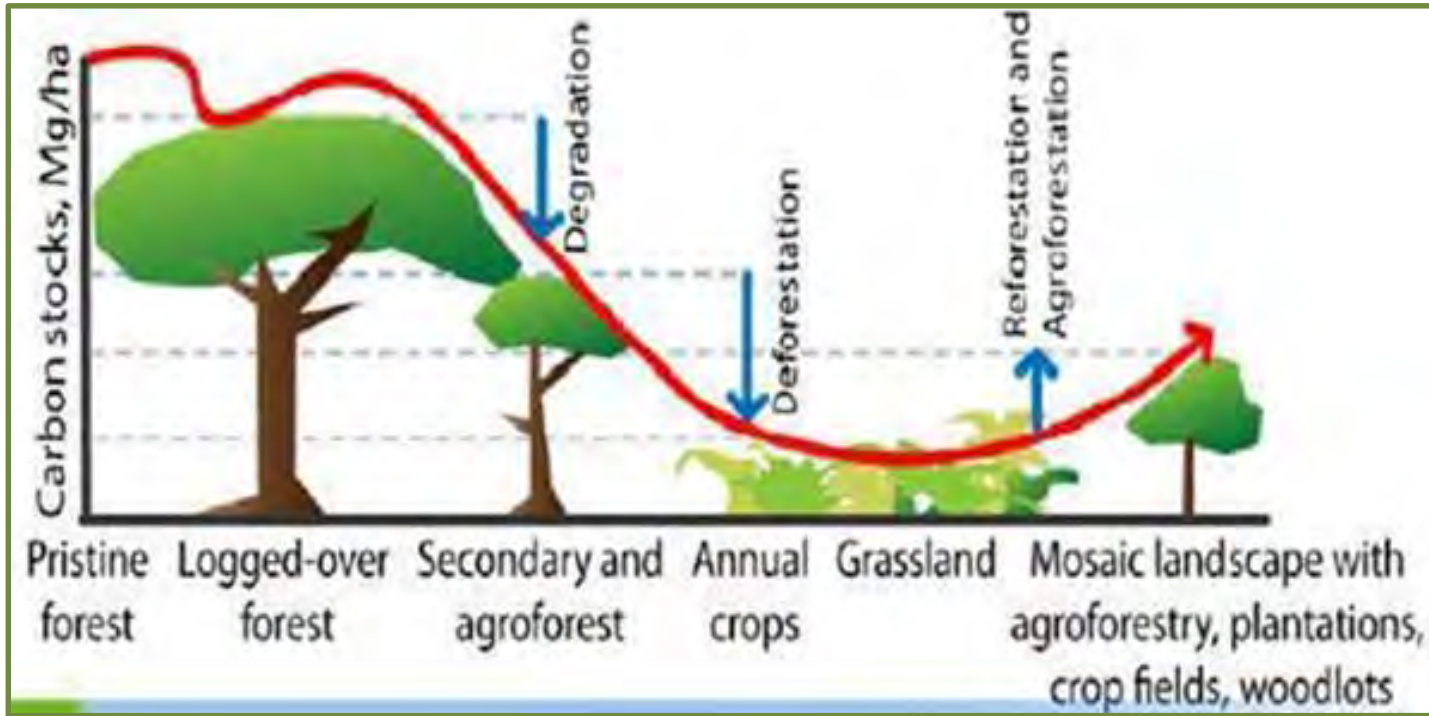


Multi-functionality in a conservation landscape in northern Vietnam

Do Trong Hoan, Delia Catacutan & Rachmat Mulia

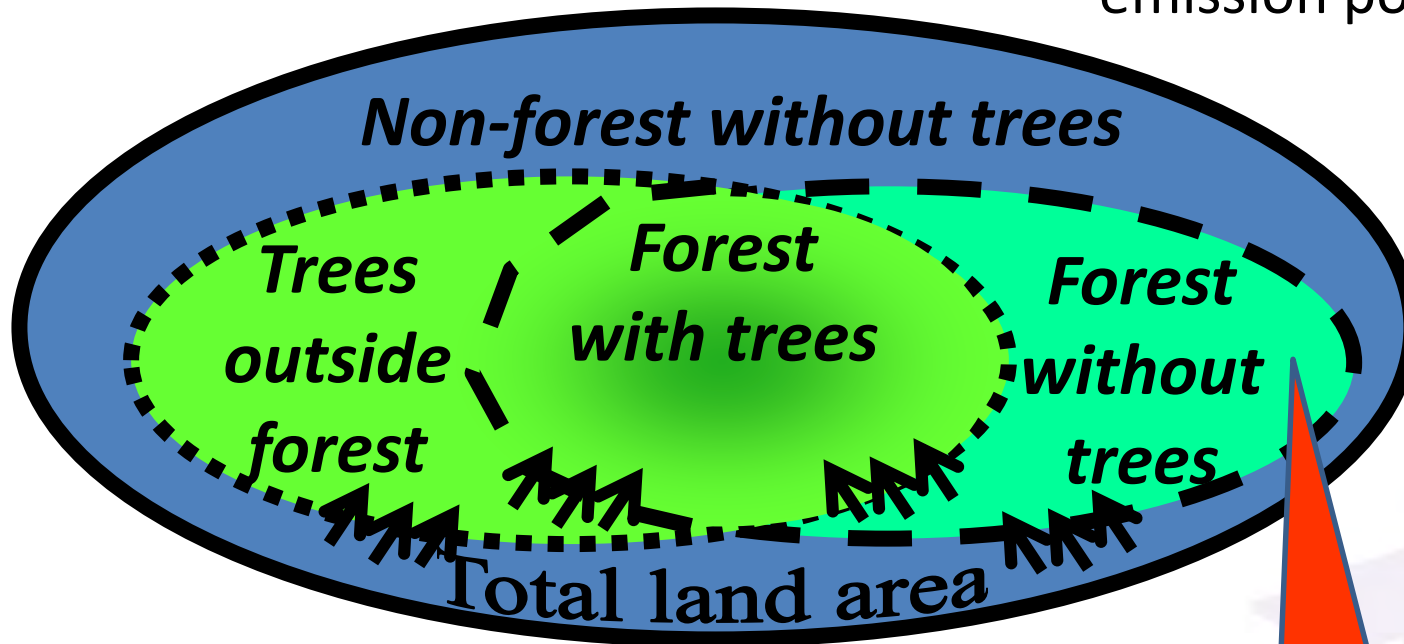
Research Framework



Forests typically undergo a transition process characterized by initial richness to degradation, deforestation, and recovery. As natural vegetation is cleared for agriculture and other types of development, the benefits that trees provide are best sustained by integrating trees into agriculturally productive landscapes – a practice known as agroforestry. Agroforestry thus, play significant roles in the recovery process.

- The term '**Forest**', as defined for the UNFCCC, can cover many types of land cover and use, varying in presence of trees (including zero tree cover lands), C-storage and C-emission potential.

Basics: forest ↔ trees



Should this stop us from doing good things to forests and landscapes?

“Temporarily unstocked”, without time limit...

The term 'Non-Forest' can cover many types of land cover and use, potentially with a lot of trees, C-storage and C-emission potential.

Background

- Reducing Emissions from Deforestation and Degradation (REDD+) is emerging
- Public funding for forestry sector is reducing significantly, while there are increasing interest in more diverse funding modality for forestry sector such as PES and REDD+;
- REDD+ is taking progress (30 mil USD funded by NORAD to pilot REDD+ in 6 provinces and support national readiness) but dominated by sectoral approach
- *Limited understanding on trade-offs and synergies between land use options & landscape functions, and mainstream these consideration into land use planning and socio-economic development planning
→ the need of negotiation support tools & methods*

