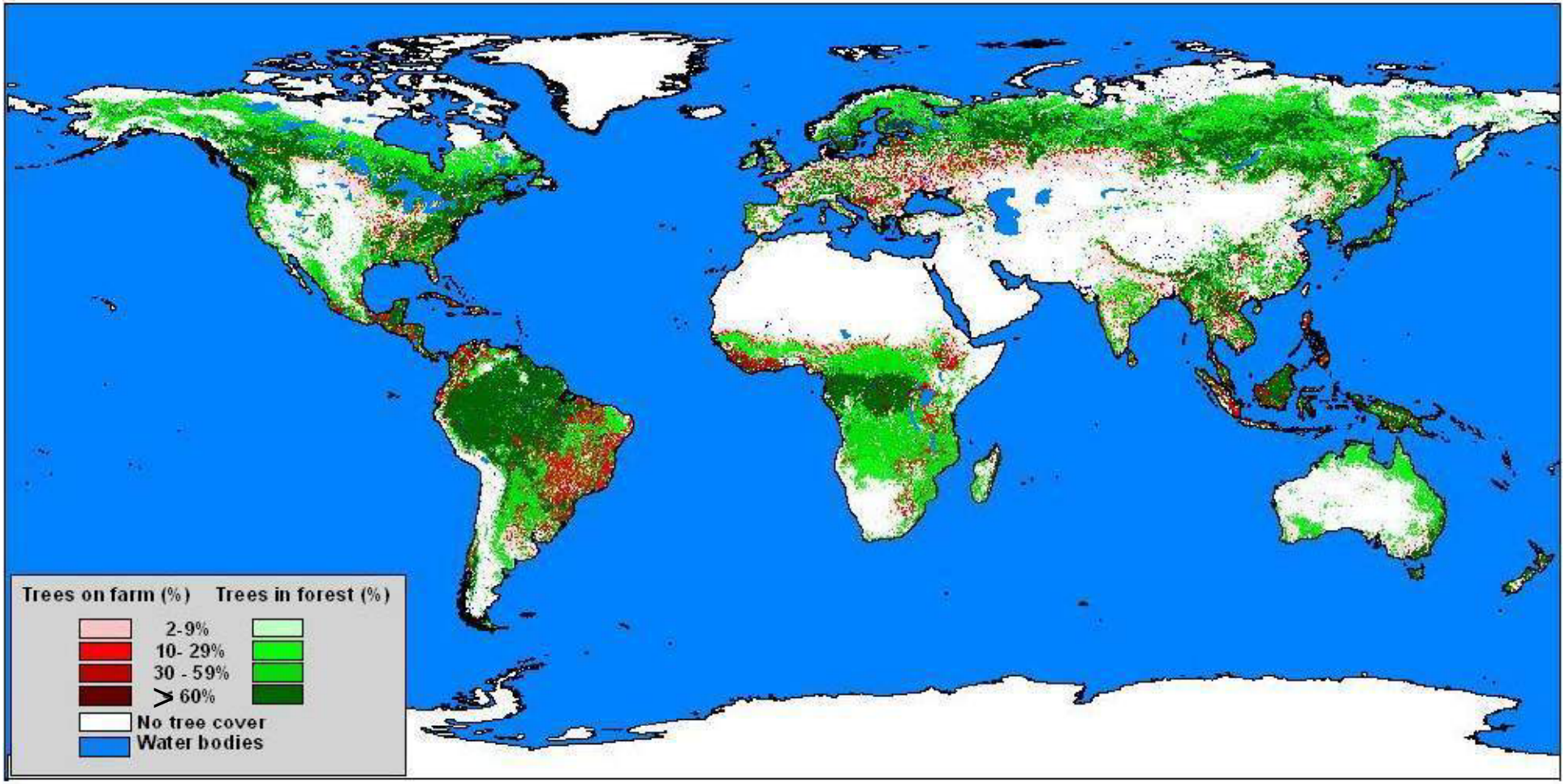
Input- or output-based definition

- Forest

Many definitions & concepts

- Multifunctionality & associated incentive systems

Trade-offs between specific functions

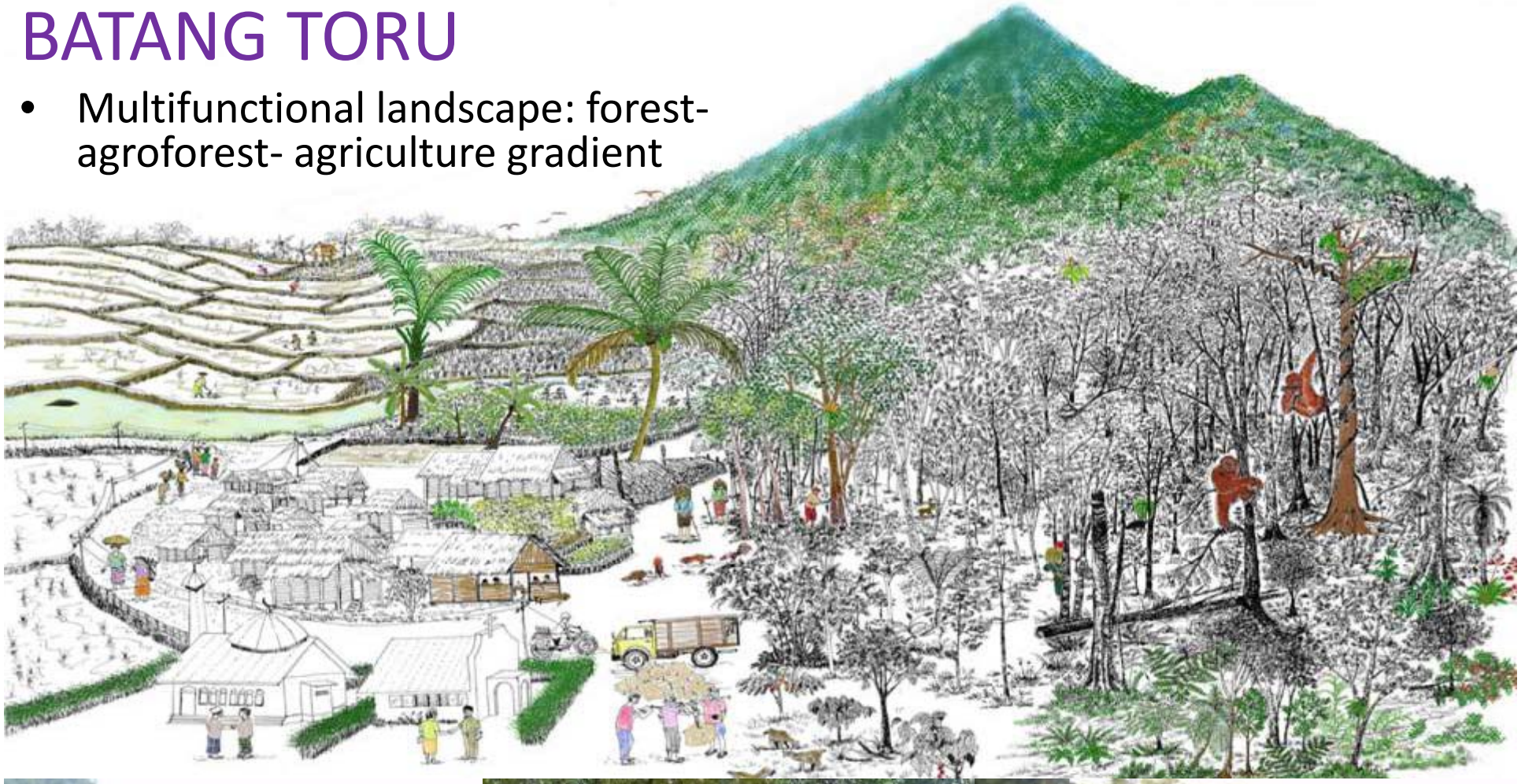


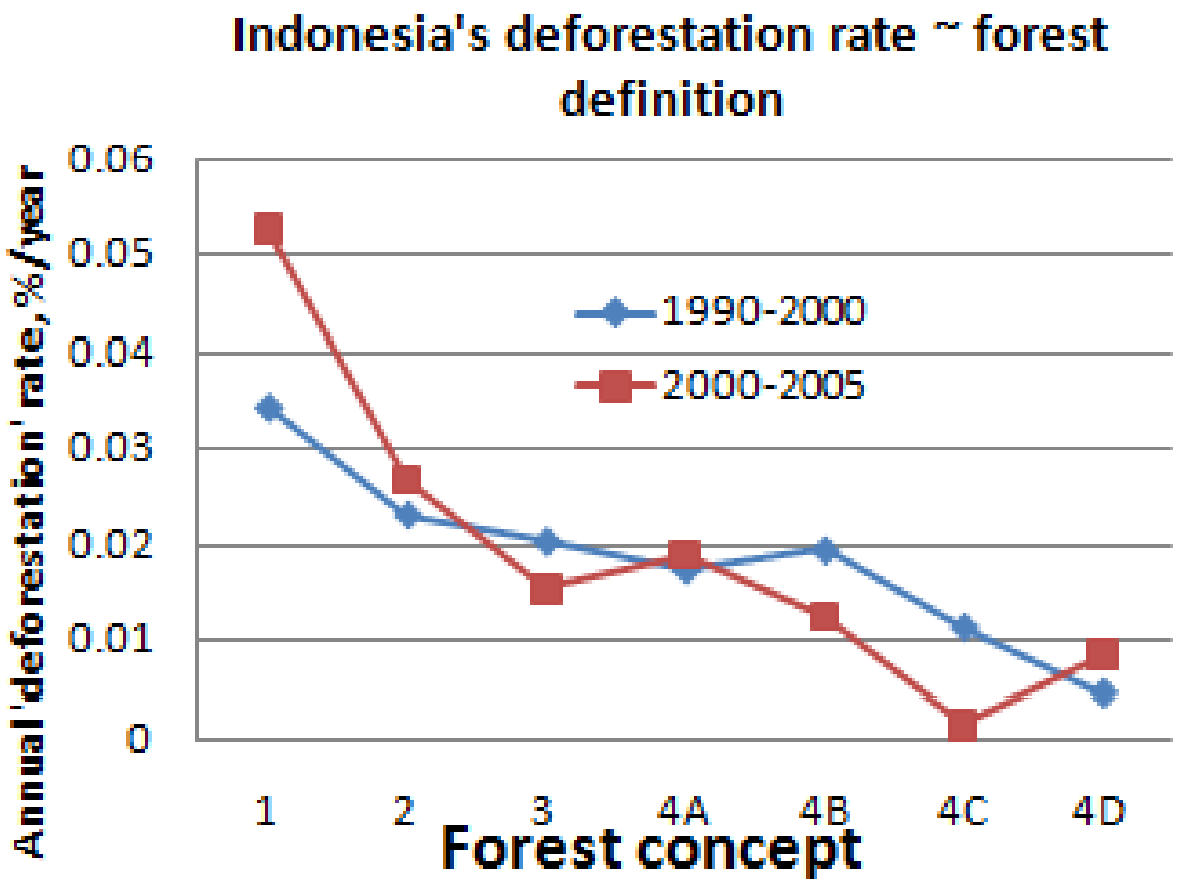
The holistic forest+tree view of the world

