

Strengthening smallholders' resilience while improving ecosystem services

Lessons from Buol District, Indonesia

Sacha Amaruzaman

(sacha.amaruzaman@adelaide.edu.au)

Betha Lusiana

Beria Leimona

Lisa Tanika

Dienda Citasyari

Presented in

ISAP 2018

Yokohama, July 2018



Outline

- Introduction
- Socio-ecological Contexts
- Activities
- Initial impacts
- Conclusion

INTRODUCTION

Tree-based agriculture as a sustainability pathway

Protection & Conservation of Natural resources

Water

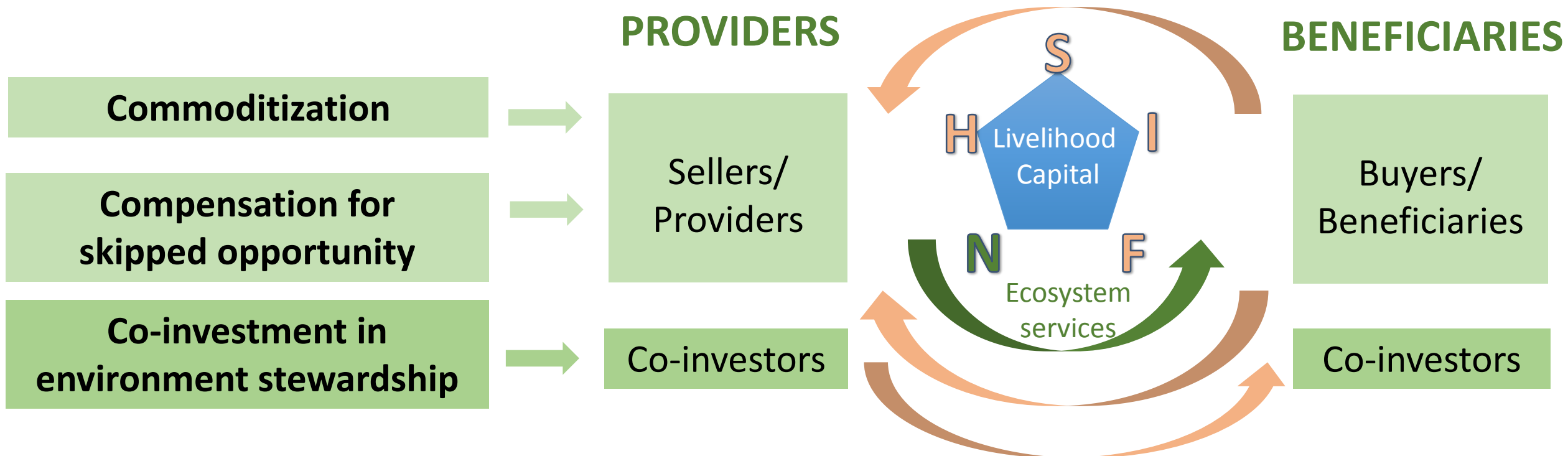
Biodi-
versity

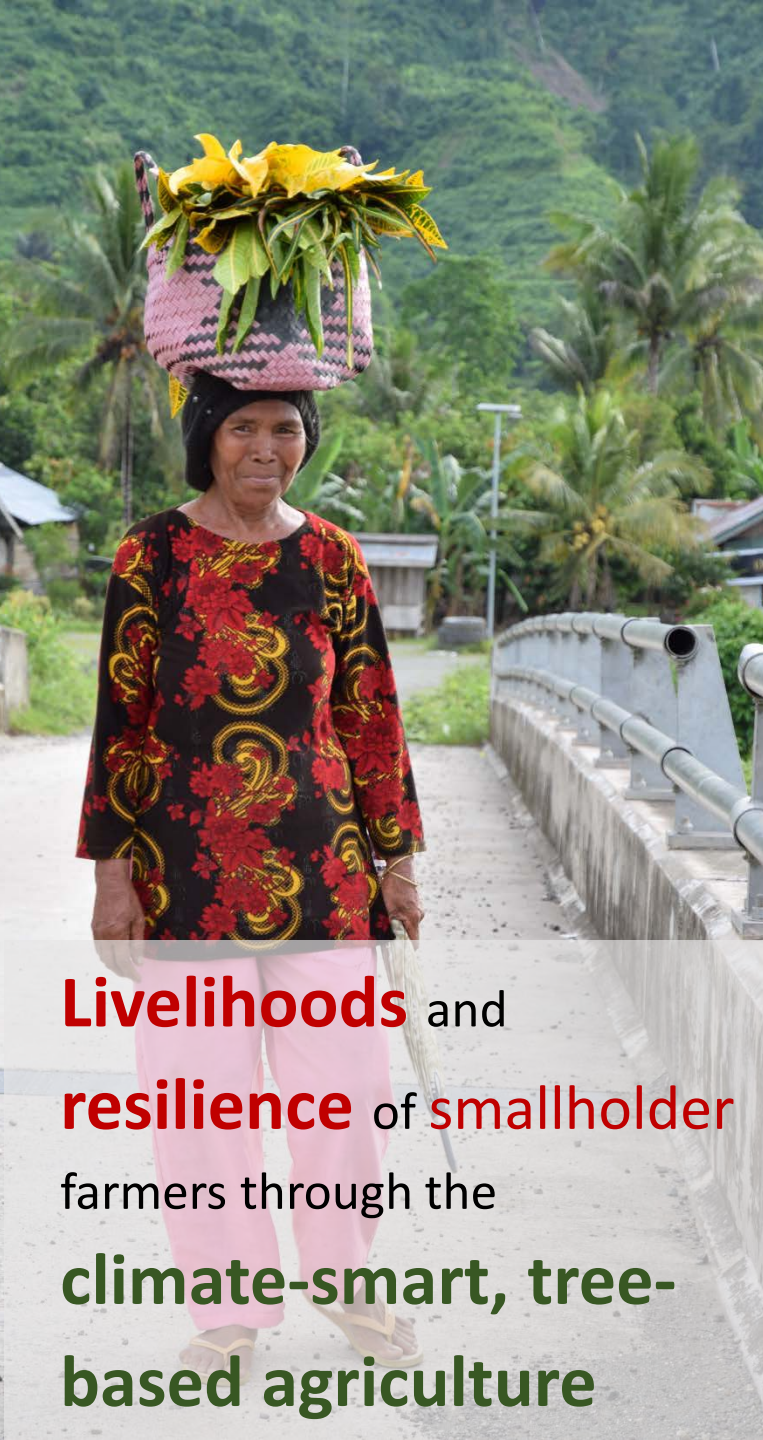