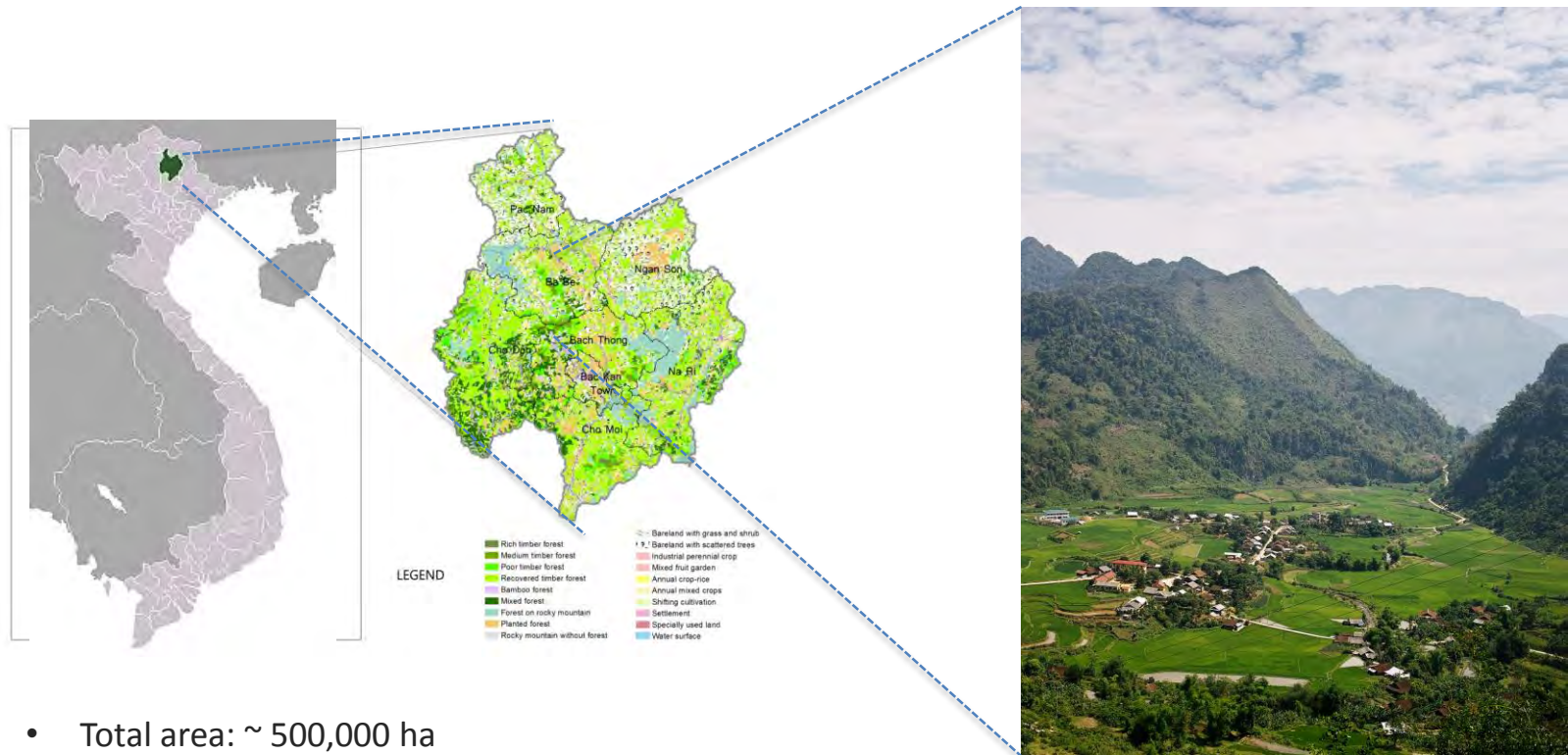
Synergies between functions	P_{crop}	P_{tree}	C_{store}	W_{sh}	Biod	Land
Crop production	Dark Green	Red	Yellow	Yellow	Light Green	Light Green
Tree production	Red	Dark Green	Red	Light Green	Light Green	Light Green
Carbon storage	Yellow	Red	Dark Green	Red	Red	Light Green
Watershed services	Yellow	Light Green	Red	Dark Green	Red	Red
Biodiversity	Yellow	Light Green	Red	Red	Dark Green	Red
Landscape beauty	Light Green	Light Green	Light Green	Red	Red	Dark Green

Concave likely (between Crop production and Carbon storage)

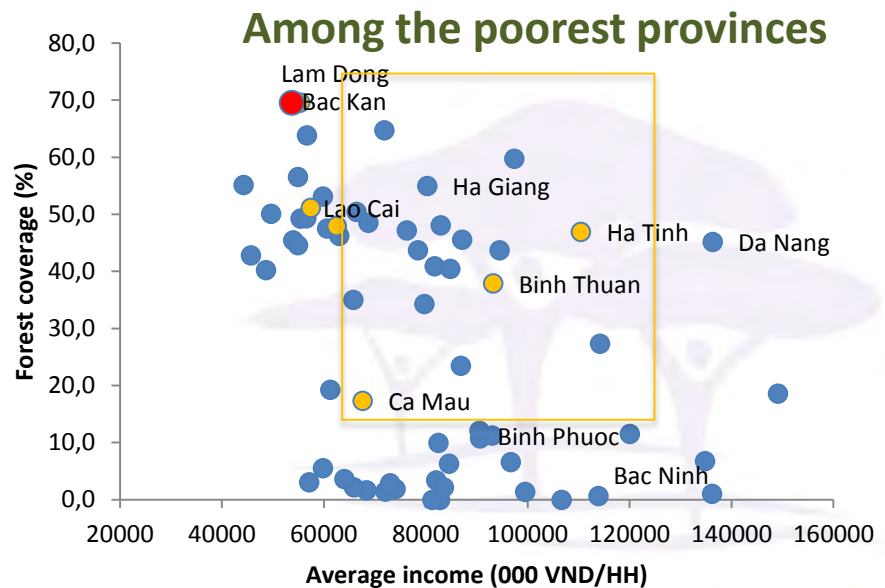
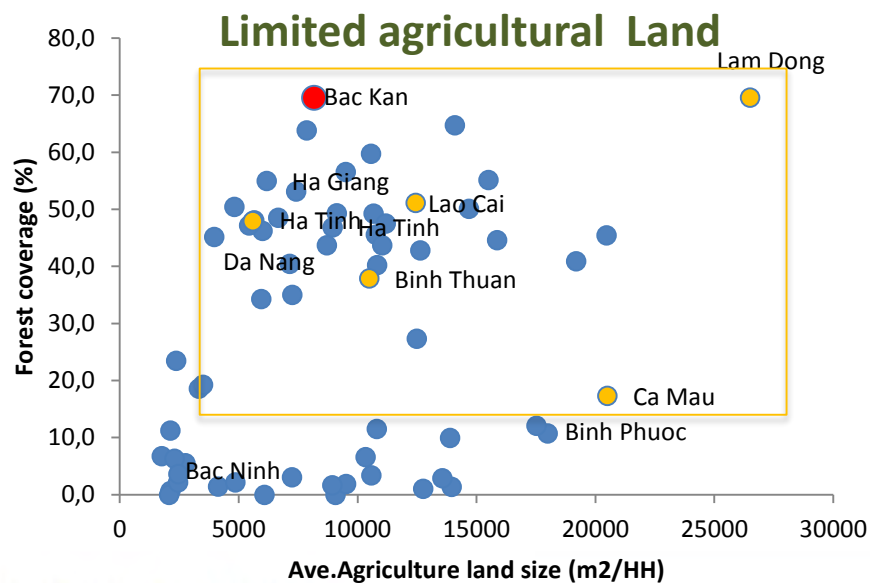
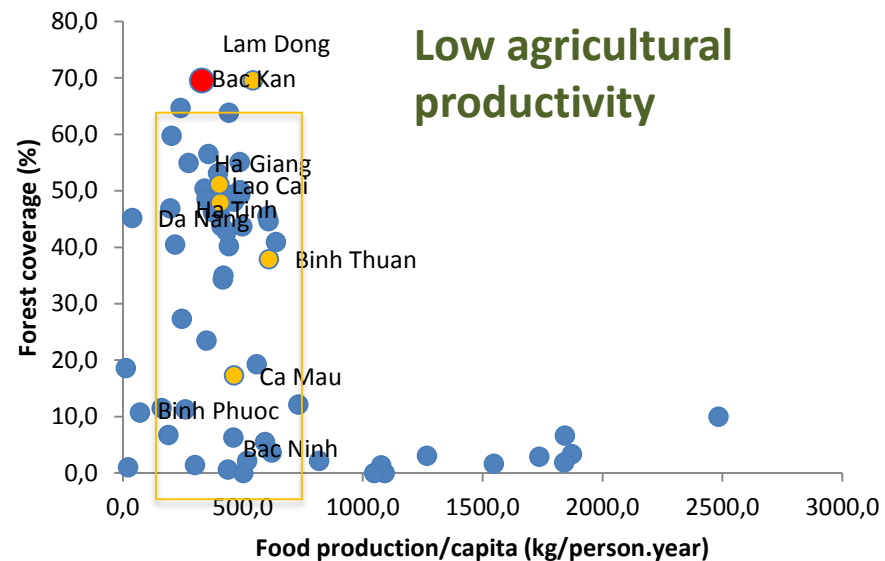
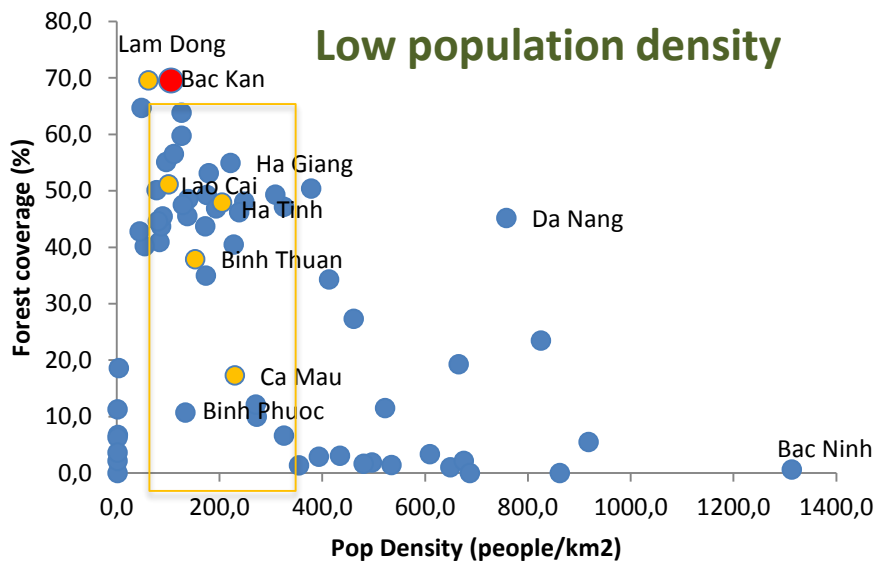
Convex likely (between Carbon storage and Watershed services)