Source: Global tree cover inside and outside forest, according to the Global Land Cover 2000 dataset, the FAO spatial data on farms versus forest, and the analysis by Zomer et al. (2009)

BATANG TORU

- Multifunctional landscape: forest-agroforest- agriculture gradient





ALLREDDI

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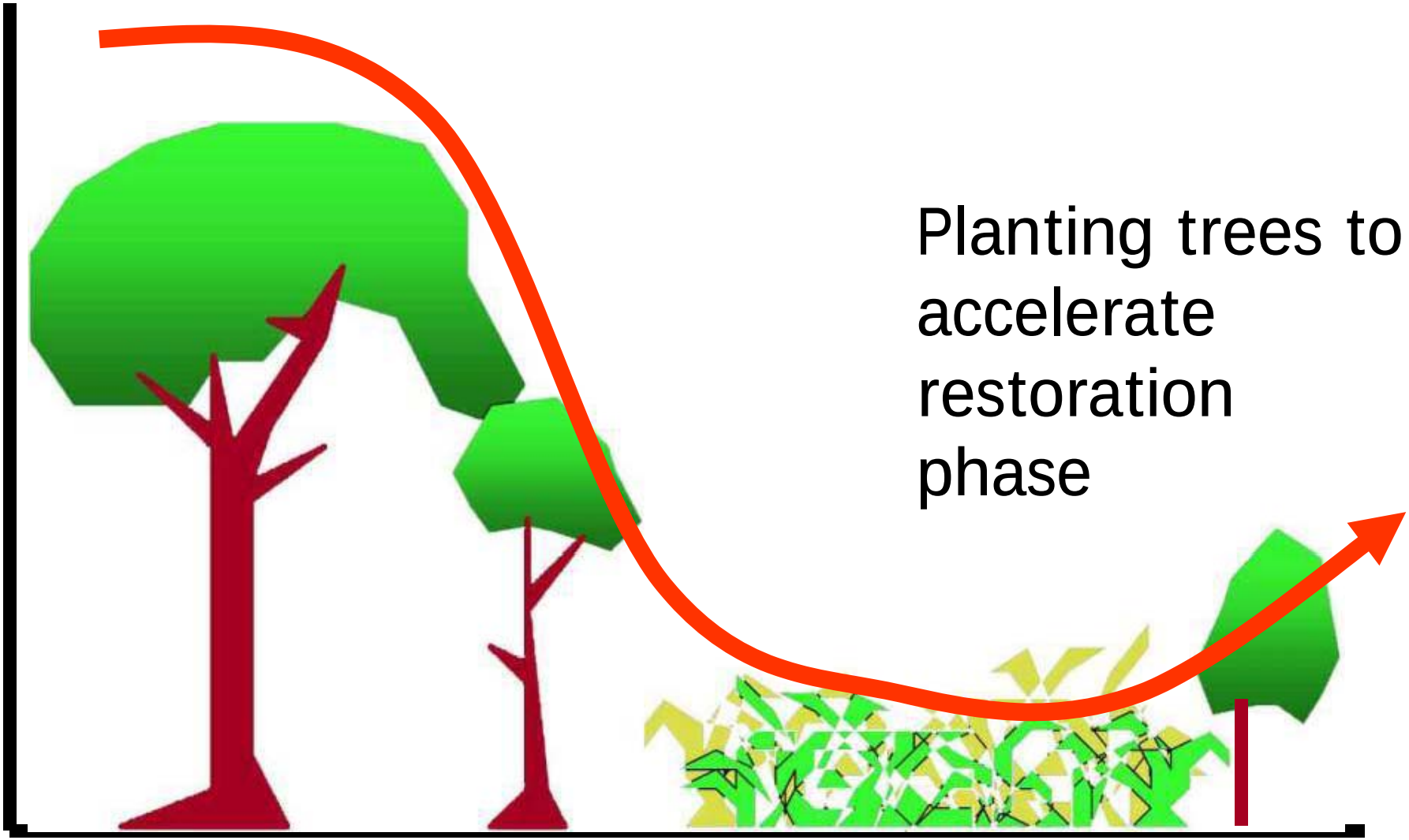
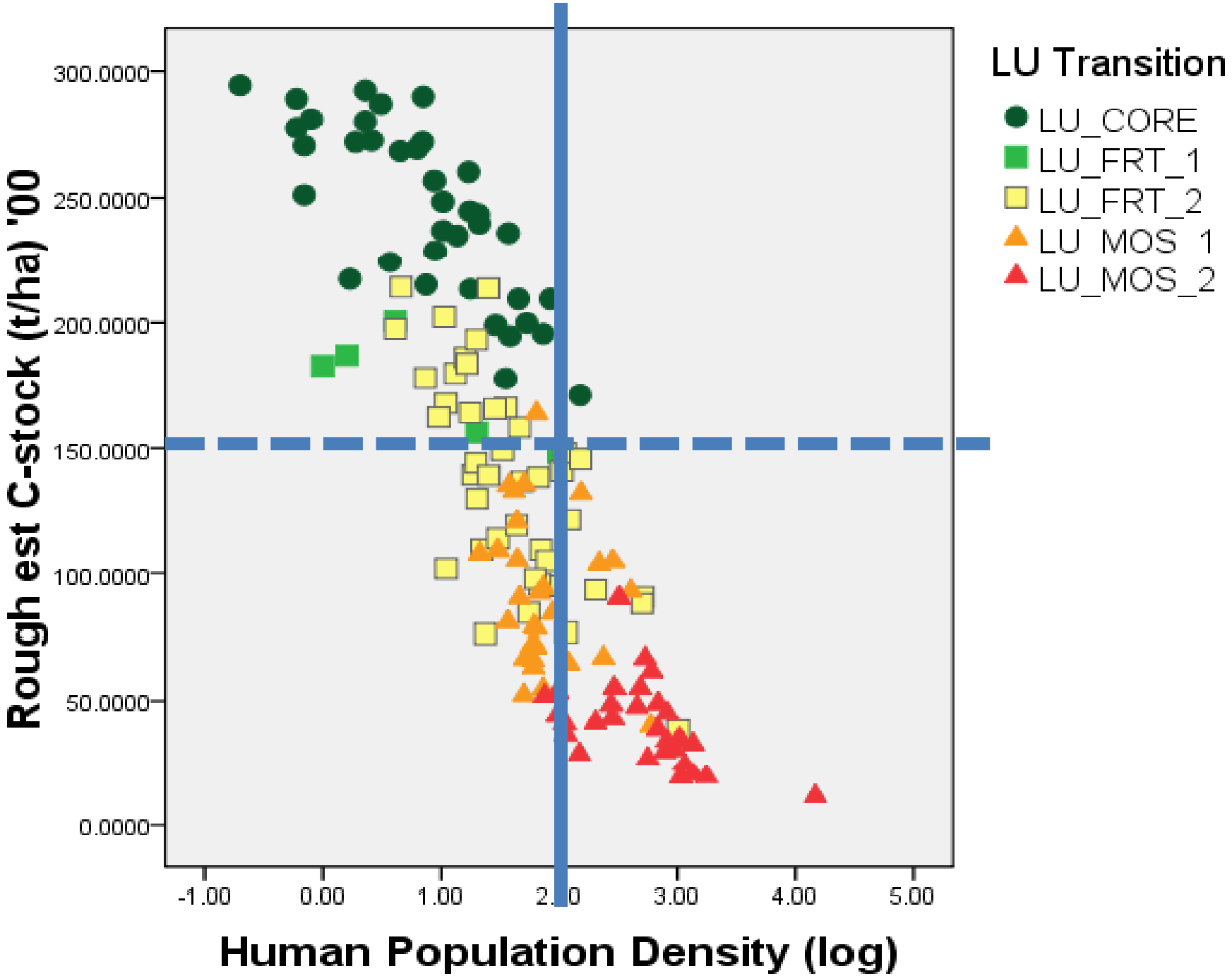
Stakeholder:

