Local actors and gender perspectives in dealing with Water, Food and Energy Trade-offs: a case from Jambi, Indonesia

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Outline

Introduction:

- Rapid land transformation
- Biofuel vs. Ecosystem Services

Methodology:

- Agent-based modeling / role-playing games

Preliminary results

- Ecosystem services trade-offs

Take home messages

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Why Indonesia?

Sources: Statistik Perkebunan, Indonesia (2011); Palm Oil Industry (2013)

Between 1967 – 2010:

- **8.4 M ha = oil palm**
- **1,900+ km2 per year**

Source: Indonesian Ministry of Agriculture, 2011

… is the world's largest producer and exporter of **crude oil palm**

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Why Indonesia?

Top five natural rubber producers (2011)	Tonnes
1. Thailand	3.34 M
2. Indonesia	3.10M
3. Malaysia	0.99 M
4. India	0.89 M
5. Viet Nam	0.81 M

Source: FAO 2011

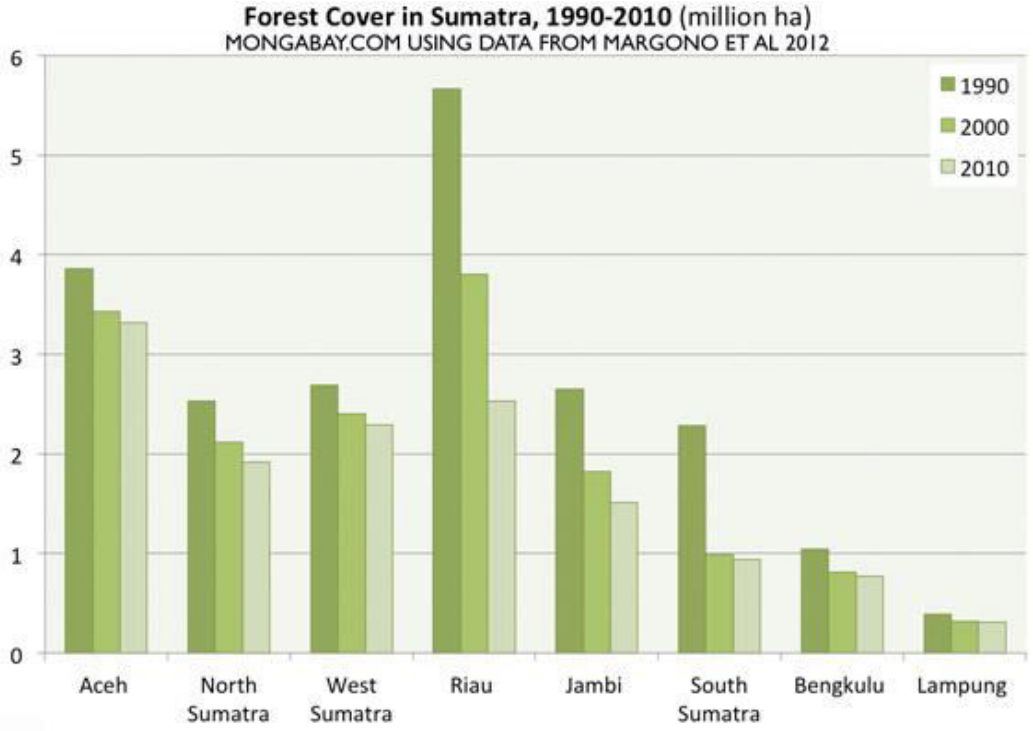
… is the 2nd largest producer and exporter of **natural rubber**

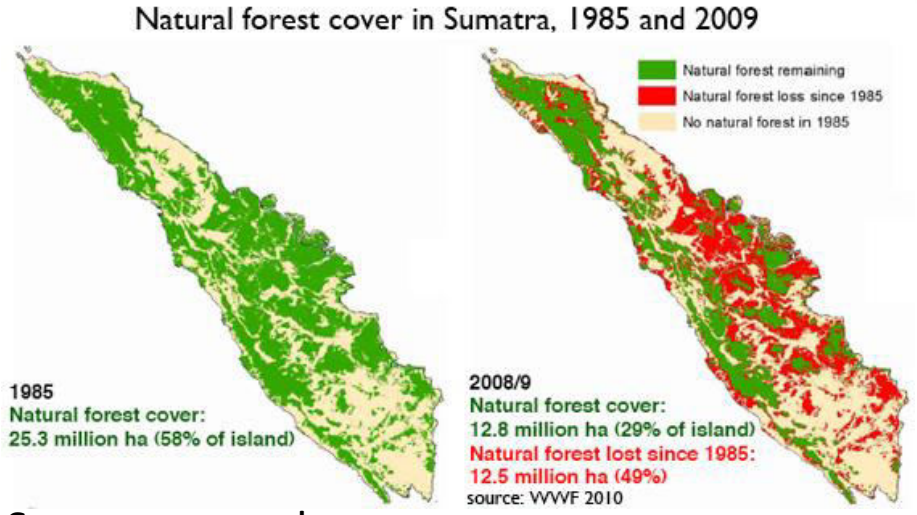
Rubber producing provinces:

1. South Sumatra
2. North Sumatra
3. Riau
4. Jambi
5. West Kalimantan

Sources: Association of Natural Rubber Producing Countries, Indonesian Rubber Association (Gapkindo), and Food and Agriculture Organization of the United Nations

