



FOR-247

Methods and Tools in Tropical Forestry

Welcome

This course will be team taught by

Prof. Edward Webb

Prof. Markku Kanninen

Dr. Eshetu Yirdaw

Dipjoy Chakma

Adrian Monge

Johanness Jamaludin

Who is this course for?

This course is for anyone who intends to conduct field work in forestry, agroforestry, livelihoods, agriculture or similar human-natural resources interface.

This course is mandatory for those who have signed up for FOR-248, Tropical Forestry field course

An aerial photograph of a tropical landscape. In the foreground, there is a dense, lush green forest. A river or stream flows through the middle ground, surrounded by a mix of forest and open areas. In the background, there are rolling green hills and a range of mountains under a clear blue sky.

FOR-247

Methods and Tools in Tropical Forestry

Learning outcomes of this course

You will learn the basic concepts and techniques for:

- Land use and land cover interpretation and basic analysis
- Forest inventory, biomass and carbon analysis
- Biodiversity analysis in forested landscapes
- Value-chain analysis of forest products
- Livelihoods and vulnerability analyses of farmers

You will explore issues of organization and logistics of field work





Tropical forestry in the 21st Century

Tropical forestry has **evolved** from a purely **technical science**:

Surveying: Estimating timber volume

Planning: Tree mapping, skid trail building, landing

Harvesting: Directional felling, winching, hauling

Silviculture: Poison girdling, liana cutting, enrichment planting

Modeling: Estimating future yields

Into a new form of **multi-disciplinary ecosystem management**, which includes:

Non-timber forest product value, yields and use

Agroforestry systems

Biodiversity management and conservation

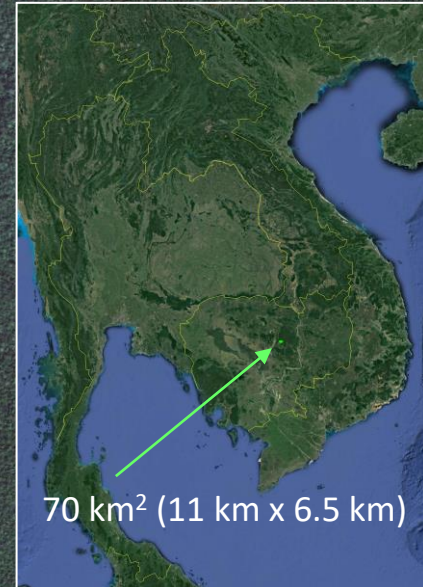
Landscape management and modeling

Livelihoods and vulnerability

Product supply chains and economics

Why has this evolution in forestry occurred?