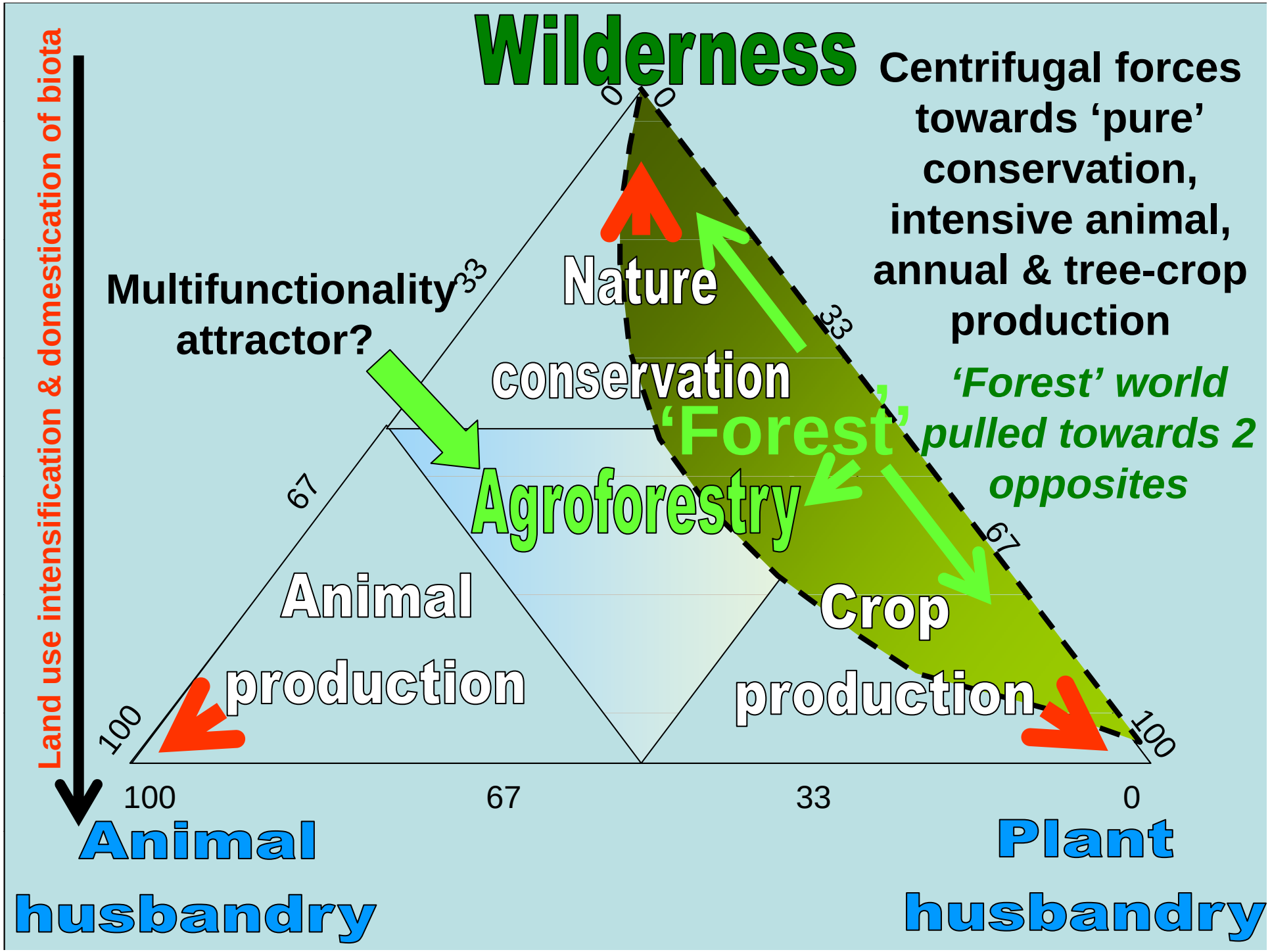
1. Undisturbed natural forest ← *Rainforest foundation*
2. Undisturbed + sust. logged natural forest ← *Conservation agency*
3. Closed canopy undisturbed + logged forest
4A. as 3 + agroforest ← *Forest ecologist*
4B. as 3 + timber plantations ← *Ministry of Forestry*
4C. as 3 + agroforest + timber plant's + estate crops ← *UNFCCC definition*
4D as 4C + shrub ← *Modis data*

Land use change in the tropics





Dewi et al. in prep.


Wilderness
Centrifugal forces towards 'pure' conservation, intensive animal, annual & tree-crop production
'Forest' world pulled towards 2 opposites
Multifunctionality attractor?
Nature conservation
'Forest'
Agroforestry
Animal production
Crop production
Land use intensification & domestication of biota
0
33
67
100
Animal husbandry
Plant husbandry

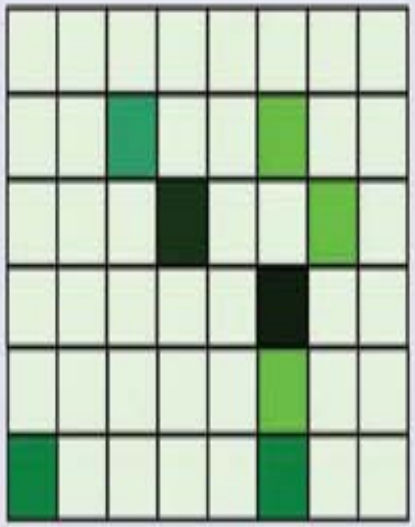
www.frontiersinecology.org

Should agricultural policies encourage land sparing or wildlife-friendly farming?

