



Enhancing Adaptation for Improving Upland Livelihood and Landscape

An insights from Sumatra, Indonesia

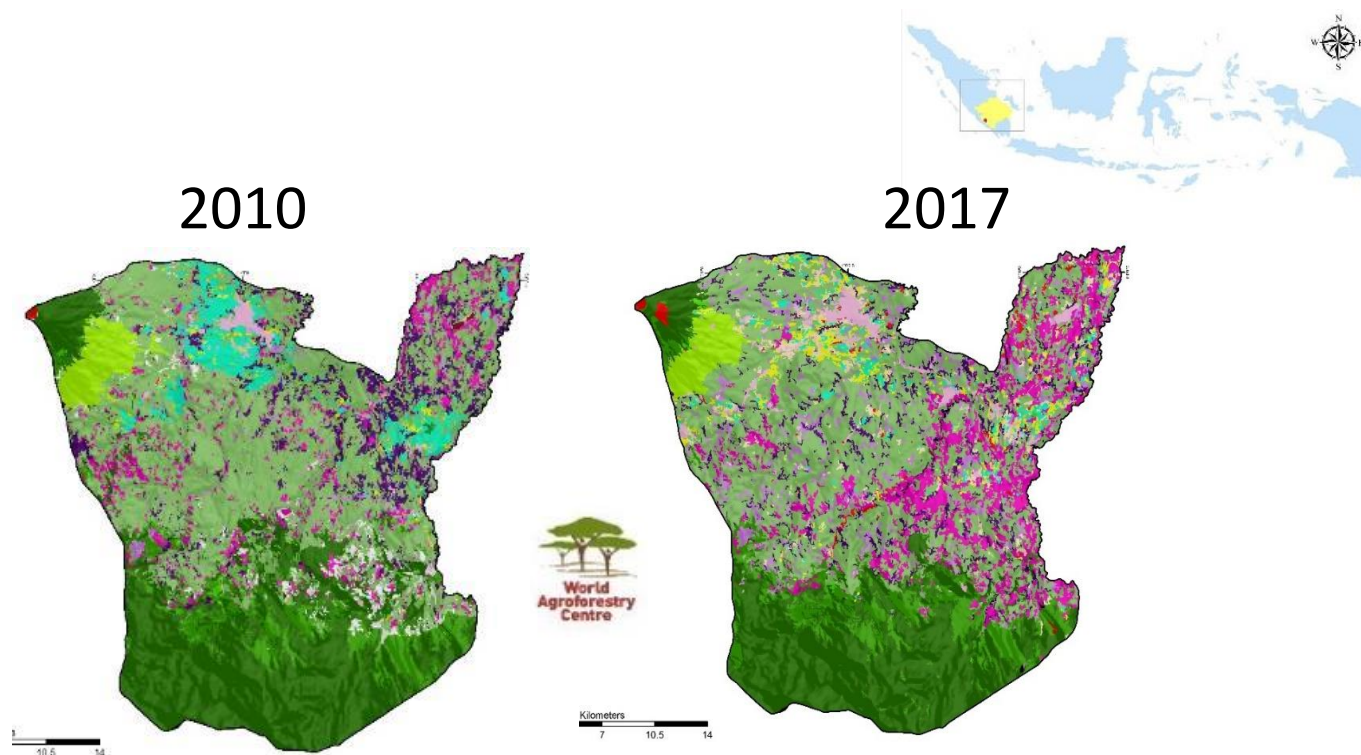
Sacha Amaruzaman

Research Fellow - World Agroforestry (ICRAF) Indonesia

PhD Candidate - GFAR, University of Adelaide

sacha.amaruzaman@gmail.com

Pagar Alam City Upland Region - Indonesia



63,000 ha of volcanic landscape

Forest and coffee agroforestry (Robusta) are dominating the landuse (66% of the area)

70% of population are farmers

Upstream area of **Musi Watershed** → ES provision for 10 million people in South Sumatra

Habitat for **endemic species:** Orchids, Wildlife, and Timber

Carbon storage of 17.2Mt CO₂ (2020)



Environmental and Livelihood Issues in PAGAR ALAM SEPL

No incentives for farmers to produce high quality coffee through improved farming practices

Limited access to better coffee market and low farm-gate price

Seasonal crops gradually replaces **coffee agroforestry**, including in the **sloping land** and **forest frontier**

Upland area as **a marginal SEPL** → Limited understanding of the smallholders' vulnerability and adaptation process in Pagar Alam.