Van Noordwijk et al., 2011

The landscape – Bac Kan province



- Total area: ~ 500,000 ha
- Population: ~300,000 people
- Forestry land > 400,000 ha, agriculture land 60,000 ha
- Drivers of D&D: Agriculture (slash & burn) and Illegal logging
- REDD+ is being piloted



Questions



1. What is the stage of forest transition? Can economic incentives help to stop D&D?
2. Does a high forest cover guarantee sustainable income and other needs, even conservation?
3. Can REDD+/PES help to secure landscape multi-functionality?
4. How should future planning be made to reconcile local people and policy makers' perspectives?

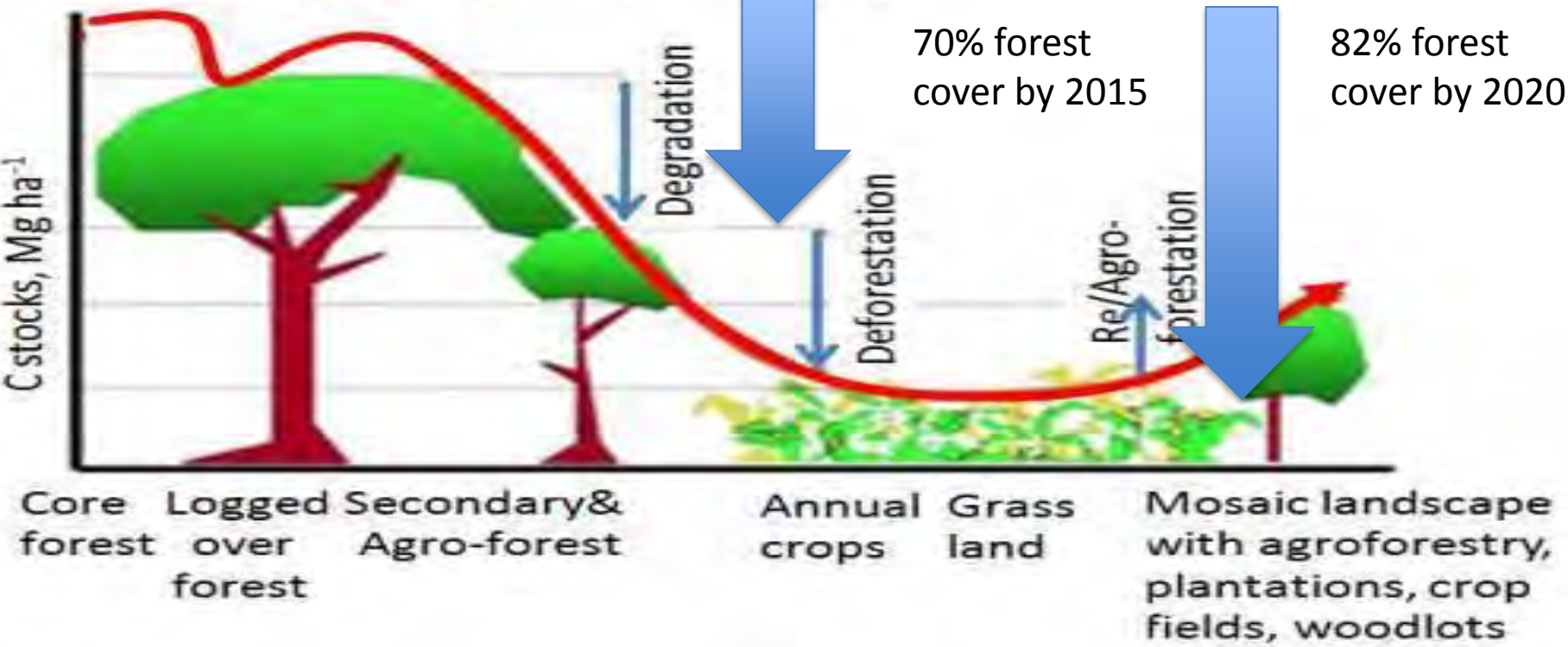
All of the above in relation to national & provincial socio-economic development strategies

Forest transition

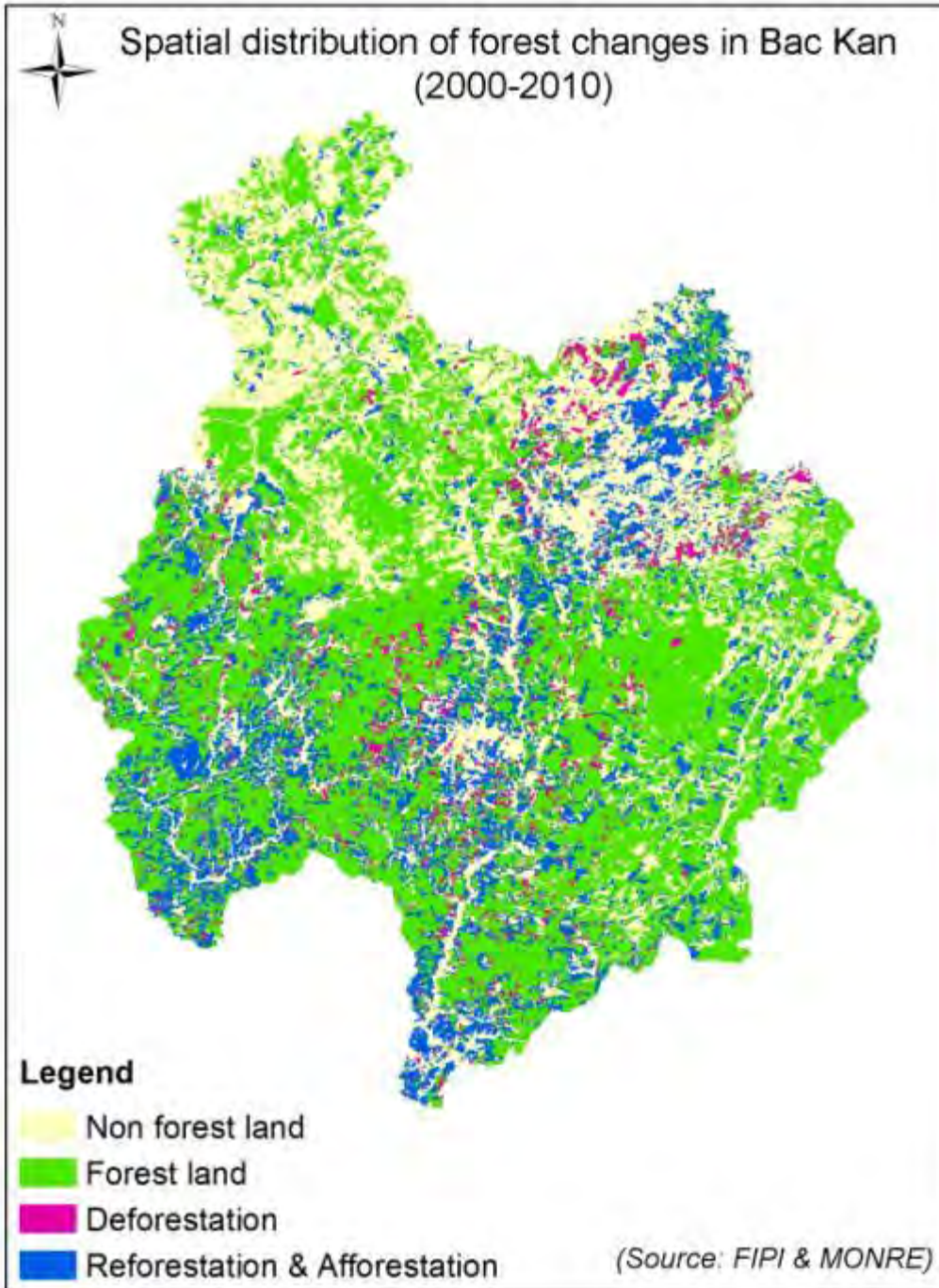
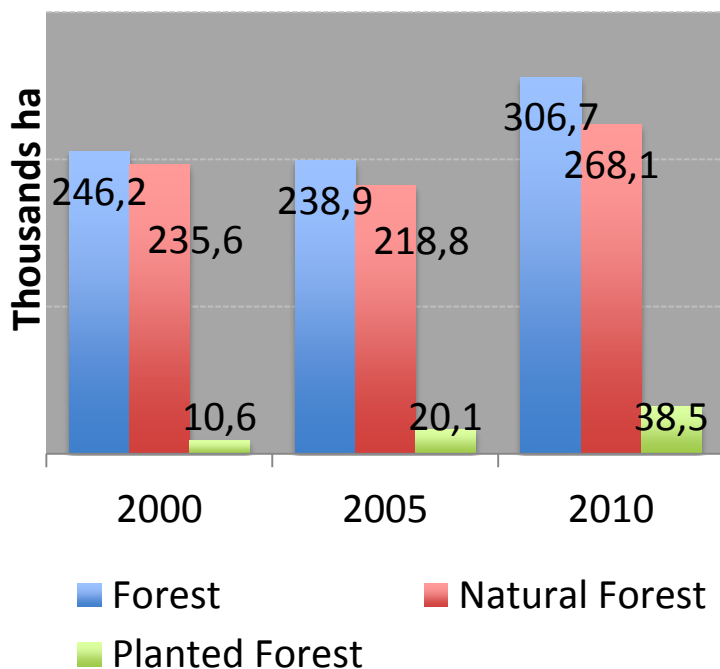
Shifting cultivators,
loggers