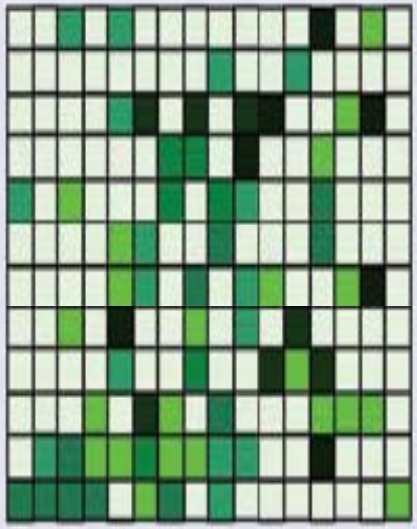
Joern Fischer[1*], Berry Brosi[2], Gretchen C Daily[2], Paul R Ehrlich[2], Rebecca Goldman[2], Joshua Goldstein[2], David B Lindenmayer[1], Adrian D Manning[1], Harold A Mooney[2], Liba Pejchar[2], Jai Ranganathan[2], and Heather Tallis[2]

In a nutshell:

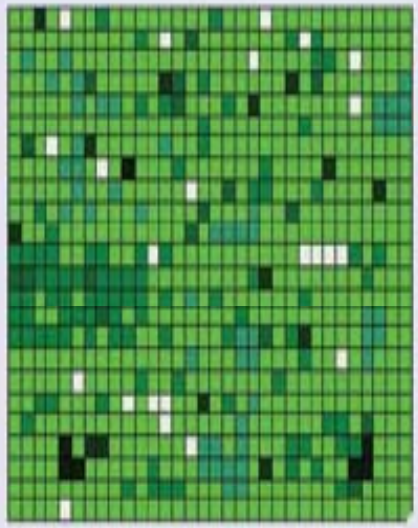
- "Land sparing" and "wildlife-friendly farming" are hotly debated as two alternative approaches to simultaneously promote biodiversity conservation and agricultural production
- The two approaches are related to different scientific world views, and have unique advantages and disadvantages
- Social factors and biophysical properties of landscapes strongly influence which agricultural policies are possible
- Recognizing these constraints, we outline policy guidelines that draw on key strengths of both land sparing and wildlife-friendly farming



(eg Western Australia)



(eg northern Europe)



(eg Coto Brus, Costa Rica)

Coarse grain and abrupt change
("Land sparing")

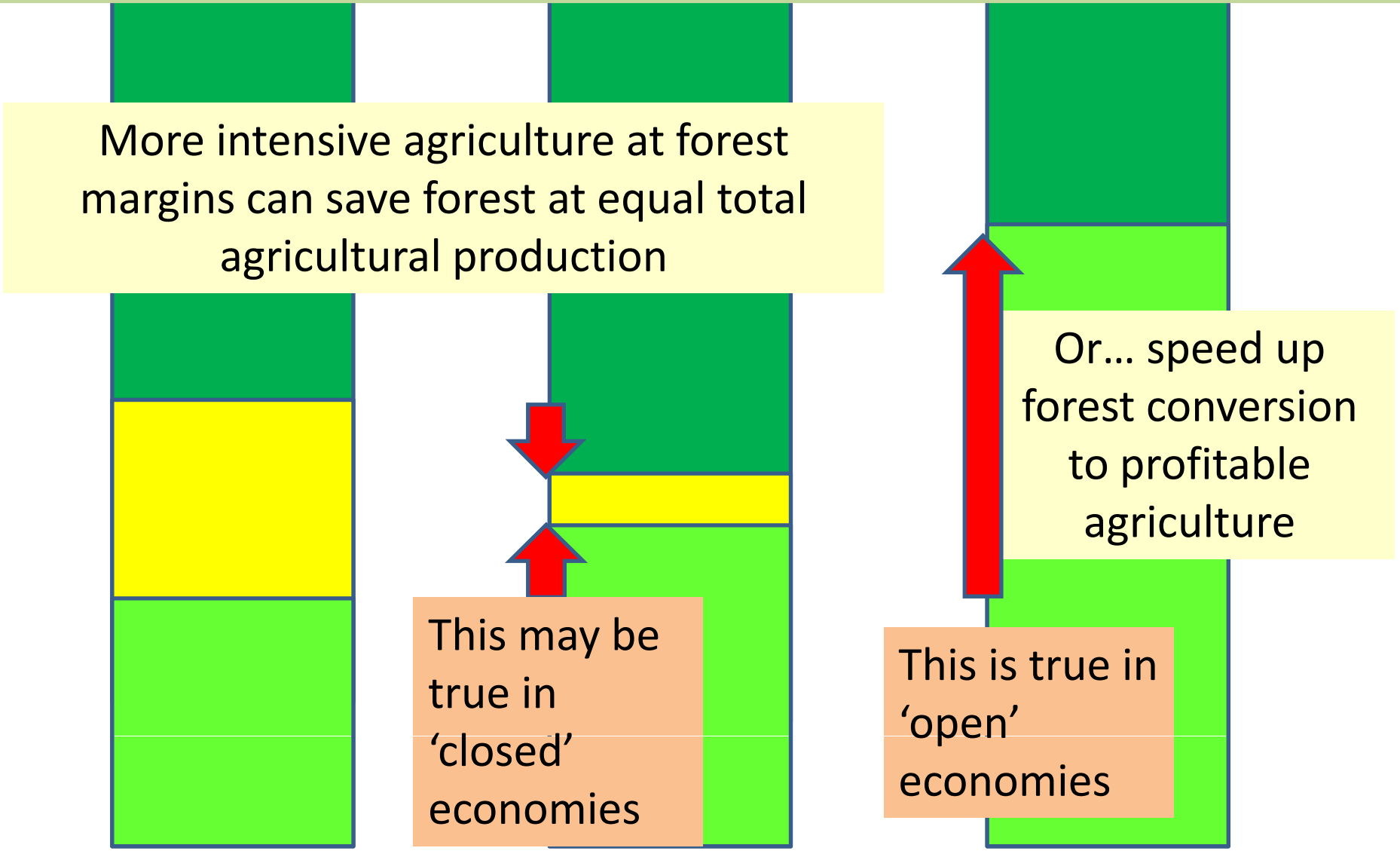
Fine grain and spatial continuity
("Wildlife-friendly farming")

Underlying scientific traditions

Binary landscape ("island model")	vs	Continuous and heterogeneous landscape
Optimization for equilibrium	vs	Maintenance of resilience
Species treated as additive	vs	Species interactions of major interest
Nature and agriculture treated as separate	vs	Externalities and ecosystem services considered
Humans considered separate from nature	vs	Humans considered part of nature

Agricultural intensification hypothesis

Remote forest edge communities & Planet earth are closed systems, in between we have ‘open’ systems…