Carbon
Stock

Maintenance of
Agricultural
heritage

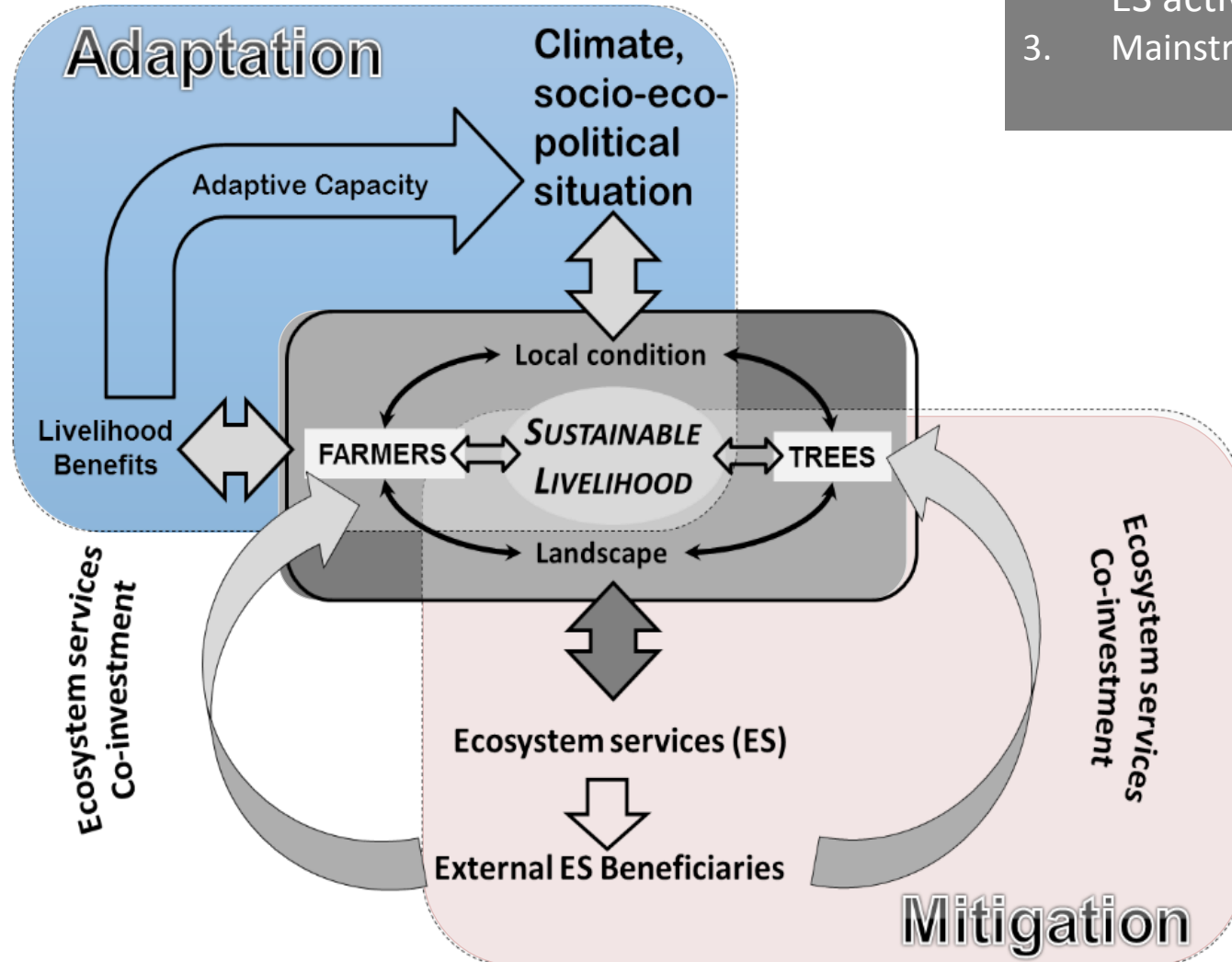
Food, fiber, fuel, fodder & fruit

Three Paradigms Payment for Ecosystem Services





Livelihoods and
resilience of smallholder
farmers through the
climate-smart, tree-
based agriculture