Government: 5 M
hectares reforestation
program since 1998

Forest & tree cover transition

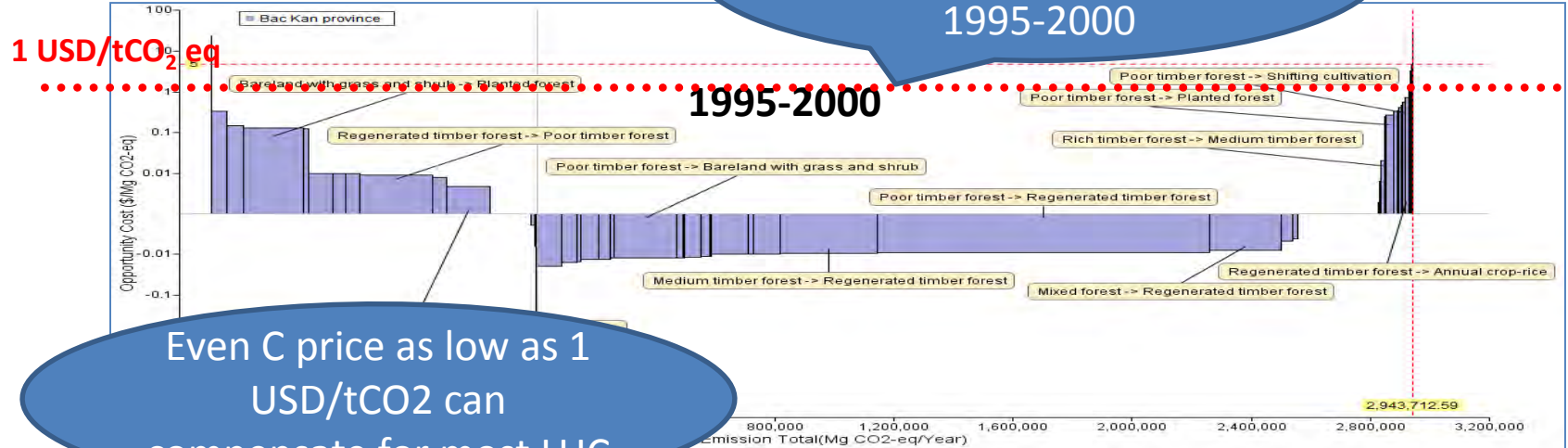


What happened to the forest?

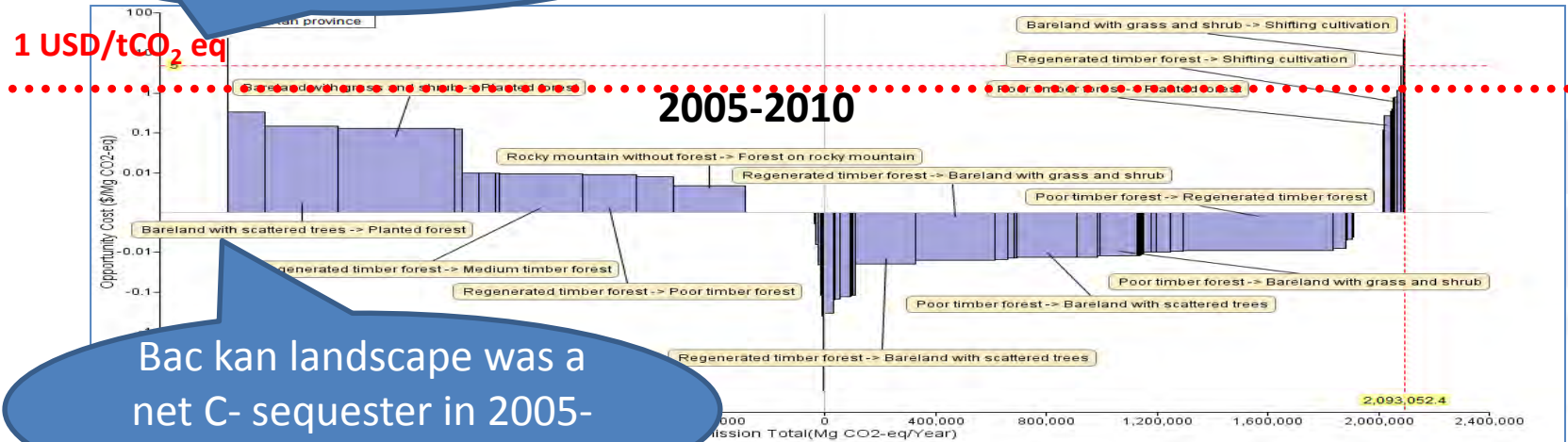


Is CO2 emission from LUC avoidable by C payment?