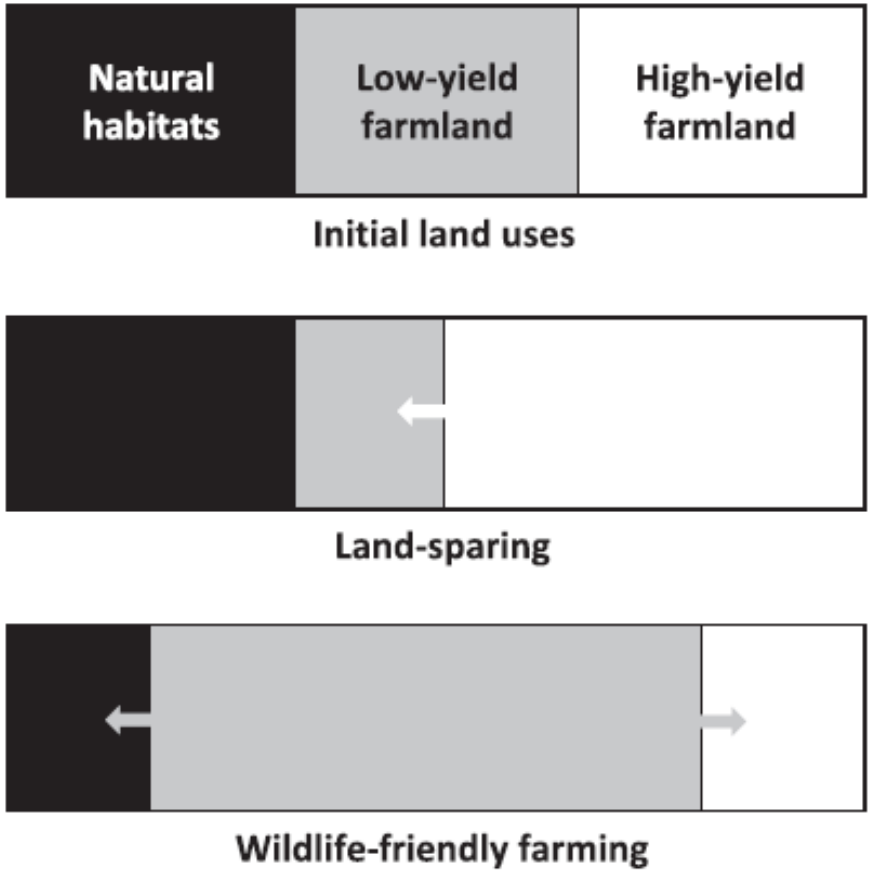
ELSEVIER

Food Policy

journal homepage: www.elsevier.com/locate/foodpol

Minimising the harm to biodiversity of producing more food globally

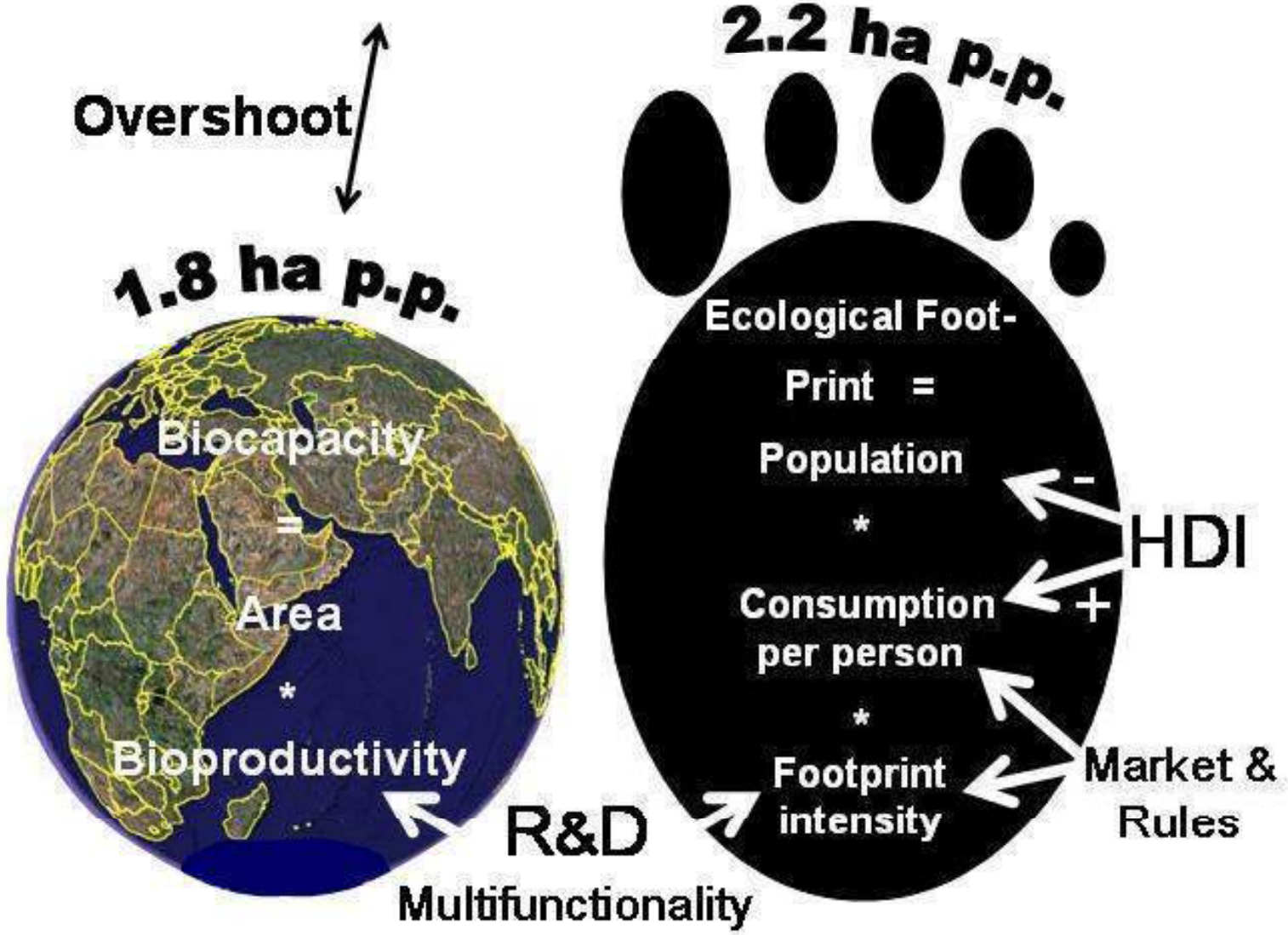
Ben Phalan [a,b,*], Andrew Balmford [a], Rhys E. Green [a,b], Jörn P.W. Scharlemann [c]



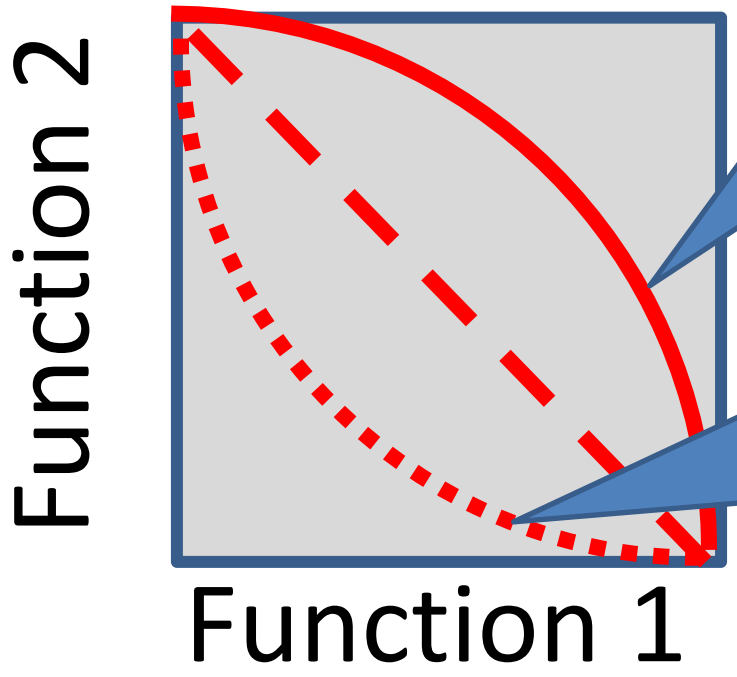
Sustainable logging has proved to be a fiction in Indonesia