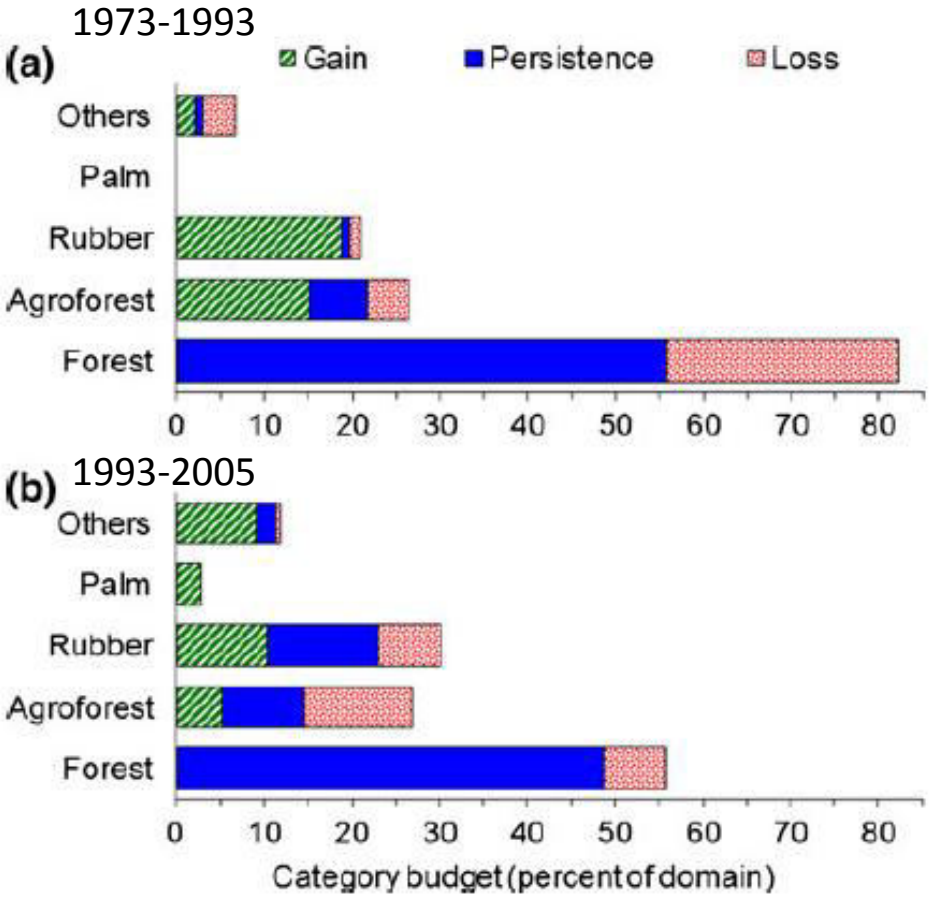
What these transitions mean?





Source: mongabay.com

Land-use change analysis & carbon emissions



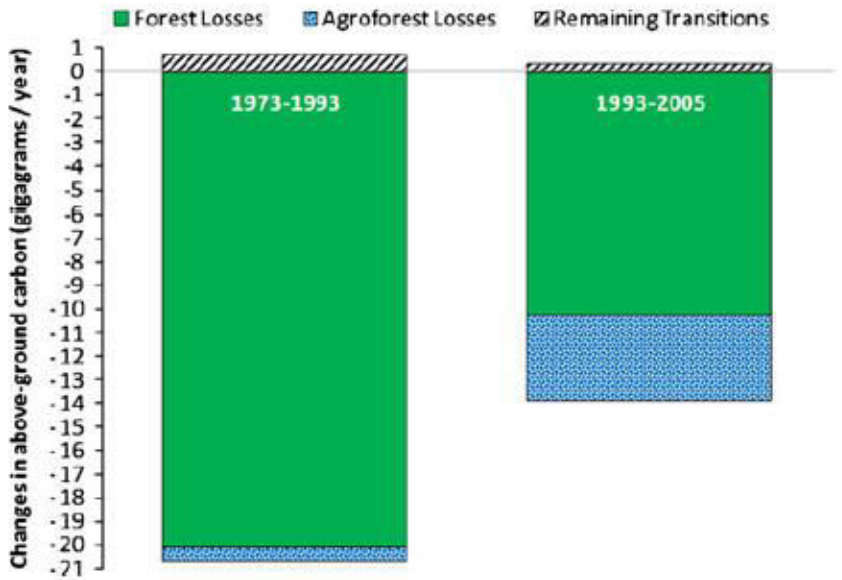
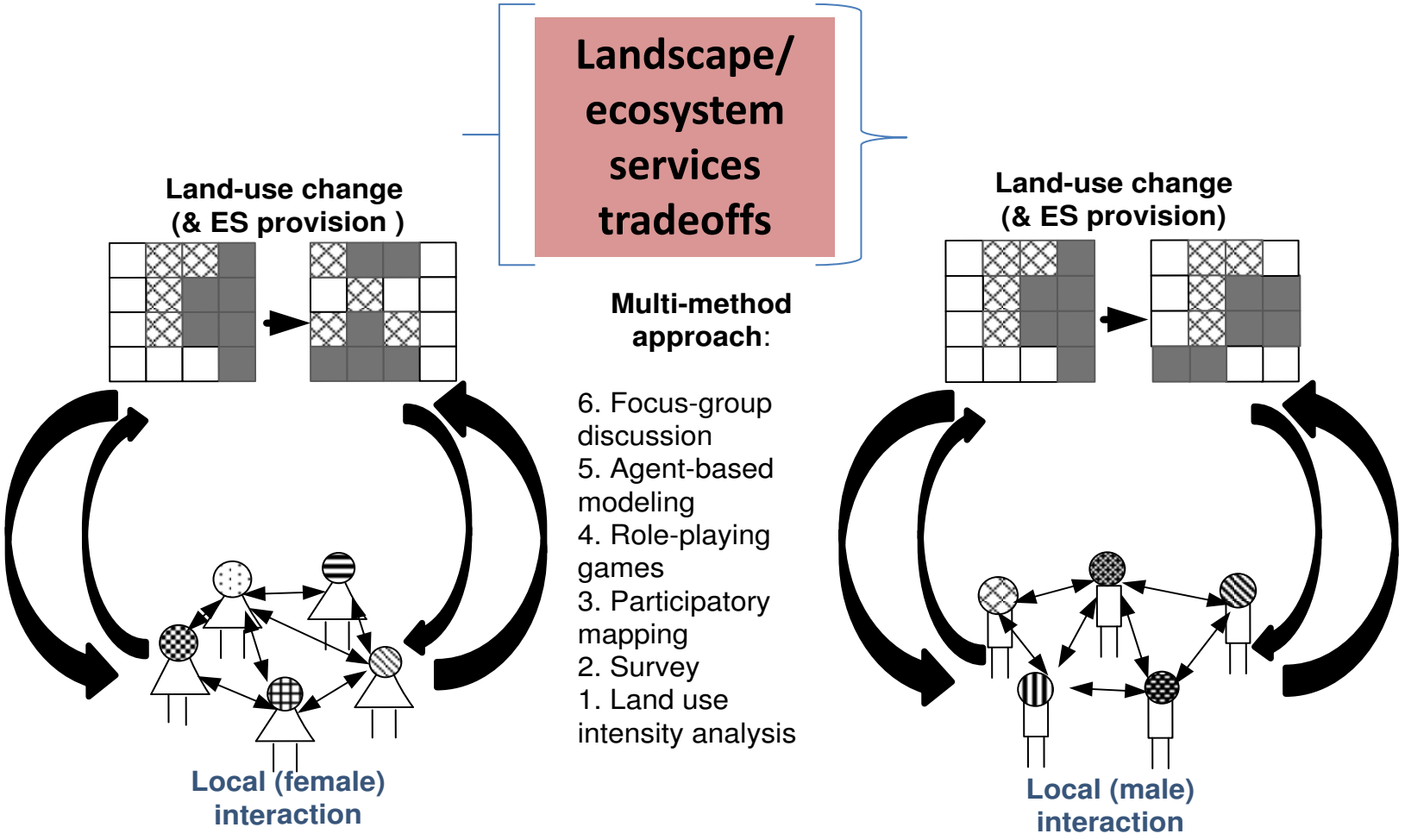