Bac kan landscape was a net emitter (in LUC) in 1995-2000



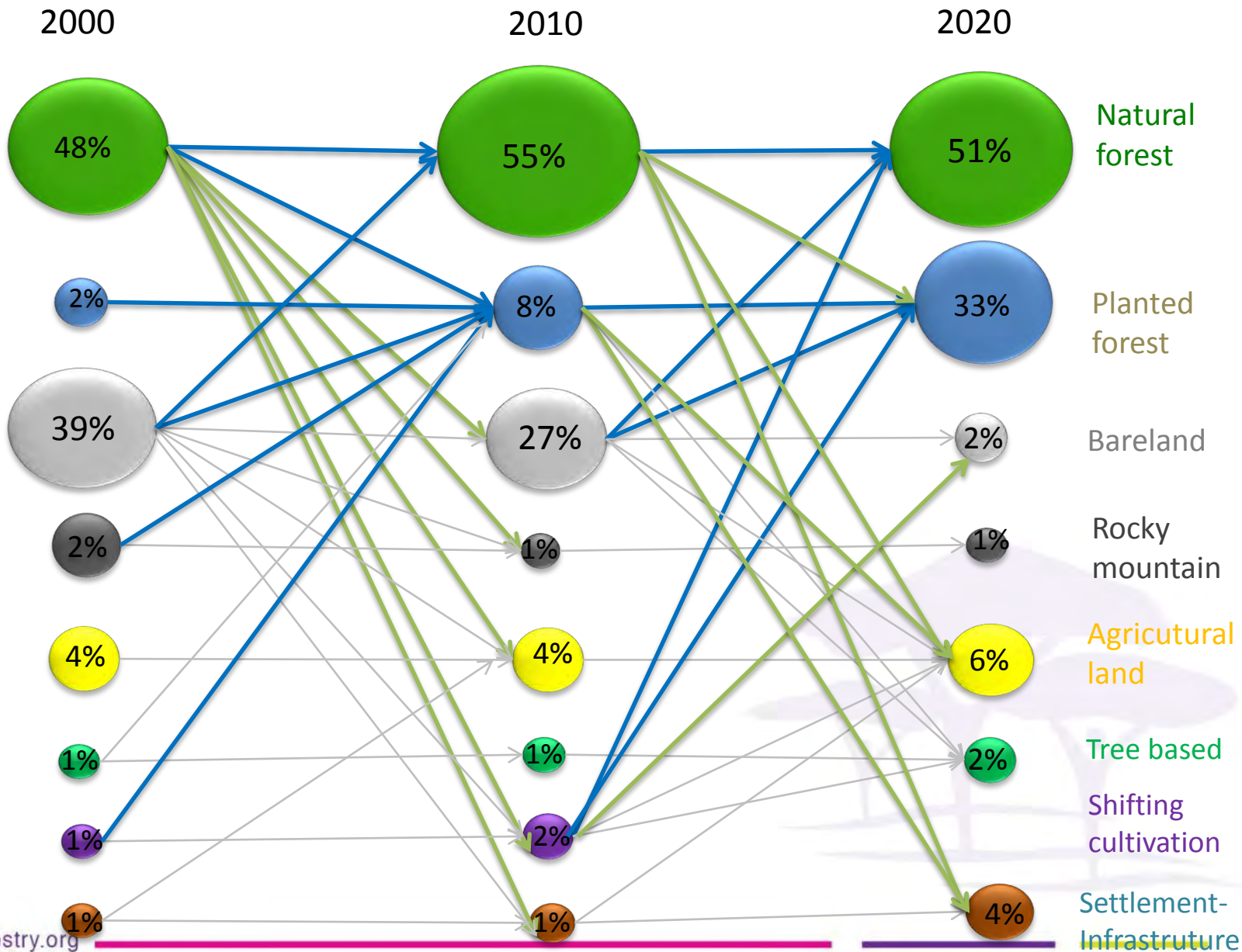
Even C price as low as 1 USD/tCO2 can compensate for most LUC



Bac kan landscape was a net C- sequester in 2005-2010

X axis: CO2 eq emission total (Mg CO2-eq/year)
Y axis: Opportunity cost (USD/Mg CO2-eq)

Pathway of forest change



Forest cover will continue to increase through forest planting, but this neither implies a climate change mitigation benefit...



Can a landscape equally address different stakeholder interests at the same time?

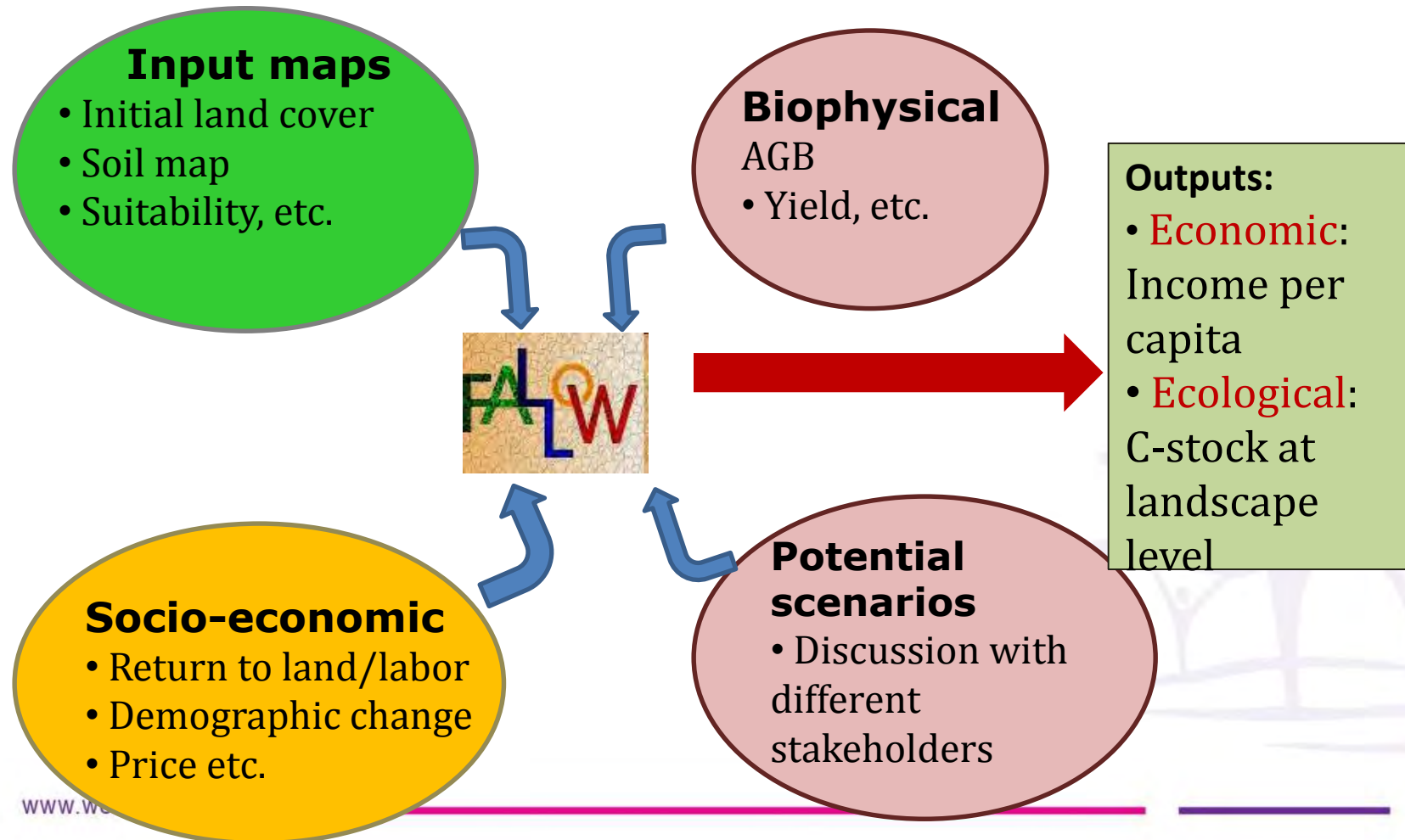
What land use options provide optimal environmental services and income benefits?

Different needs, contexts require different responses on the ground.



1. Analyse land use trade-offs

Forest, Agroforest, Low-value Lands Or Waste (FALLOW) model



Land use change scenarios

Forest /tree conservation & expansion

REALU

Agroforestry replaces shifting cultivation

REDD+

No illegal logging + establishing forest tree plantation

Acacia mangium
expansion

Acacia mangium planted in natural production forest
(20 -50% of establishment cost is subsidized)