➔ Intensive plantations as alternative

Sharing – argument 1: there isn't enough space without multifunctionality



Sharing – argument 2: Many tradeoff functions are convex: multifunctionality

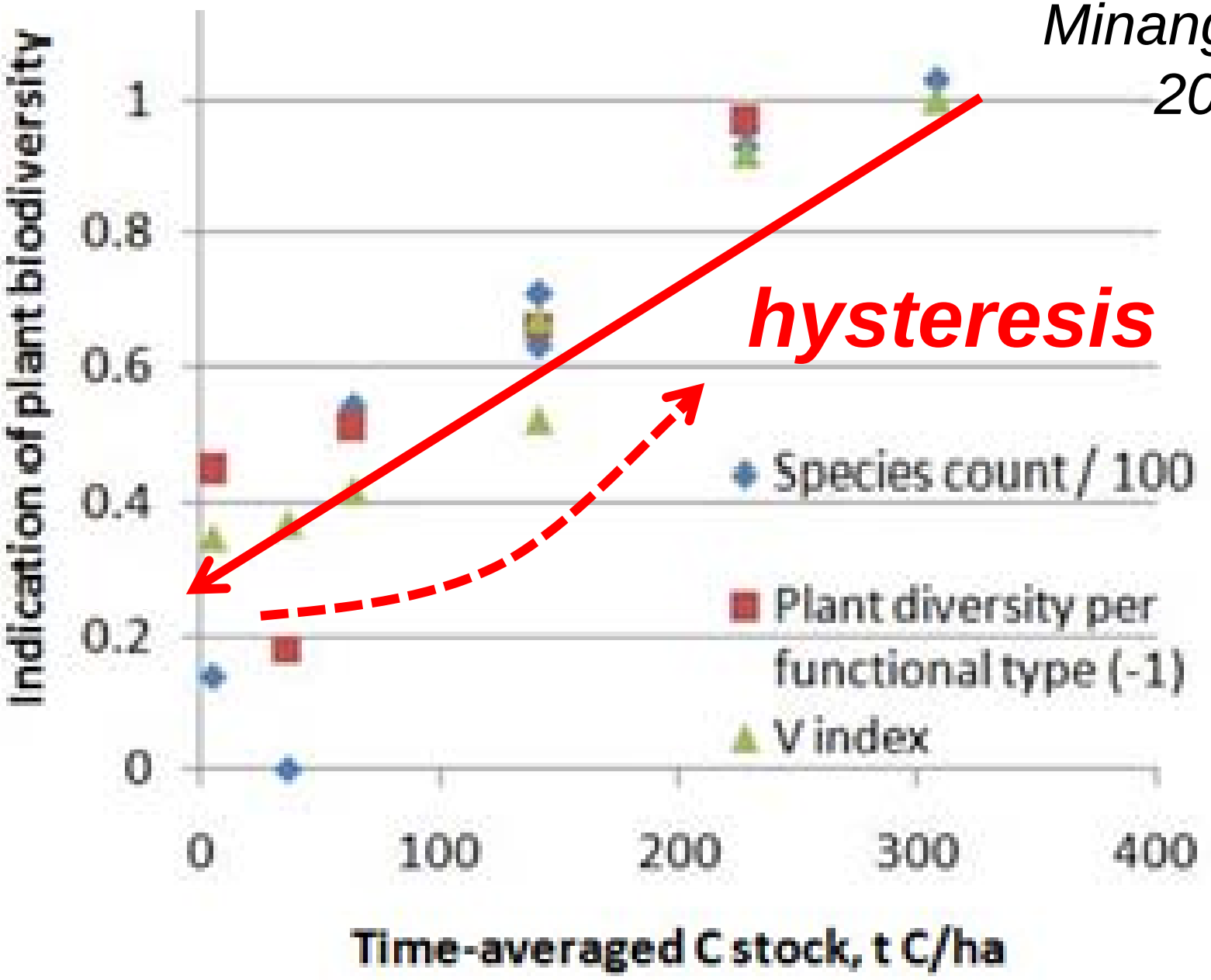


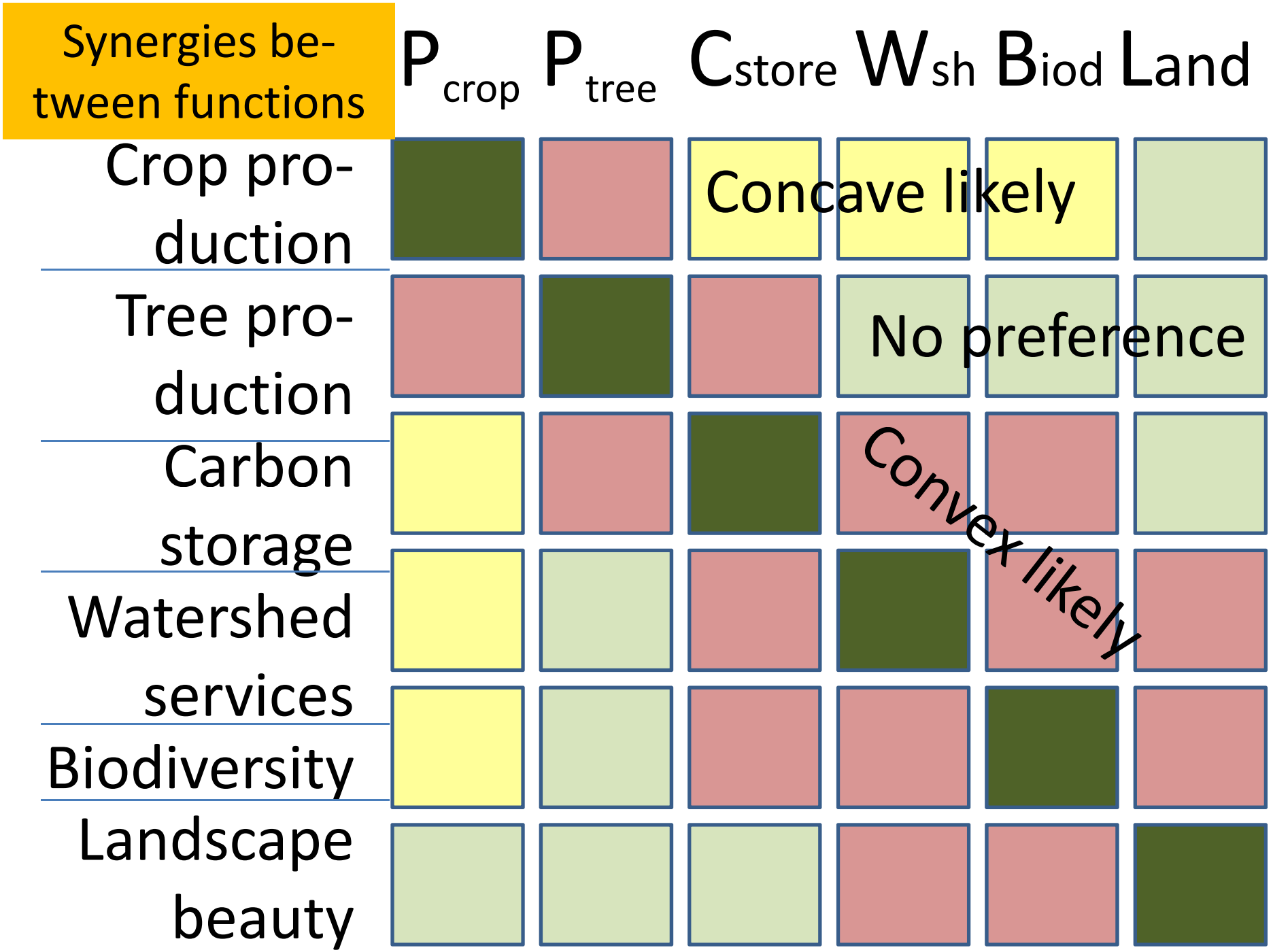
Convex tradeoff: multifunctionality saves land