Fig. 6 Annual net change in aboveground carbon during 1973–1993 and 1993–2005

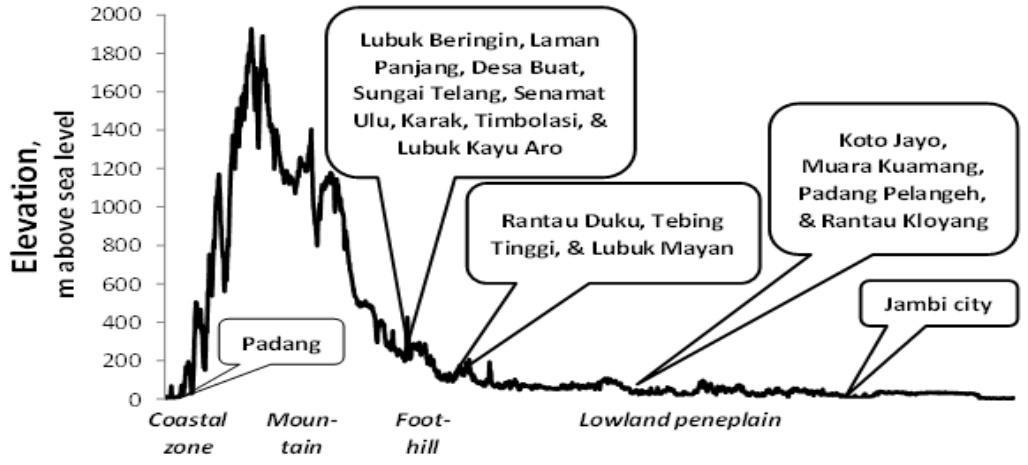
Source: Villamor et al. 2013

… Ranks 2nd in carbon emissions from deforestation & degradation in the world

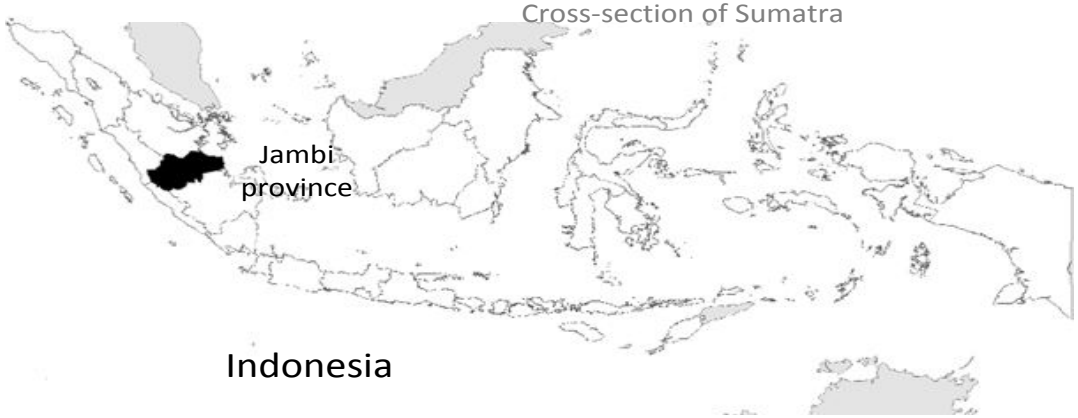
What about the local actors?