BAU

Crop expansion

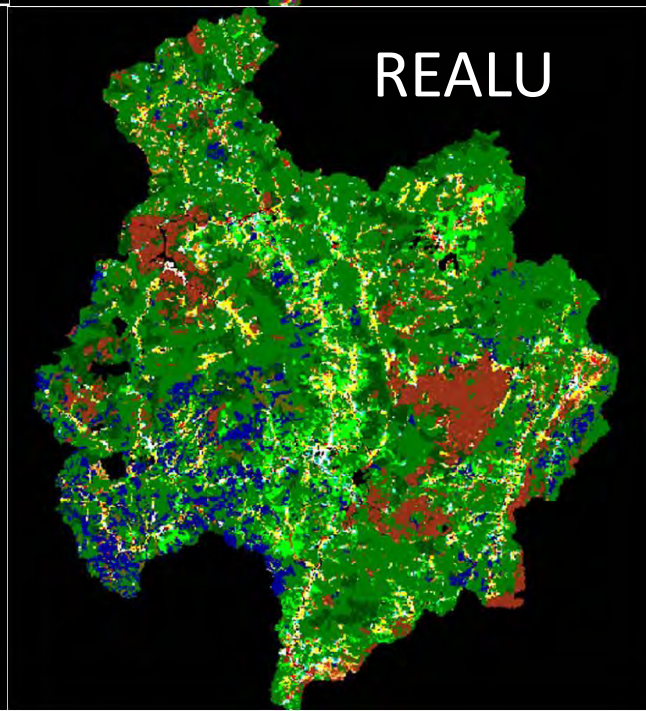
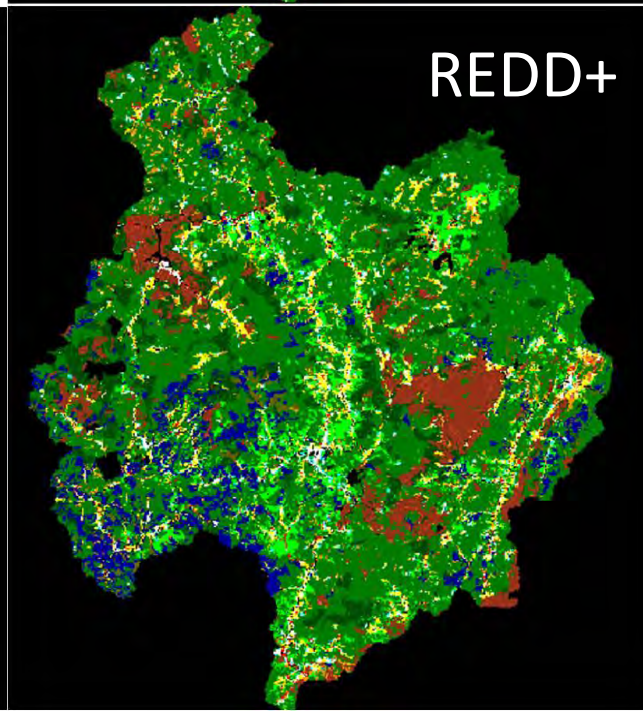
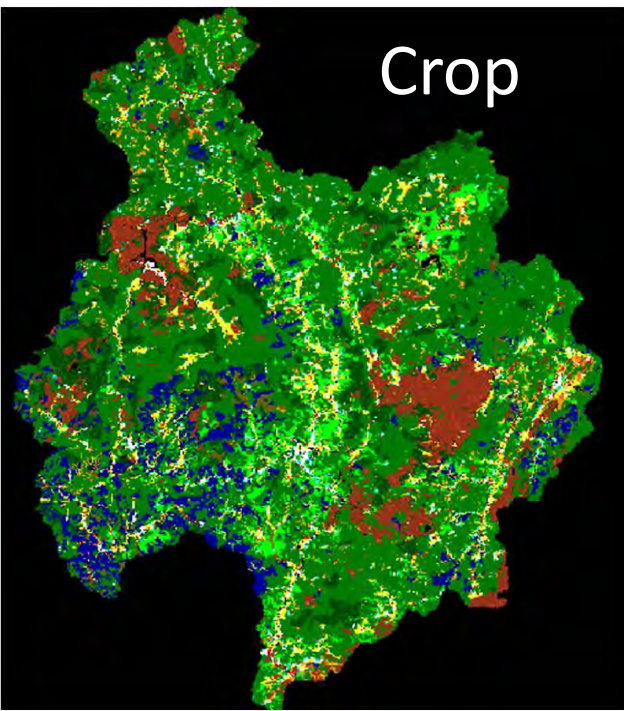
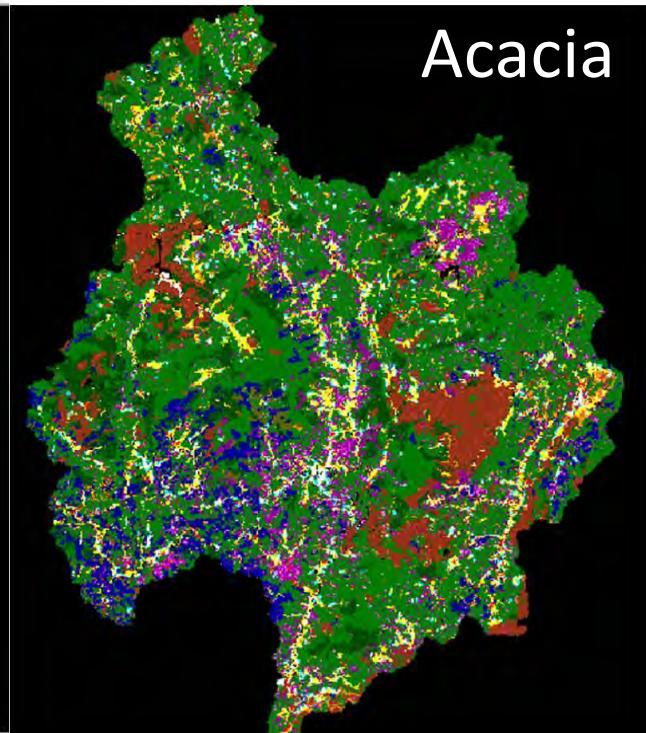
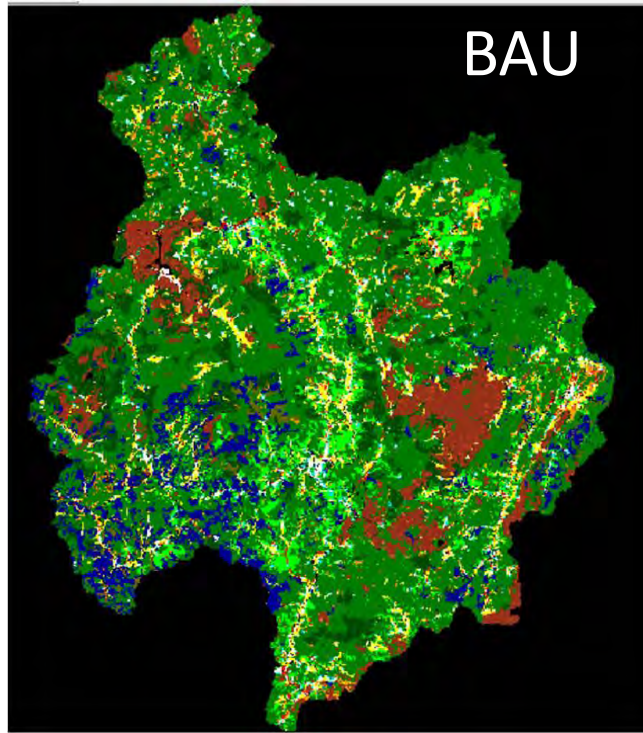
Agriculture expansion