Concave tradeoff: specialization saves land

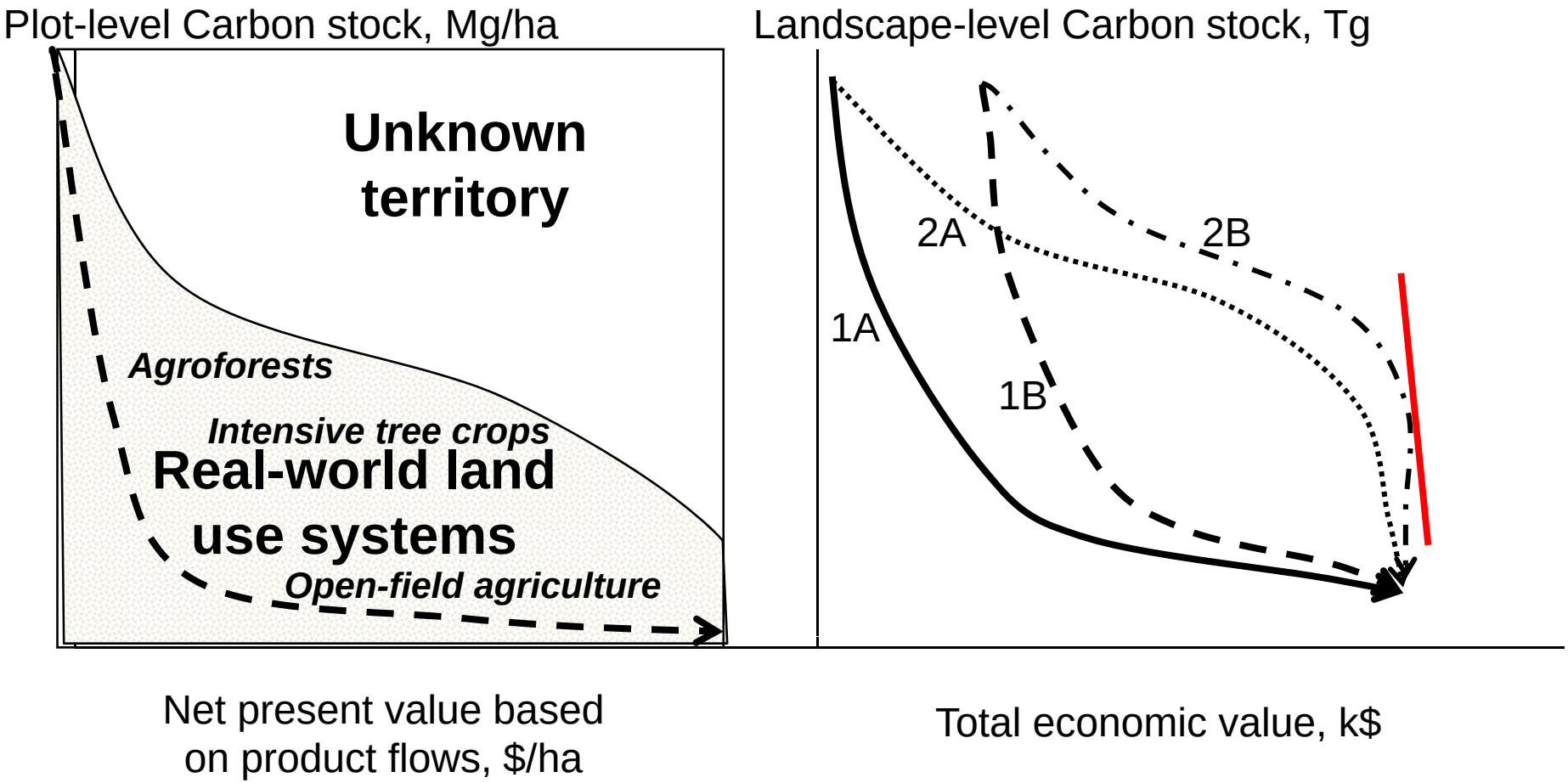
Many examples in agroforestry literature

ASB-data: Minang et al., 2011

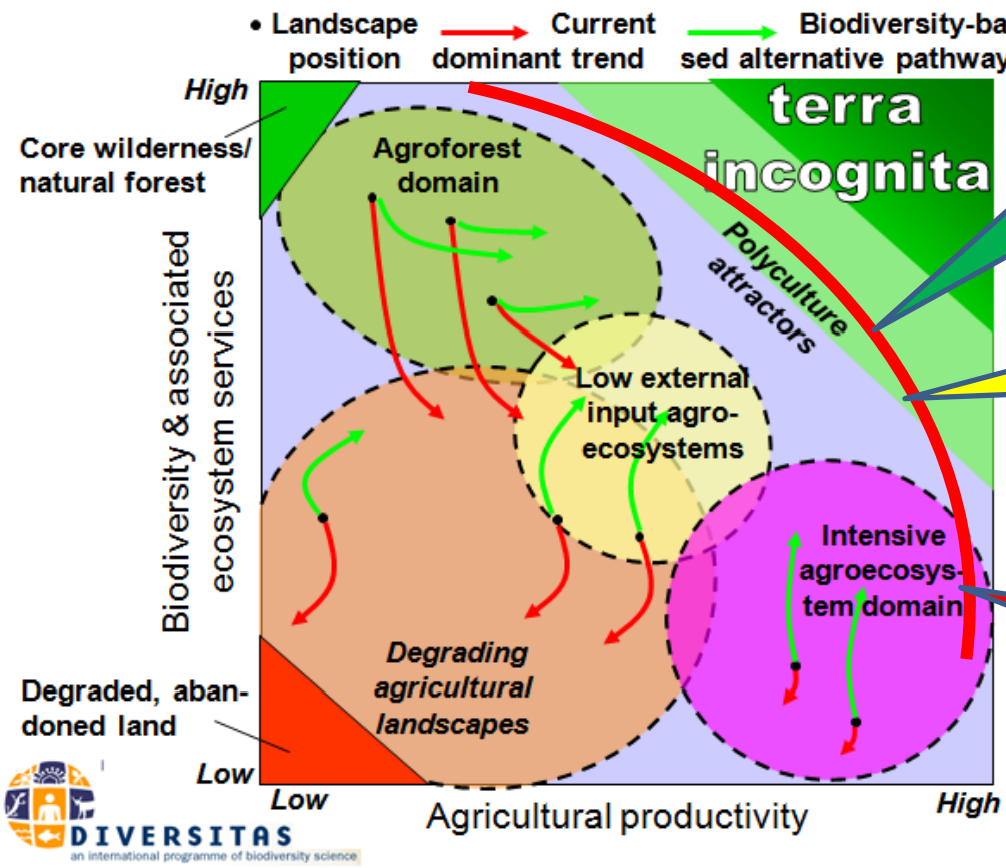



Synergies between functions
P_{crop}
P_{tree}
C_{store}
W_{sh}
B_{iod}
Land
Crop production
Tree production
Carbon storage
Watershed services
Biodiversity
Landscape beauty
Concave likely
No preference
Convex likely

Sharing – argument 3: Multifunctionality requires balanced economic incentives



Sustainable Weighting of Economy-Ecology Tradeoffs: Organized Reduction or Stretching Our Use of Resources? (SWEETorSOUR?)