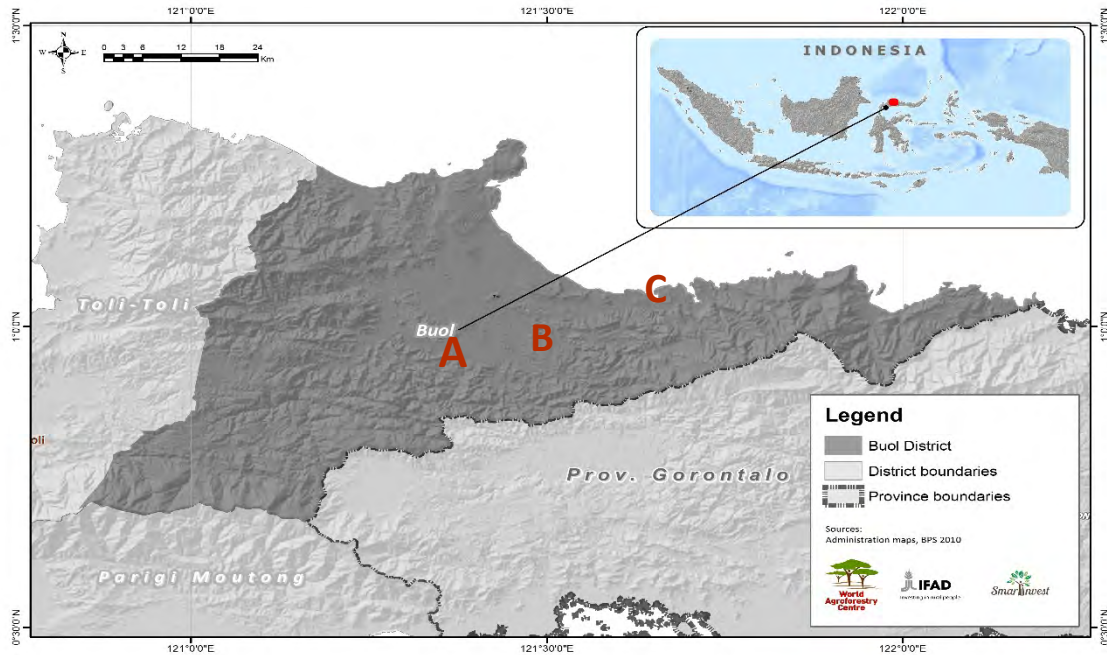
Action research

2014-2017 Phases

1. Scoping
2. Pilot co-investment in ES activities
3. Mainstreaming results

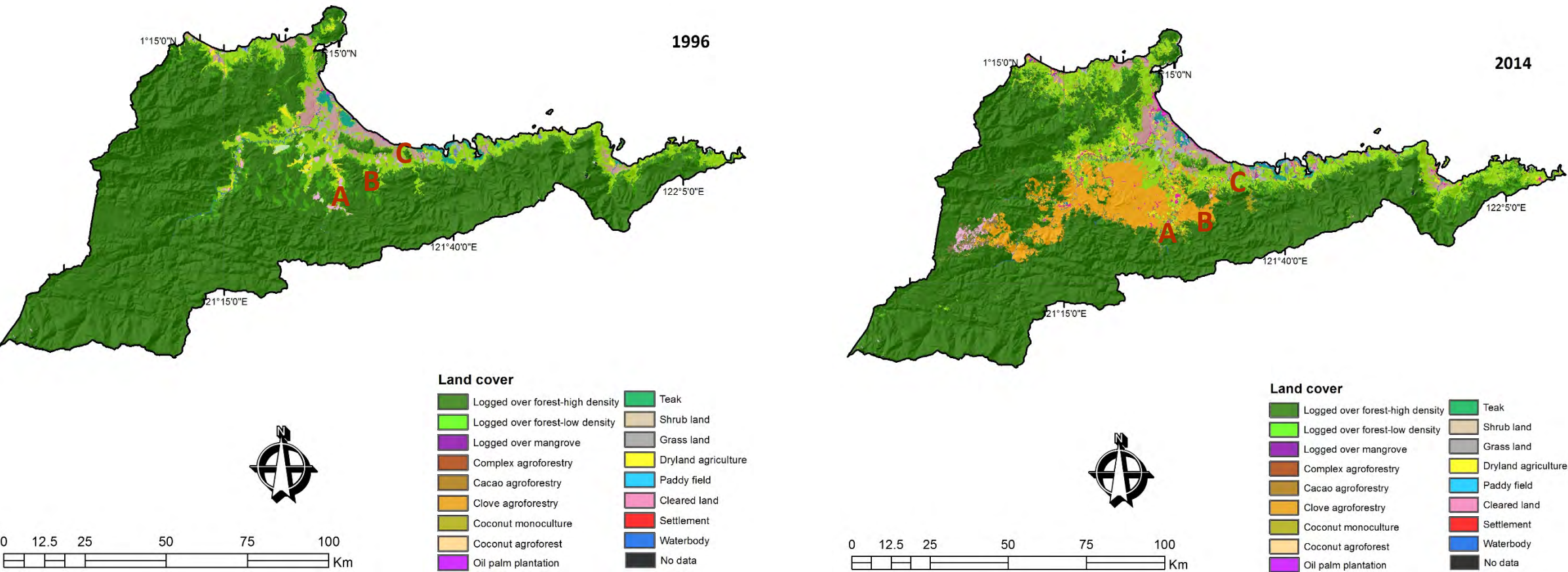
SOCIO-ECOLOGICAL CONTEXTS

Buol District, Central Sulawesi



- Coastal district with diverse landscapes
- Forest frontier, forest conversion to large settlements area and oil palm plantation
- Three landscapes/clusters:
 - A. Upstream catchment (UC)
 - B. Mid-stream catchment (MC)
 - C. Coastal (Co)
- Absence of major private sector entities as down-stream beneficiaries