Free competition based on
economic interests

10-20% subsidy for annual crops

Simulation results

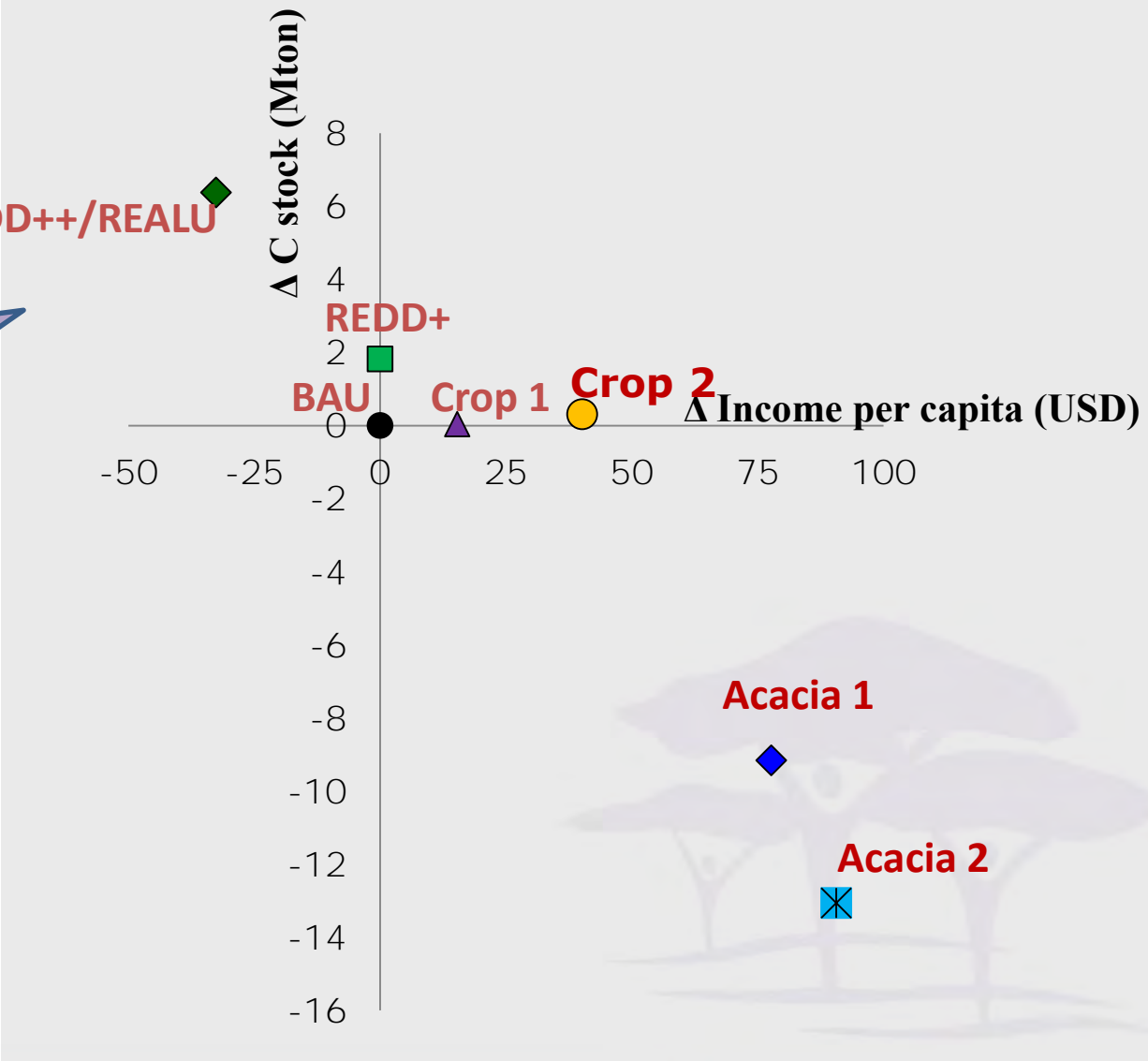
Landcover distribution at 2040



Trade-offs between ABG-C and \$

Trees inside and outside forests bring more carbon benefits in the landscape

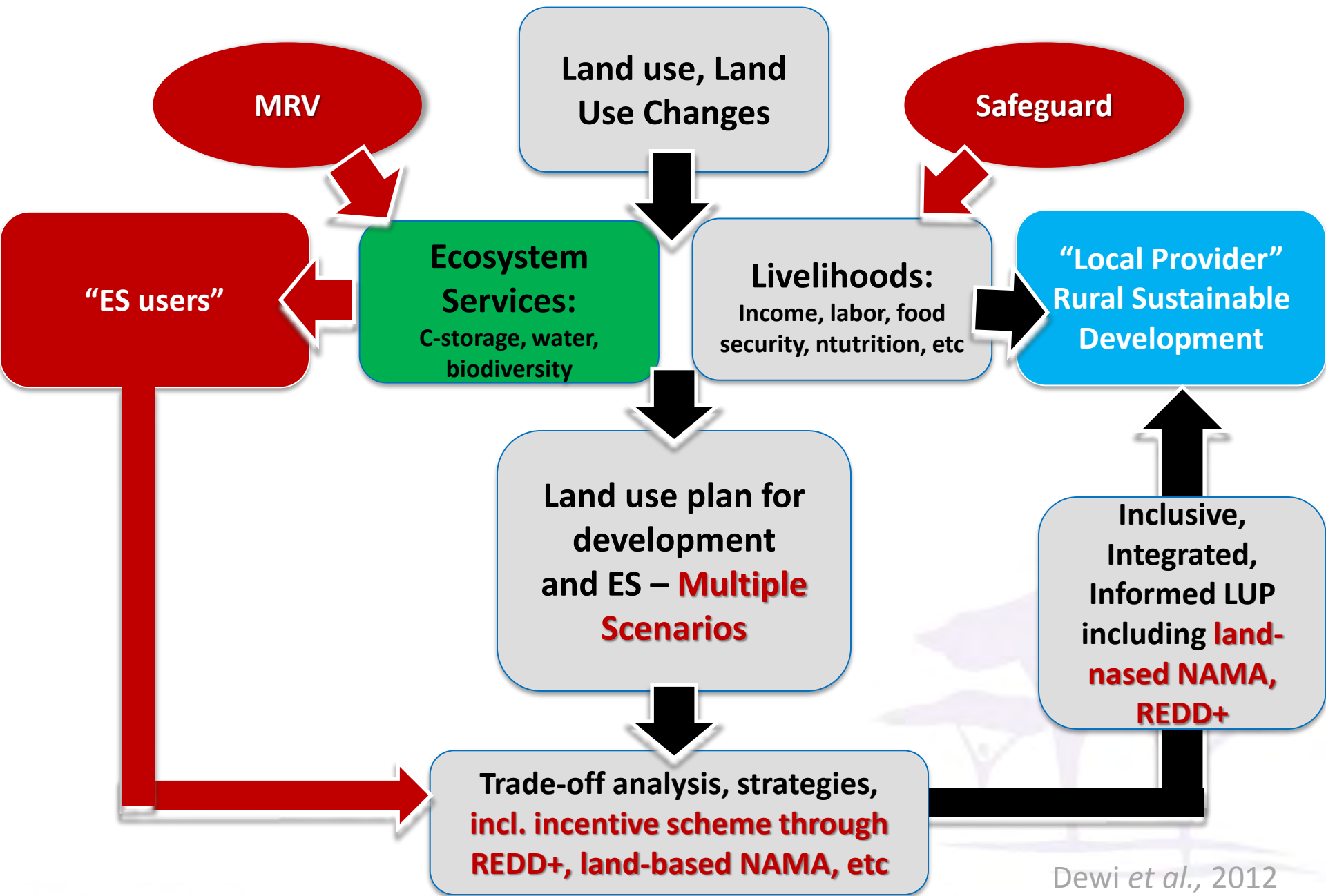
Reducing Emissions from All Land Uses (REALU) can be a win-win scenario, if incentives will be provided