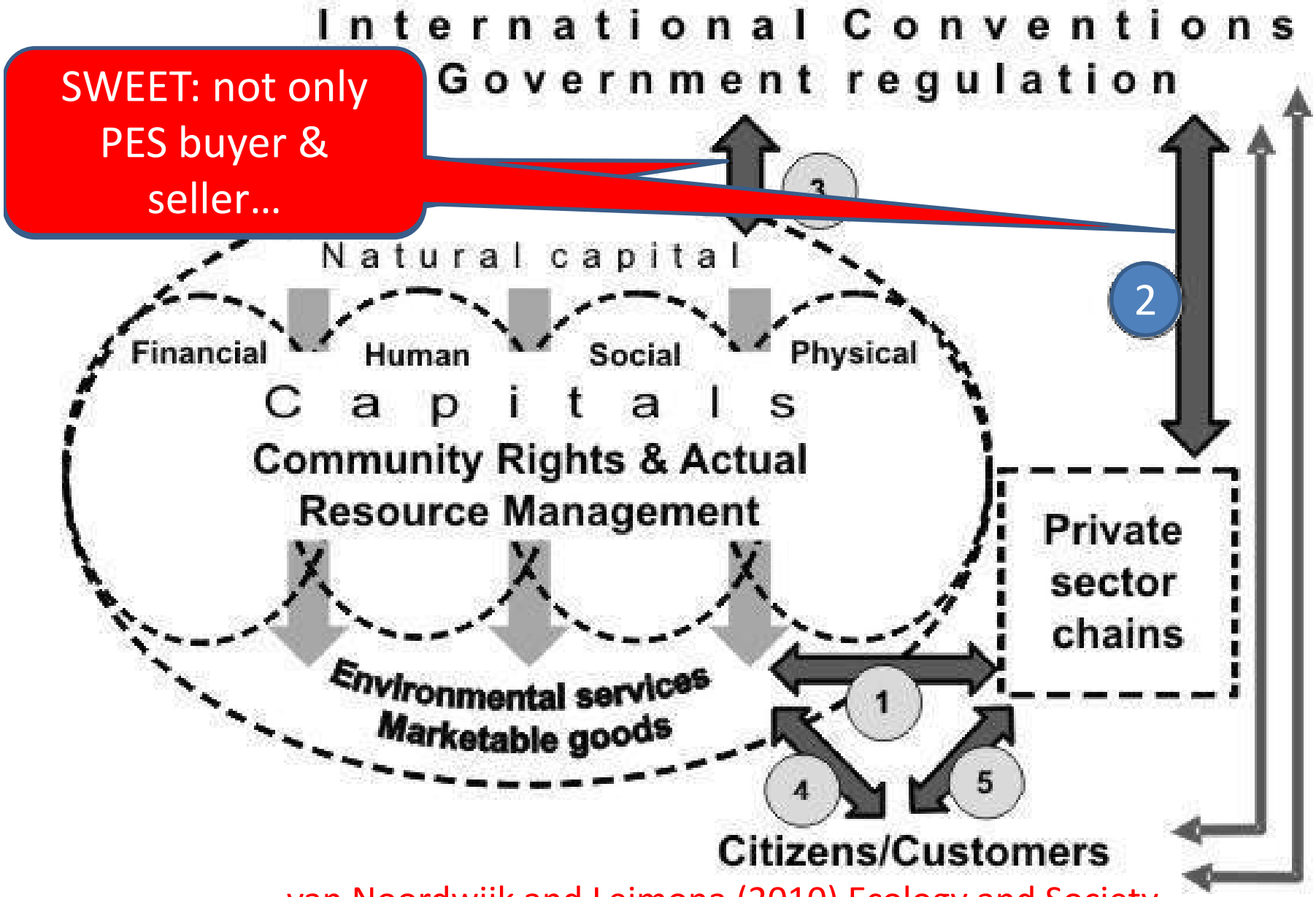


This may be societal optimum, but requires SWEET

Production Possibility Frontier

Getting here may turn SOUR

Actors in the Landscape & Livelihood Assets



van Noordwijk and Leimona (2010) Ecology and Society

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Pro-poor rewards for environmental services

Context *+ Mechanism* ➔ *Outcome*

Asia and Africa network of learning sites

Realistic:
Assessment of impacts of Δ Land Use on ΔES

Pro-poor:
Assessment of multiple dimensions of poverty

Conditional:
performance-based contracts

Voluntary: process of negotiations

& ***Impact***

- Per capita financial transfers remain small but with tenurial security
- Reduced conflict over resource access=> more options; less poverty
- Co-investment in steward-ship, rather than 'PES'

R&D efforts to reduce transaction costs, enhance and balance fairness + efficiency;

Mainstreaming into Development Planning

PRESA
RUPES Rewarding Upland Poor for Environmental Services
ASB Partnership for the Tropical Forest Margins
IFAD International Fund for Agricultural Development

Three paradigms within PES

Paradigm (van Noordwijk & Leimona, 2010) Condition	**CES** : **commoditization of ES, e.g. C markets** **Requires A + B**	**COS**: **compensating or opportunities skipped, e.g. public fund allocations** **Requires B + C (A helps as well)**	**CIS** : **coinvestement in stewardship, risk & benefit sharing** **Requires C**
A. Spatial & conceptual ES boundaries clear?	**Yes** (national AFOLU) **No** (subnational REDD) **No** (local: plot&tree)		
B. All rightholders identified & in agreement	**Yes** (national constitution, UNFCCC rules) ***Yes?*** (subnat./sectors) **No** (local: plot&tree)	**Yes** (national constitution, UNFCCC rules) ***Yes?*** (subnat./sectors) **No** (local: plot&tree)	
C. All stakeholders engage in adaptive learning		***Yes?*** With nested MRV ***Yes?*** With nested MRV ***Yes?*** Possible locally	***Yes?*** With nested MRV ***Yes?*** With nested MRV ***Yes?*** Possible locally
Conclusion	National scale only	Subnational scale	Local plot&tree scale

Sharing – argument 4: Removal of perverse policies helps multifunctionality

Understanding forest transition in the Philippines: main farm-level factors influencing smallholder's capacity and intention to plant native timber trees

Fernando Santos Martín · Manuel Bertomeu · Meine van Noordwijk · Rafael Navarro

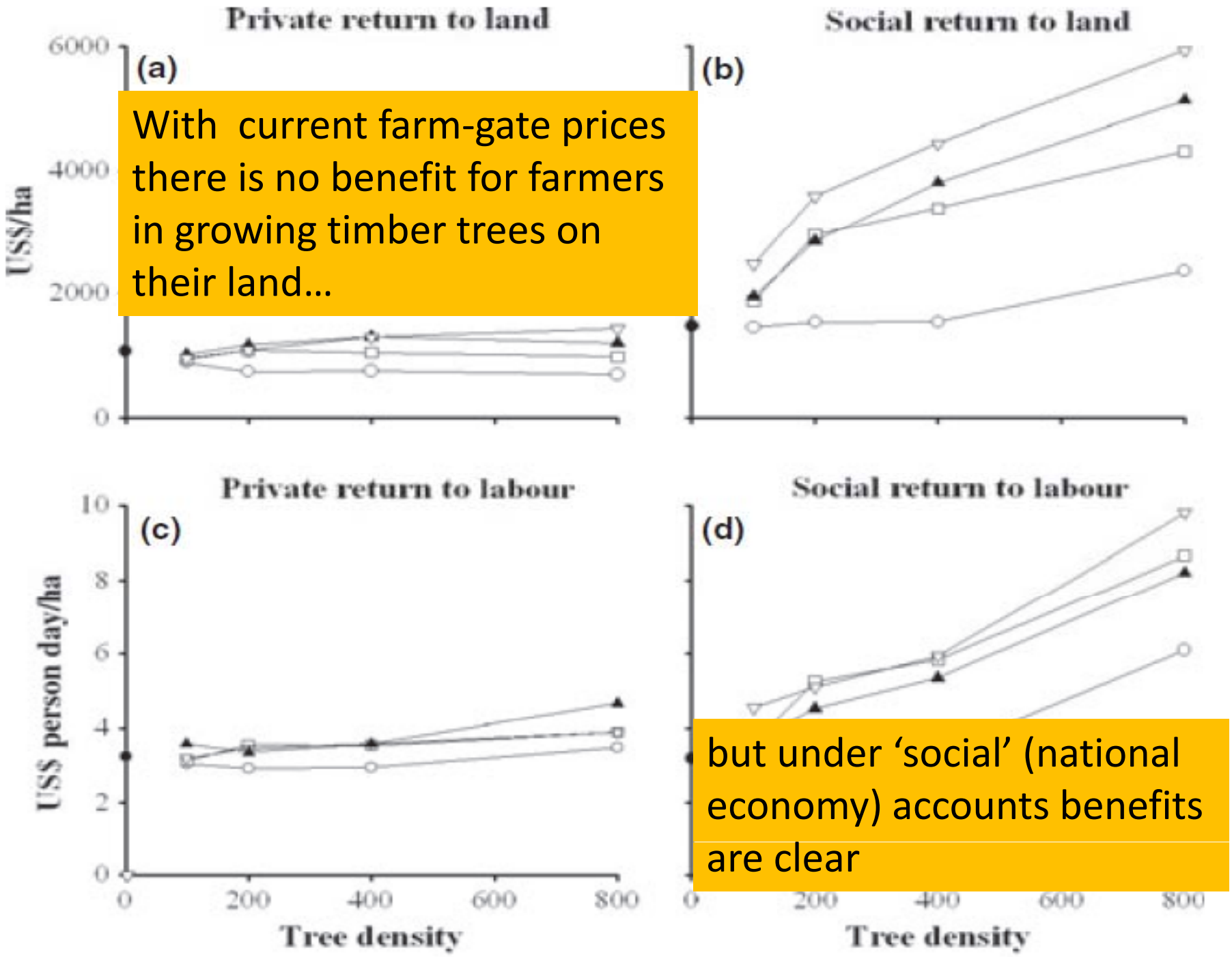
The Australian Journal of Agricultural and Resource Economics

Journal of the Australian Agricultural and Resource Economics Society

The Australian Journal of Agricultural and Resource Economics, 55, pp. 257–272

Is native timber tree intercropping an economically feasible alternative for smallholder farmers in the Philippines?

Fernando Santos Martin and Meine van Noordwijk†



With current farm-gate prices there is no benefit for farmers in growing timber trees on their land…

but under 'social' (national economy) accounts benefits are clear

Sparing + Sharing + Caring

- Agricultural intensification

Input- or output-based definition

- Forest

Many definitions & concepts

- Multifunctionality & associated incentive systems

Trade-offs between specific functions

Coinvestment & incentives