Case study site

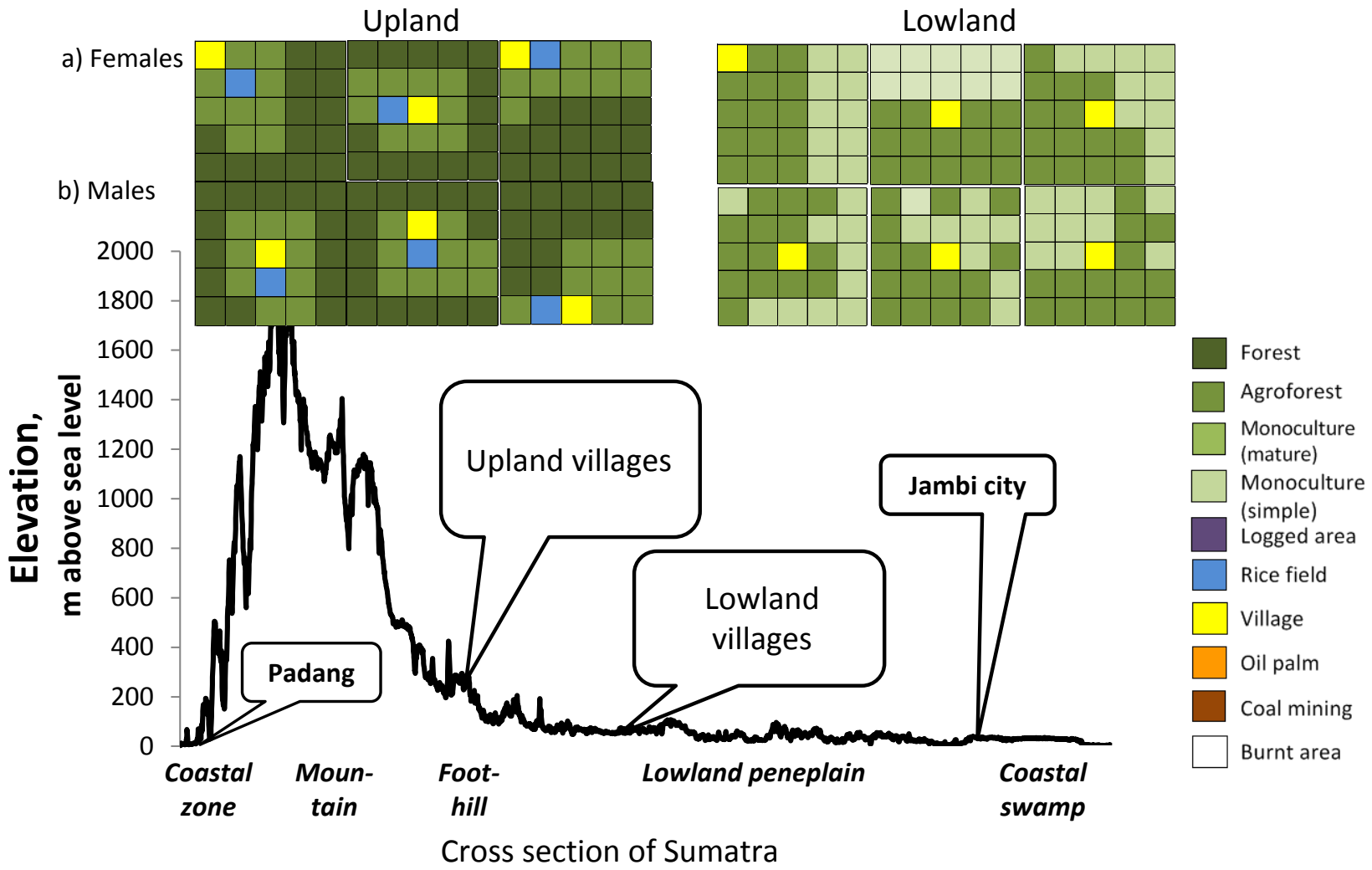


Cross-section of Sumatra



- characterizes the individual households
- identifies factors affecting land-use decisions
- N = 726 of which 30% are females

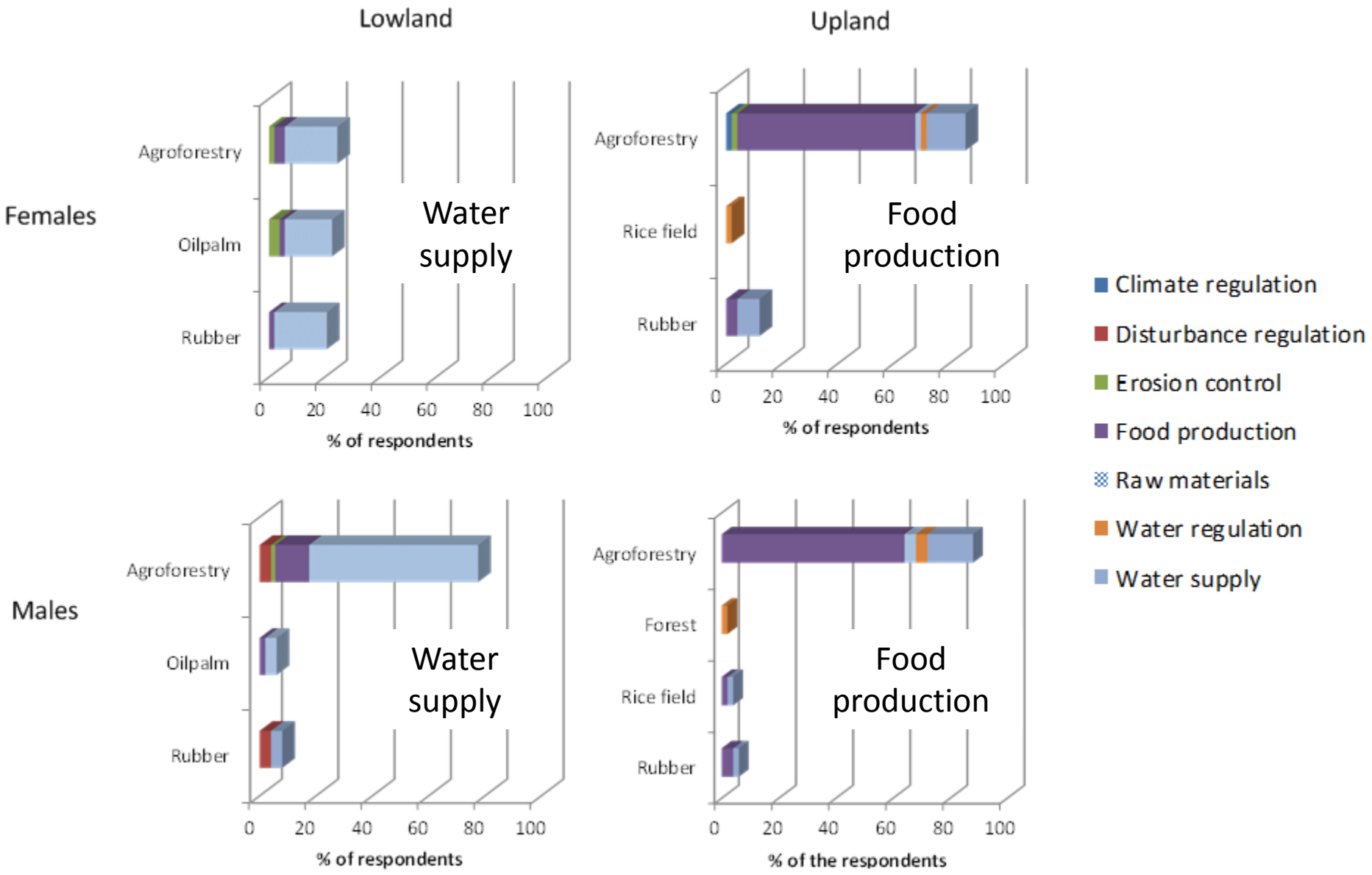
Gender perception: spatial land-use arrangement