SDM CASE STUDY in Pagar Alam



Aims

Assess coffee smallholders' **vulnerability** that affects the upland livelihood and landscapes

Enable smallholders to apply **adaptation measures** that simultaneously address livelihood and landscape improvement.



Project Site

Eight villages in the forest border with high threats of coffee agroforestry conversion

Target area of Community Forestry Program (HKm)



Project partners

- * *Empower* project (NedCoffee)
- * *IndoGreen* project (GFAR)

Local Vulnerability Perception

Subsidized fertilizer scarcity

Price fluctuation

Landslide

Flood

Vulcanic ash

Strong wind

Warmer temperature

Crops pest and disease

Decreased water supply

Prolonged rain

Hailstorm

Prolonged drought



Socio-economic shocks/stressors

Climatic shocks/stressors

■ Female perception ■ Male perception

Farming systems profitability in Pagar Alam



Farming System	Input establishment cost (USD/ha)	Labour establishment cost (USD/ha)	Return to Land (USD/ha/year)	Return to Labour (USD/ps/year)	Return to capital
Coffee Agroforestry	46	135.5	446	6.7	71 %
Rubber Agroforestry	132	35.4	254	7.1	46 %
Vegetable Crops	1,315	1,204	3592	7.4	38 %

Source: [Isnurdiansyah et al., 2021](#)

Coffee farmers Vulnerability

Smallholders perceive coffee farming as their culture, inherited from their ancestors

Seasonal crops (vegetable) as the alternative responses to shock

- *Coffee price fluctuation and changes in climate pattern, such as prolonged drought and rainy season, were the major shocks for smallholders*
- *Traditional coffee smallholders highly dependent to the local middlemen, with a very limited bargaining power for price*

- *Short-term income, more intensive farming practices*
- *Limited new land availability → coffee agroforestry conversion*

Maintaining and Improving the **Values of Coffee Agroforestry** for conserving the Landscape and Local Livelihood



(re-) Promoting Agroforestry

Adaptation and Mitigation strategy in Pagar Alam

A multi-stakeholder **workshops on sustainable coffee** (with *Empower project* of Nedcoffee and Starbucks Farmer Training Centre in Indonesia)

Action plan between multi-scale stakeholders (national & local government, coffee farmers, and private sectors) on strengthening local coffee management and marketing



A **pilot initiative for market improvement** between a local coffee cooperative with Louis Dreyfus Company (LDC) in the neighbour Province

- Link the coffee cooperative with *Bank Rakyat Indonesia (state bank)* for cooperation with the Dutch coffee trader
- Facilitated a negotiation with the local government as a follow up of the workshop

Nature-based solutions and co-benefits



Upland **coffee agroforestry** in Pagar Alam represents an unoptimized NbS for managing landscape and livelihood

- Forest - Agriculture transition area, mediates **conservation** (*Watershed services; Carbon stock; Biodiversity*) with **production** (*Livelihood*) activities
- Sustainable Resources Management and ES utilization for Adaptation (*Aichi Target 7 and Target 14*)

Sharing landscape benefits → Locally appropriate adaptation requires understanding of the landscape and people

- Landscape characteristics;
- Vision and aspirations of people;
- Local institutions;
- External opportunities aligned with socio-ecological values



Multi-level governance and ecosystem connectivity

- Stronger networking and alignment across governance scale is essential for managing and strengthening the landscape
- Intermediaries mediating different stakeholders supporting the adaptation process → ICRAF in Pagar Alam
 1. Evidence-based adaptation & mitigation strategy
 2. Sustainable coffee workshop: Pagar Alam government + Local Coffee roasters + Local champions + Empower (NedCoffee) + Starbucks
 3. Connecting global coffee traders (LDC) with local coffee cooperatives
 4. Buy-in and support from the local government



Final remarks

Sustainable Adaptation and Mitigation Strategy



A more reflexive understanding on agro-ecological landscape values

- *Look at diverse perspectives (i.e. socio-cultural, ecological)*
- *Acknowledge multiple adaptation & mitigation pathways*
- *Identify exogenous factors that drives landscape transition (i.e. market, innovation, etc.)*

Strengthen multi-scale governance involving national and local governments, private sectors, and local community

- *The Role of Intermediary*
- *Certification, Eco-label, Green Commodity*



Thank You!

ICRAF SDM Project team in Pagar Alam:

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