Land-use land-cover changes: 1996-2014



Socio-ecological profiles of the study sites

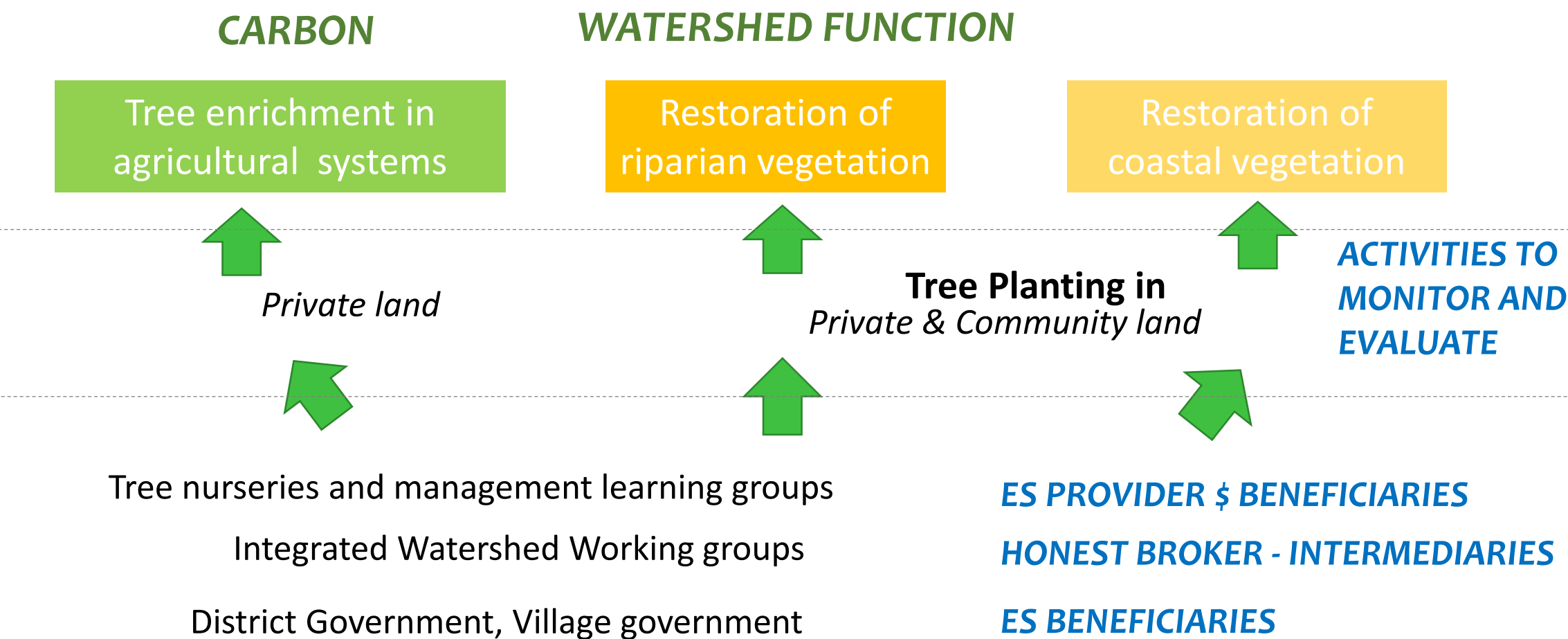
Landscape cluster	Upstream	Midsteam	Coastal
Agricultural system (dominant)	Annual crops, agroforestry, oil-palm	Annual crops, rice, and cacao agroforestry	Tree-based (cacao, clove agroforestry)
Livelihood	Agriculture; Oil palm plantation (labour)	Agriculture	Agriculture; Fishing; Mining
Origin	Migrants	Mixed	Local
Environmental issues	Low water debit; Erosion in plantation area	Frequent flooding; River bank collapse	Coastal degradation; increase sea-level
Infrastructure (<i>road, irrigation, electricity, communication, etc.</i>)	Poor	Moderate	Good

Shocks, Exposures, Impacts and Responses

Shocks	Exposures in the Cluster			Impacts	Perceived Potential Buffer
	Upstream	Midstream	Coastal		
Flood	High	High	n/a	Crop failure; economic loss; infrastructure loss	Better flood infrastructure (<i>embankment construction, river straightening</i>)
Agricultural pest and Disease	Low	Low	High	Reduction of yield, crop failure; loss of income	Knowledge on farm management; improved rural-advisory
Drought	High	n/a	n/a	Reduction of yield; Crop failure	Alternative livelihood options, Irrigation infrastructure, Aid from the government
Increasing Food Price	Moderate	Moderate	Moderate	Increased expenses; Reduced food consumption	Food diversity; higher and stable income
Scarcity of Fertilizer	Low	High	High	Reduced yield and income	Membership in a farmer group; reduce dependency on chemical fertilizer
Unstable commodity price	High	n/a	n/a	Loss of income	Better knowledge to add value to the products; improve market access

Potential performance-based co-investment scheme to improve the landscapes

→ *The downstream private sector as the direct beneficiaries of ES is not available*



Challenges:

- *Smallholder's short-term livelihood strategies;*
- *Capacity of local actors to support sustainable livelihood and landscapes;*
- *Lack of sectoral integration within the local government initiatives*

Recommendation: *develop enabling condition to co-invest*

PLOT ➡ Farmers' capacity to manage tree-based agricultural systems

LANDSCAPE ➡ Build the capacity of community and government in monitoring their landscapes

DISTRICT ➡ Capacity and internal coordination of the local government as an intermediary in developing a co-investment for livelihoods and landscapes