Cross section of Sumatra

- land use types valuable for livelihood: rice field & rubber agroforest (Upland); rubber agroforest (lowland)
- pattern of land use change (e.g., fragmentation, clustering)

Land use and perceived ES/functionality



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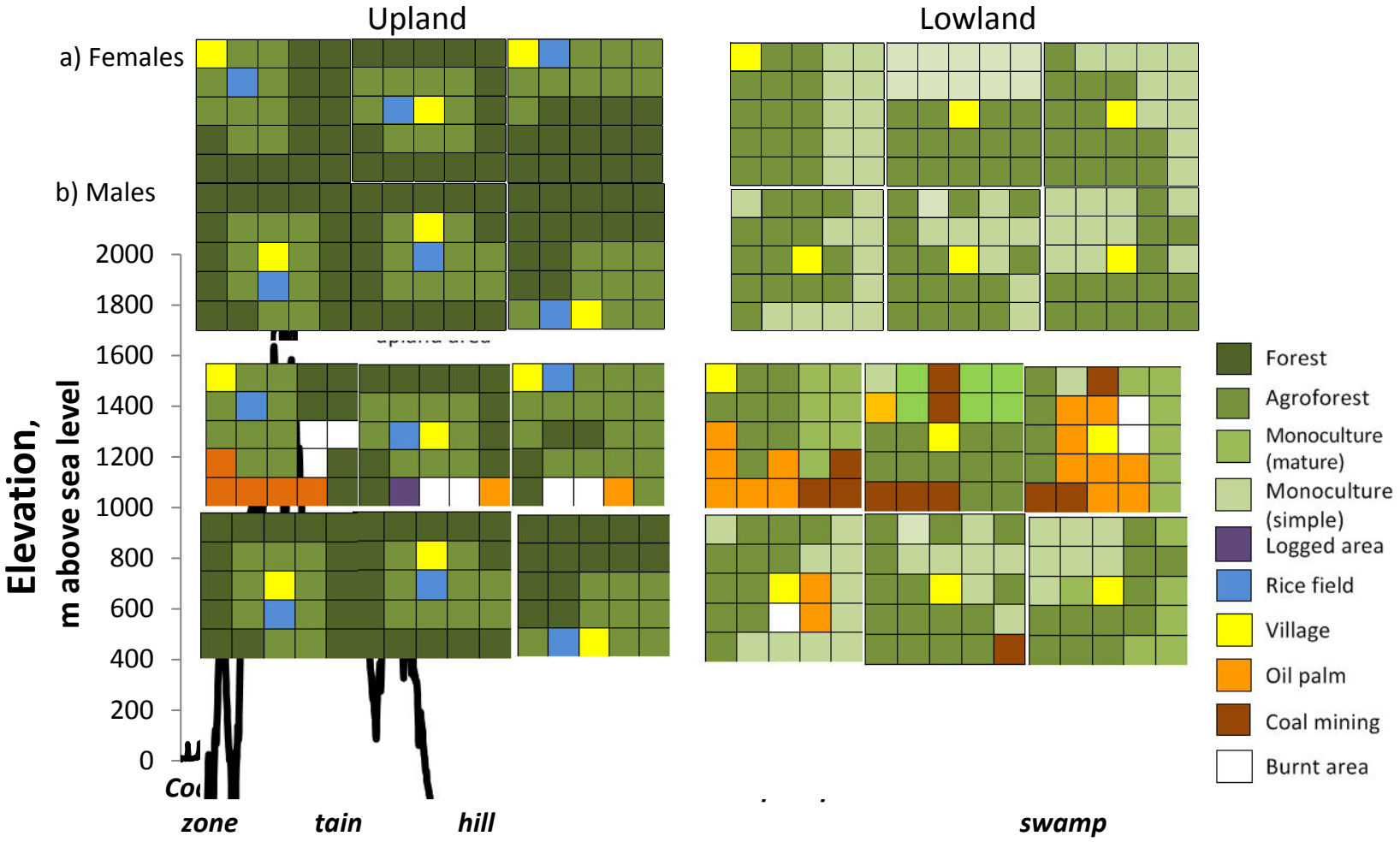
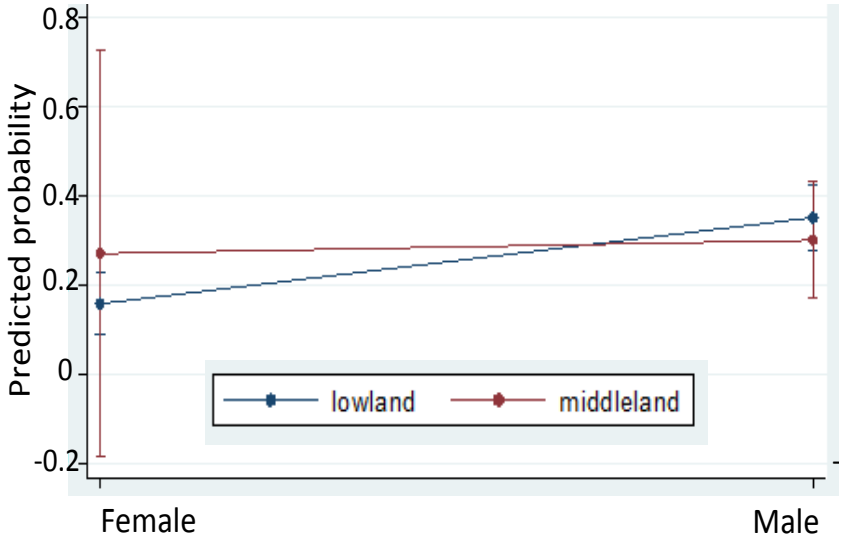
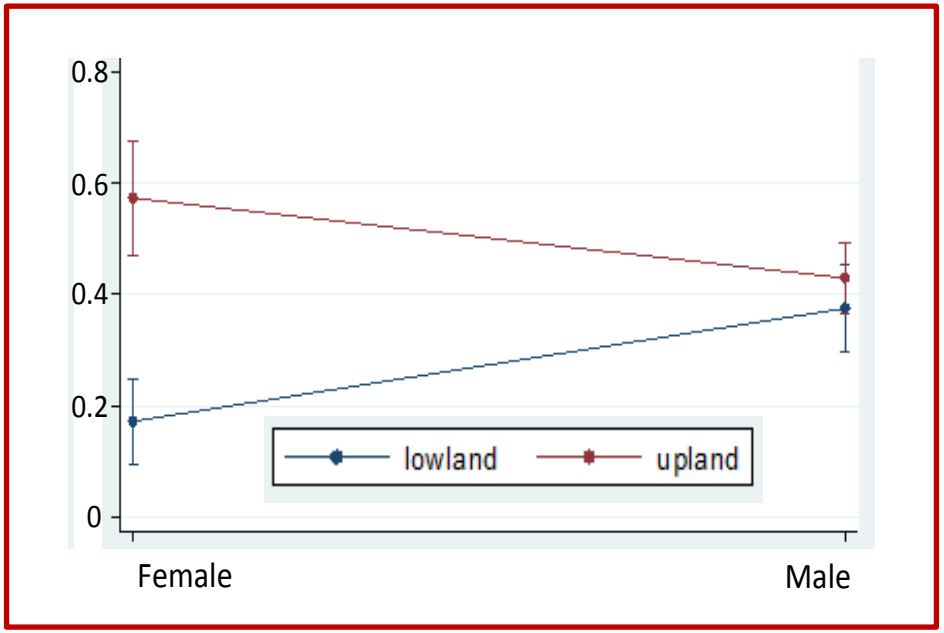
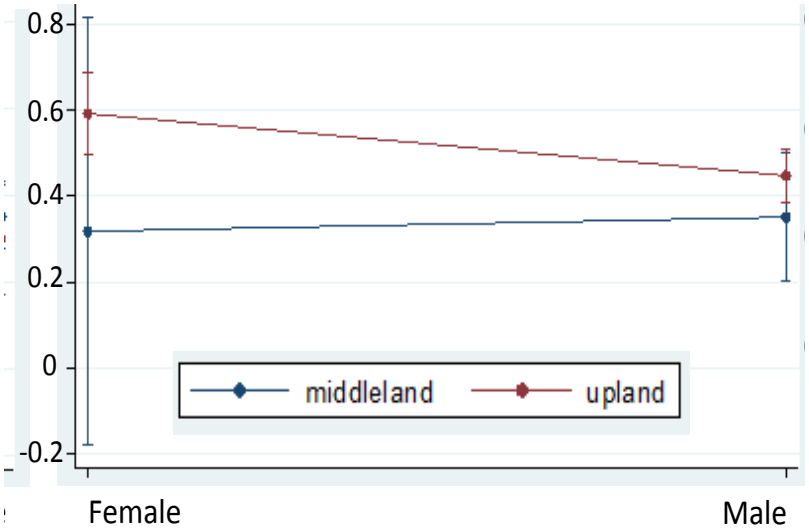