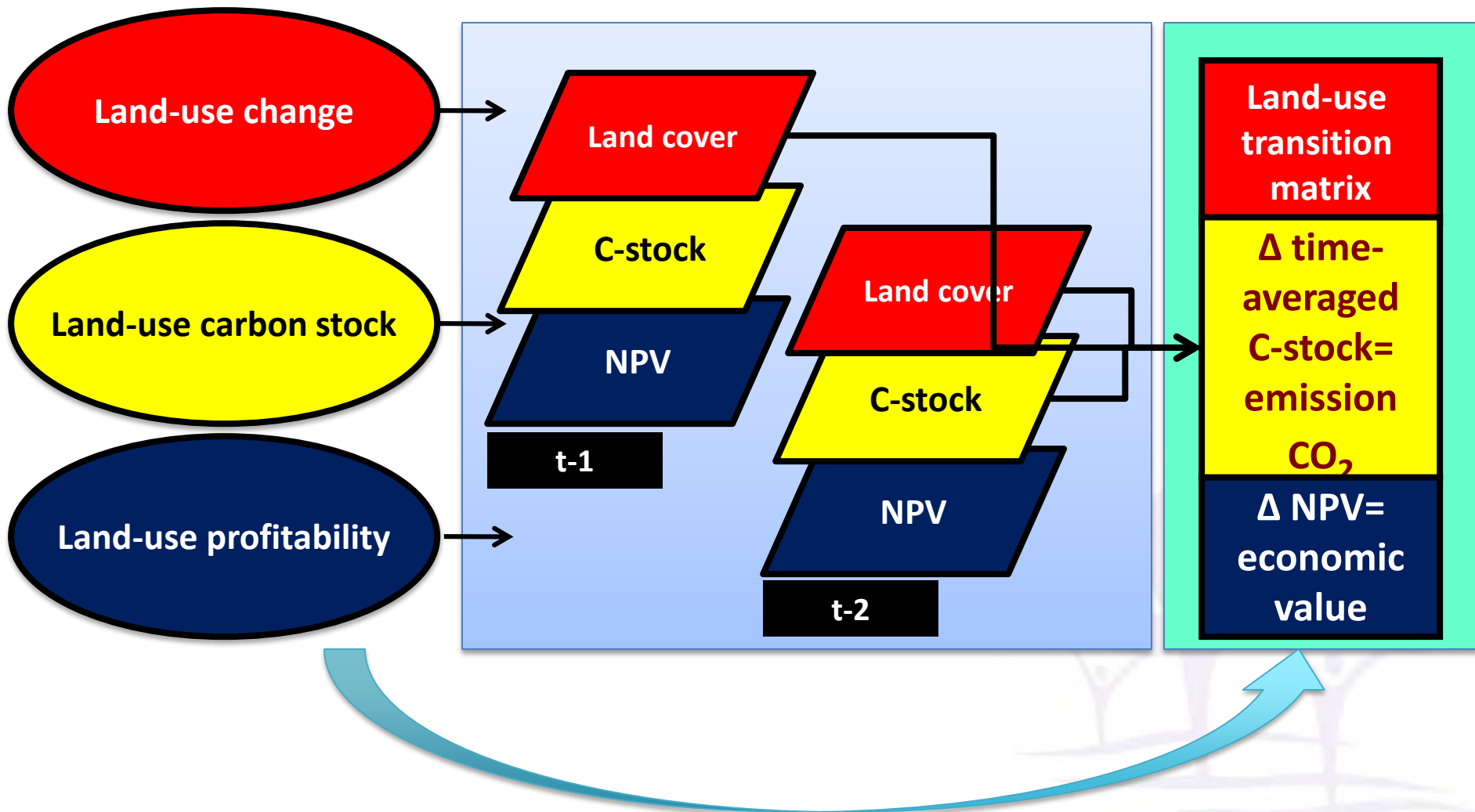


2. Adopt participatory land use planning for low emissions development strategy

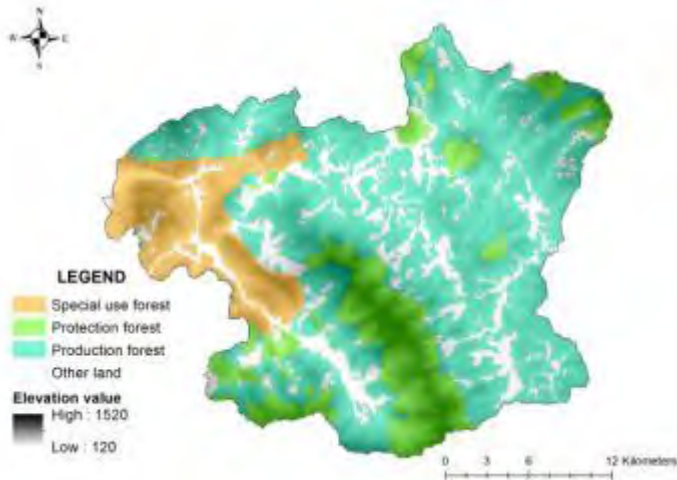
LUWES framework for reconciling different objectives

- Multiple functions, multiple needs, multiple agenda, multiple stakeholders, multiple policies, multiple scale issues from limited resources
- Reconciliation is necessary; often involving trade-offs
- Land use planning for development and environmental services should be conducted inclusively and by integrating spatial and development planning on valid and up-to-date data and information.
- Capacity strengthening for land use planning in tropical landscapes is necessary
- Several rapid tools for assessing environmental services, including simple indicators are available





Piloting LUWES at district level



Special use F

- 8,797 ha
- Forest protection contract
- Forest planting (small scale)
- Natural regeneration

Protection F

- 11,528 ha
- Forest protection contract
- Natural regeneration
- Forest planting on bare land

Production F

- 37,034 ha
- Forest planting on bare land
- Natural regeneration
- Converting shifting cultivation area into agroforestry land use systems

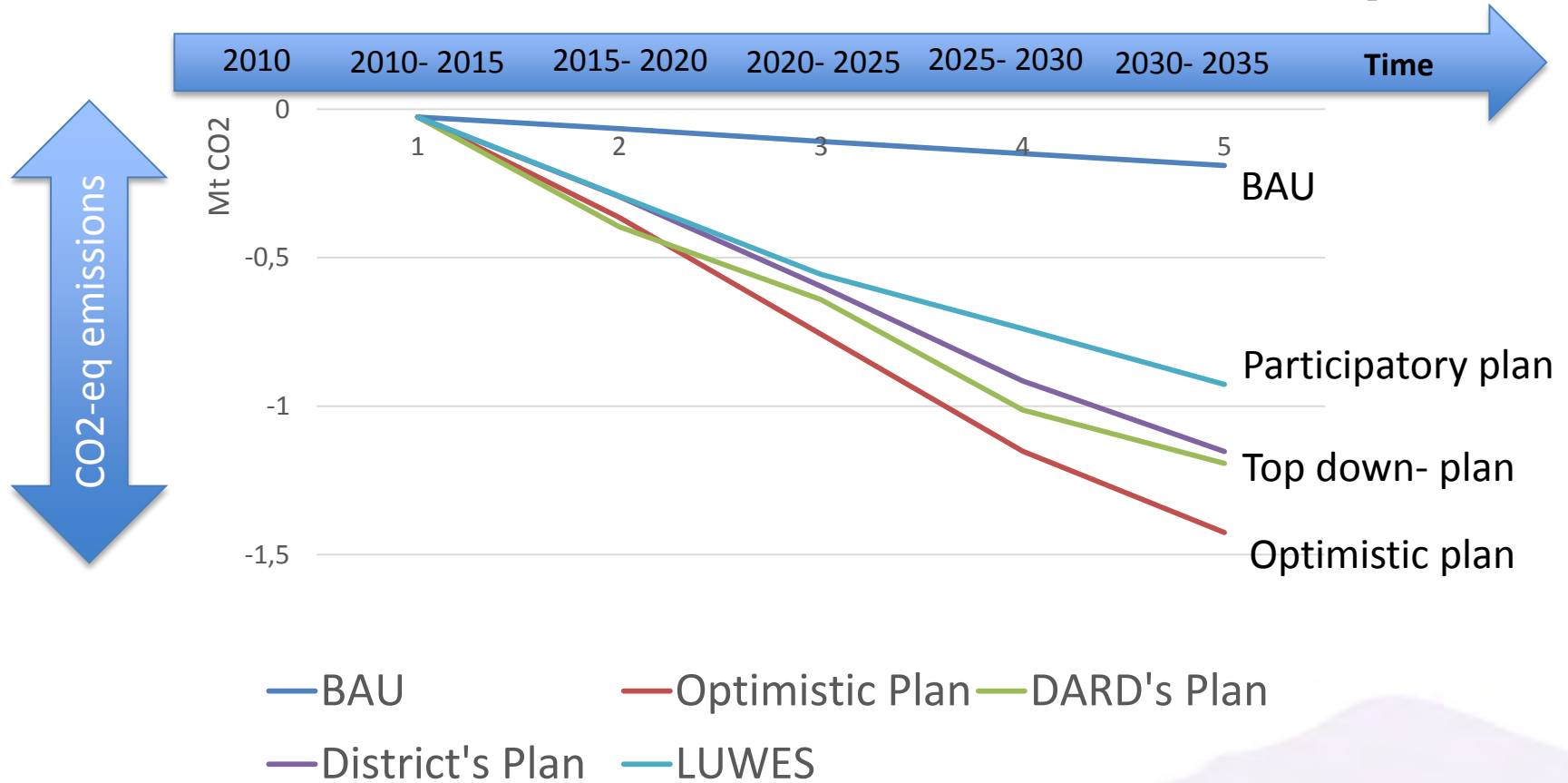
Non F

- 10,838 ha
- Accelerating production area such as AF or fruit tree planting

Scenario development

- BAU: business as usual (as of 2005-2010)
- Scenario 1 (optimistic): Protect all forests and replant forest wherever possible
- Scenario 2 (DARD): Forestry planning by provincial DARD
- Scenario 3 (District consultation): DARD's plan + district authority consultation
- Scenario 4 (LUWES- participatory scenario): Local consultation with villagers and communities

Emission reductions by different land use plans

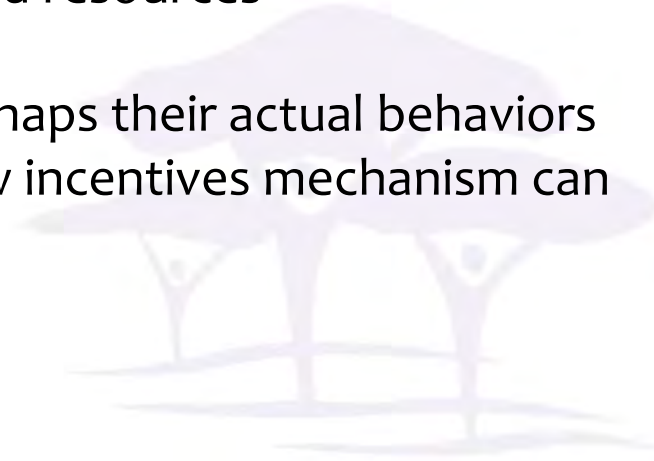


DARD's plan: Land sparing approach, strict forest protection and planting forest anywhere possible

Participatory plan: Land sharing approach, forest should be used to meet local demands and plantation of TOF can help to achieve carbon and livelihood objectives

Limitations and challenges

- Among environmental services (ES), only Carbon sequestration has been considered in trade-off analysis
- Issue of landscape boundary: some ES such as water regulation (quantity and quality) can be analyzed within a natural boundary (watershed) rather than jurisdictional boundary
- Uncertainty/Certainty issues due to lack of data and resources
- Stakeholders' perspectives are important, but perhaps their actual behaviors are more important: lack of empirical data on how incentives mechanism can change behaviors and land use practices



THANK YOU VERY MUCH!



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http://worldagroforestry.org/regions/southeast_asia/vietnam