Activities

Plot

Farmers tree-farm management learning group



Initiation



Preparation



Planting

Implementation

Participatory watershed monitoring

Landscape



Rainfall measurement; Water discharge; Turbidity and sedimentation measurement; Awareness raising and public consultation

District level

Training on Ecosystem services



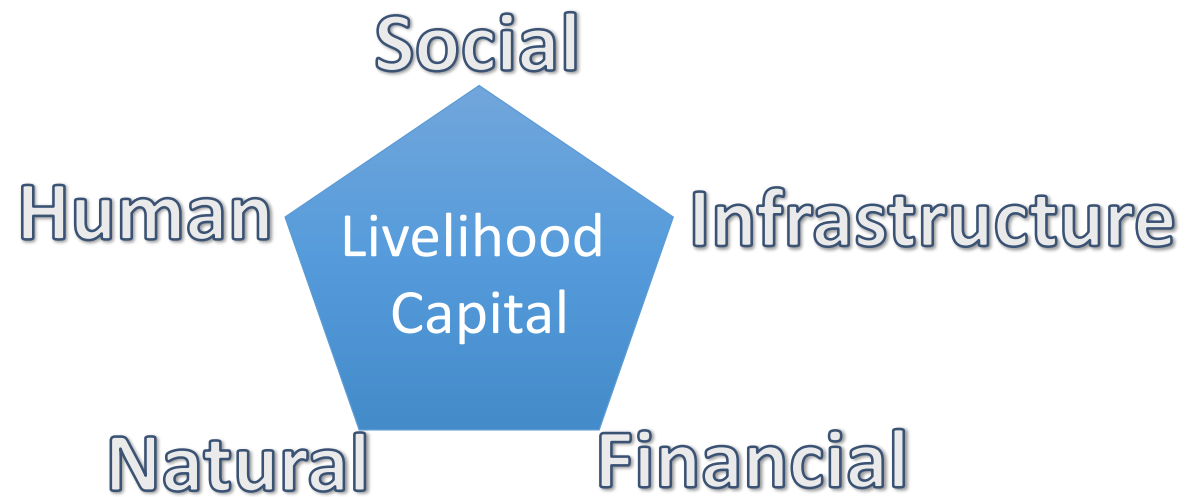
Training of trainers – extensionist



Working group on watershed management



Initial Impacts



Human capital

- Empowerment; behavioural change (S)
- Improved awareness on the landscape condition (S)
- Increased understanding on the ES from productive landscape (G, S)
- Strengthened sectoral coordination in development planning (G)
- Endorsement of project replication into local public and private resources (G, P)

S = smallholders; G = district government – members of working group, P = Palm oil company

Natural capital

- Smallholders voluntary planting 4,500 trees in their private and degraded land
→ potentially improve the landscape's ES
- A better-informed and integrated planning to improve the environmental condition in the district's watersheds



Financial capital

- Potential increase in smallholders' income from the on-farm capacity building
- In 2017, Buol Government allocated USD 38,400 to replicate the project activities
- Three village governments in the project sites allocated Village Fund Development to replicate the tree management learning groups.
- A raise in land price of degraded lands due to increasing land demand to plant trees



Social capital

- Improved social capital and social bonds in the learning groups
- Intensive interaction through replication activities potentially **improve trust and collaboration between government and the communities**

Physical capital

- Potentially **reduce dependency on infrastructure construction** as the main solution to solve the watershed problems

Conclusion

- Understanding the **context of the landscapes potential and challenges** is imperative as a **basis towards improving farmers resilience and landscape**
- Co-investment can be operationalized through **integrated and nested actions** with stakeholders at the different scales
- An **operational co-investment** needs a degree of **flexibility in funding sources**; sufficient **stakeholders' capacity**; and **political will** from the governments.

Thematic Review

Chapter 5 Satoyama Initiative Thematic Review Vol.3

Chapter 5

**Strengthening smallholder resilience and
improving ecosystem services provision in
Indonesia: Experience from Buol District,
Central Sulawesi**

Sacha Amaruzaman, Betha Lusiana*, Beria Leimona, Lisa Tanika, Dienda C. Hendrawan

The World Agroforestry Centre (ICRAF) Southeast Asia Program,
Situ Gede, Sindang Barang, Bogor 16115. PO Box 161 Bogor 16001 West Java, Indonesia
email address: *b.lusiana@cgiar.org

Contact person:
Betha Lusiana

Email: B.Lusiana@cgiar.org
http://worldagroforestry.org/regions/southeast_asia