Cross section of Sumatra

Gender and elevation interactions

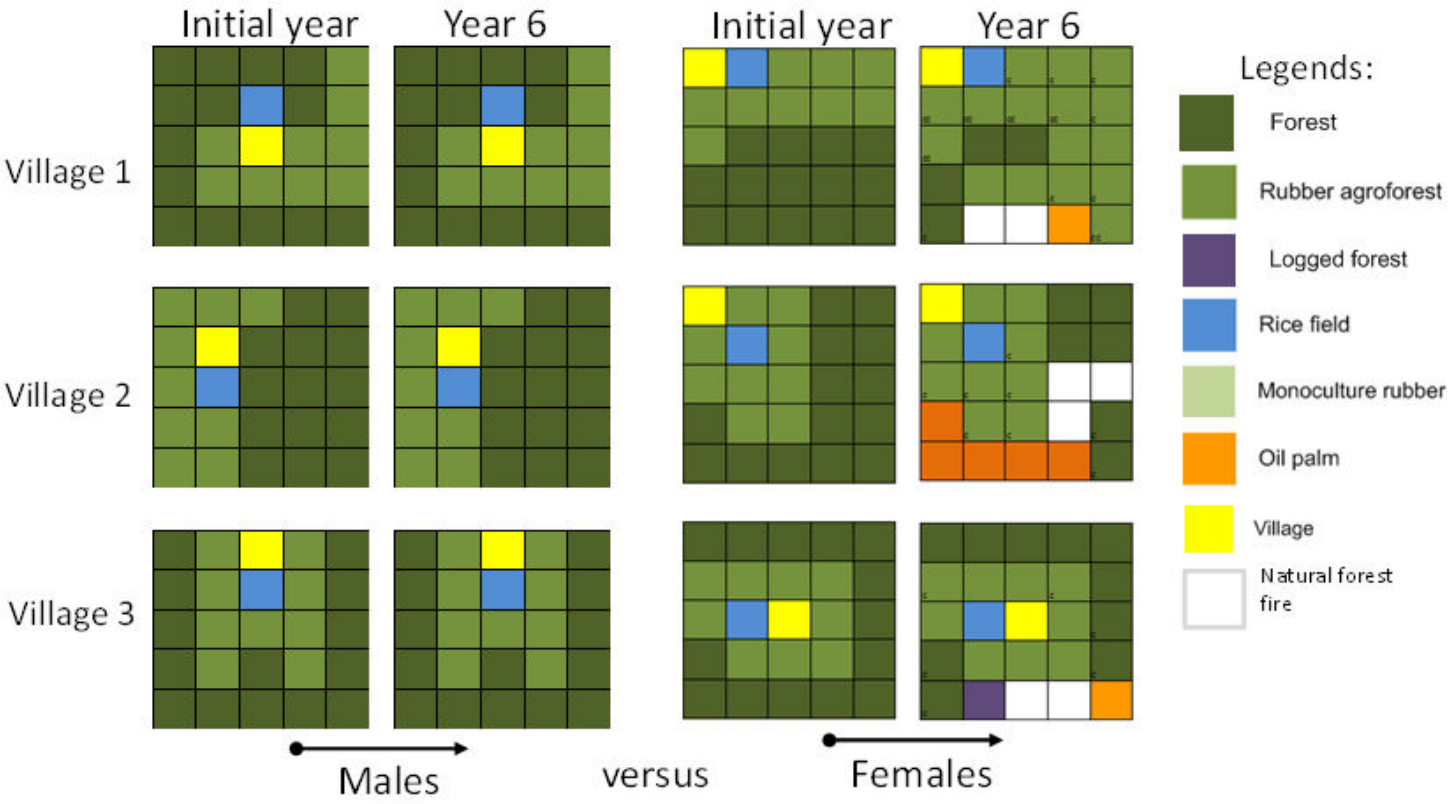






Gender of respondents

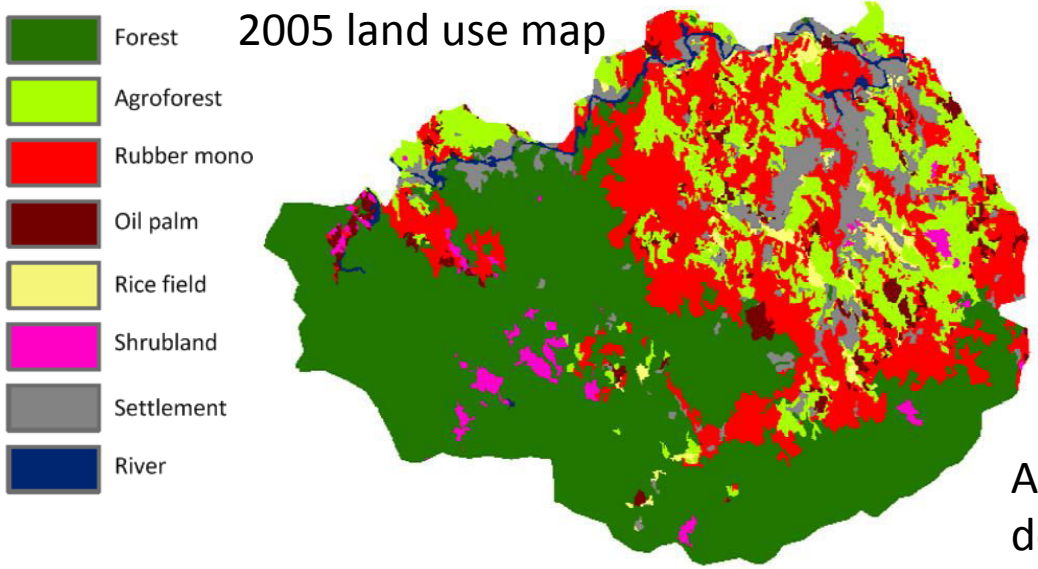
Who is more dynamic and explorative?



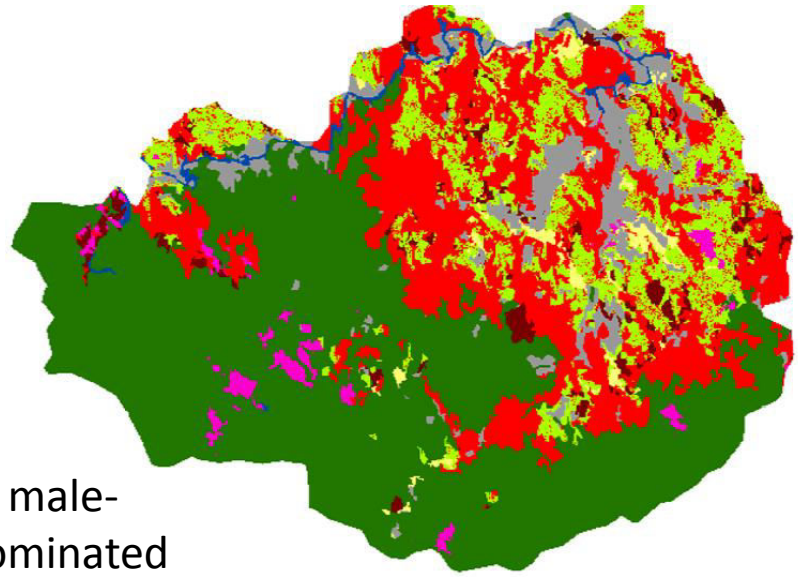
Women from both the upland and lowland villages who played the RPG approached land use change in a more dynamic way than men from the same villages, reacting more positively to external investors proposing logging or oil palm conversion.

Villamor et al. 2013, *Mitigation and Adaptation Strategies for Global Change*

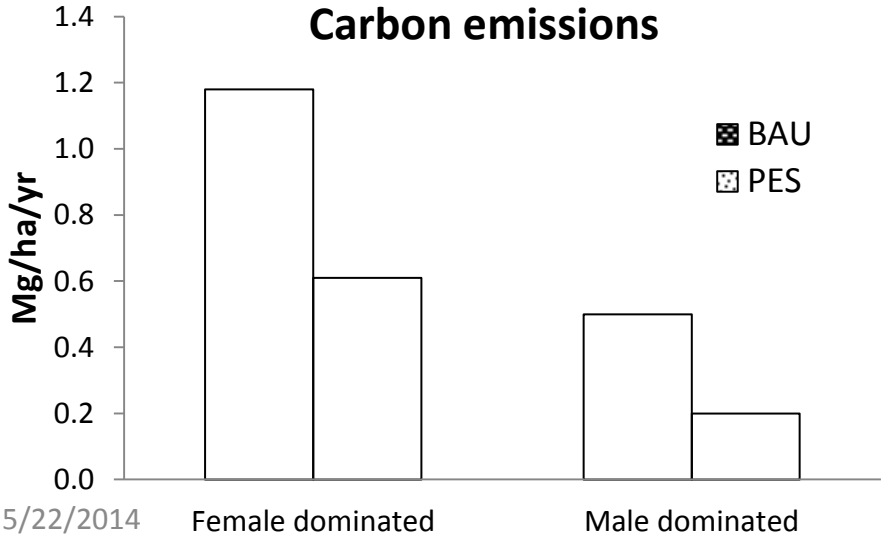
Ecosystem goods & services

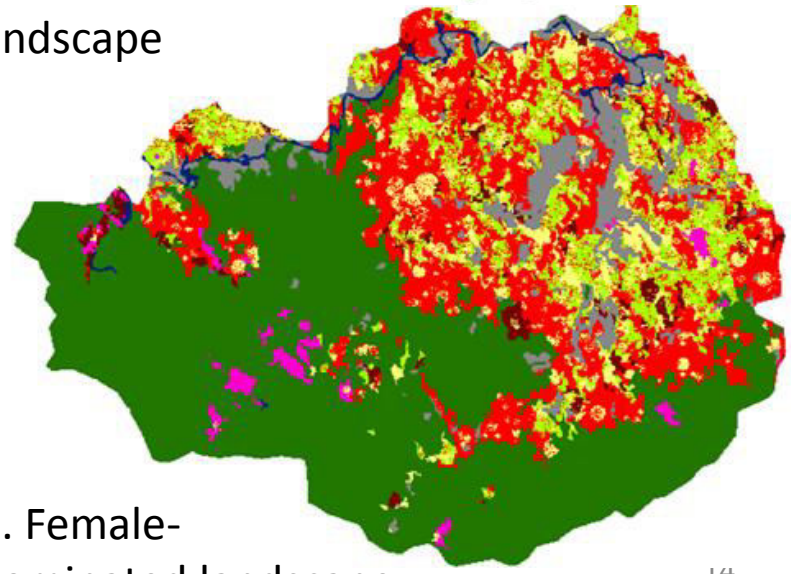


2005 land use map



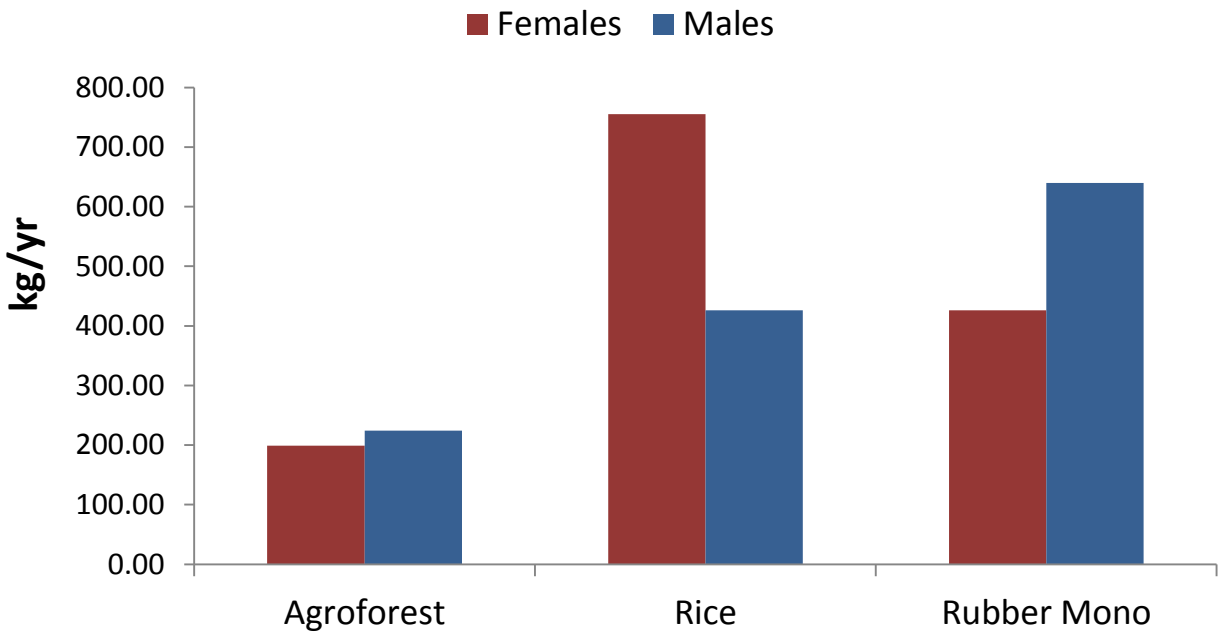
A. male-dominated landscape





B. Female-dominated landscape

Ecosystem goods & services



Business-as-usual scenario

Take home message:

- Gender matters in land-use decision making
- Gender differentiated roles may affect the ecosystem service delivery
- Gender differentiation should be considered in policies addressing tradeoffs.

Villamor, G.B., M. van Noordwijk, U. Djanibekov, M.E. Chiong-Javier and D. Catacutan. 2014. Gender differences in land-use decisions: shaping multifunctional landscapes?. *Current Opinion in Environmental Sustainability*, 6: 128-133.

Villamor, G.B., Desianti, F., Akiefnawati, R., Amaruzaman, S. and M. van Noordwijk. 2013. Gender influences decisions to change land use practices in the tropical forest margins of Jambi, Indonesia. *Mitigation and Adaptation Strategies for Global Change*, DOI: 10.1007/s11027-013-9478-7

Villamor, G.B., Leimona, B., and M. van Noordwijk. 2013. RUPES role-playing game (RPG). In: van Noordwijk, M., Lusiana, B., Leimona, B., Dewi, S., and D. Wulandari (eds.): Negotiation-support toolkit for learning landscapes. World Agroforestry Centre, 245-248.

Thank you for your attention

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