2010



1 km

2018

1 km

2010



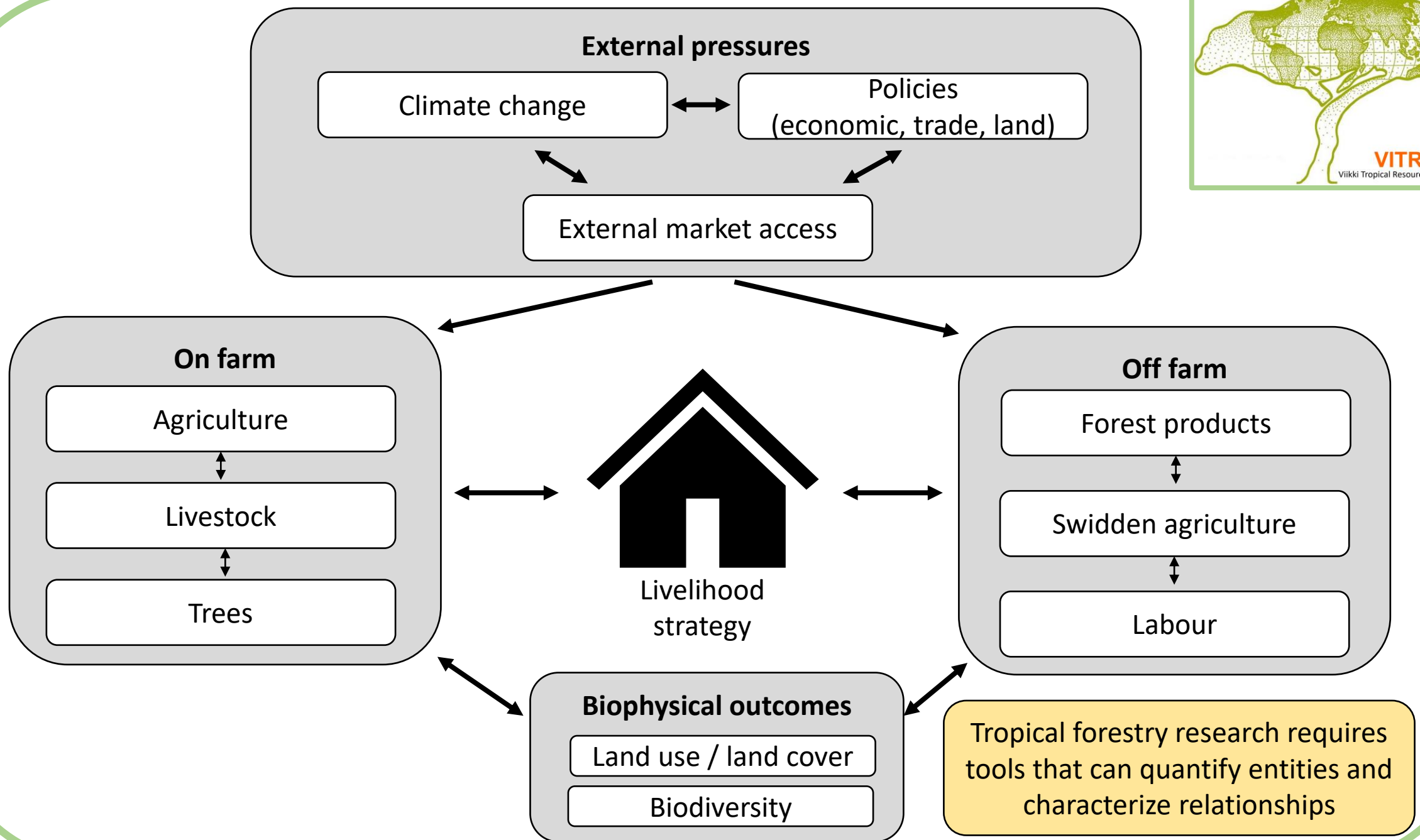
1 km

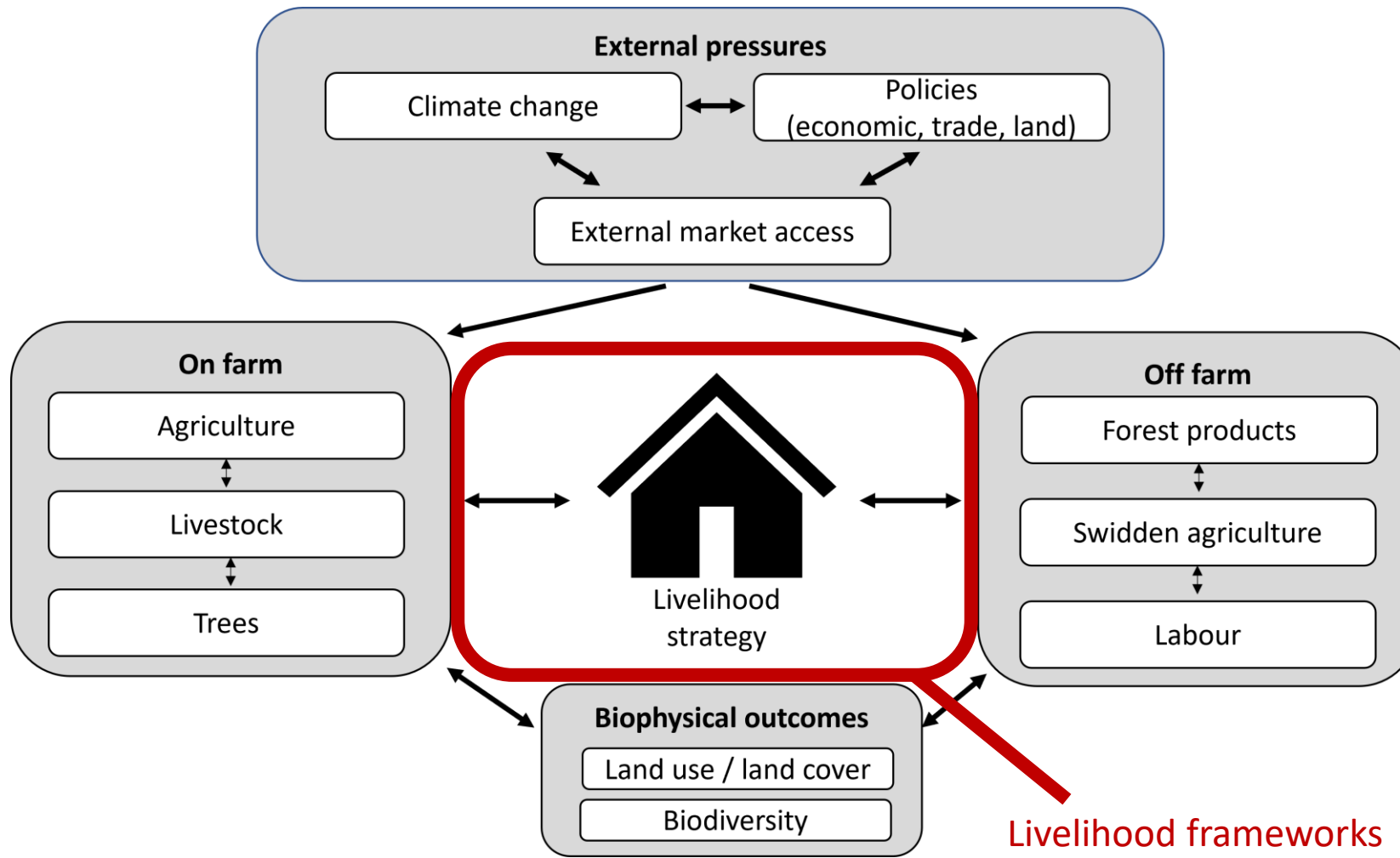
2018



Go to Google Earth Street View

1 km





Livelihood frameworks
Quantification of livelihood contributions
Assets
Behaviour and perceptions: risk, reward
Gender roles

Site history



Resource mapping

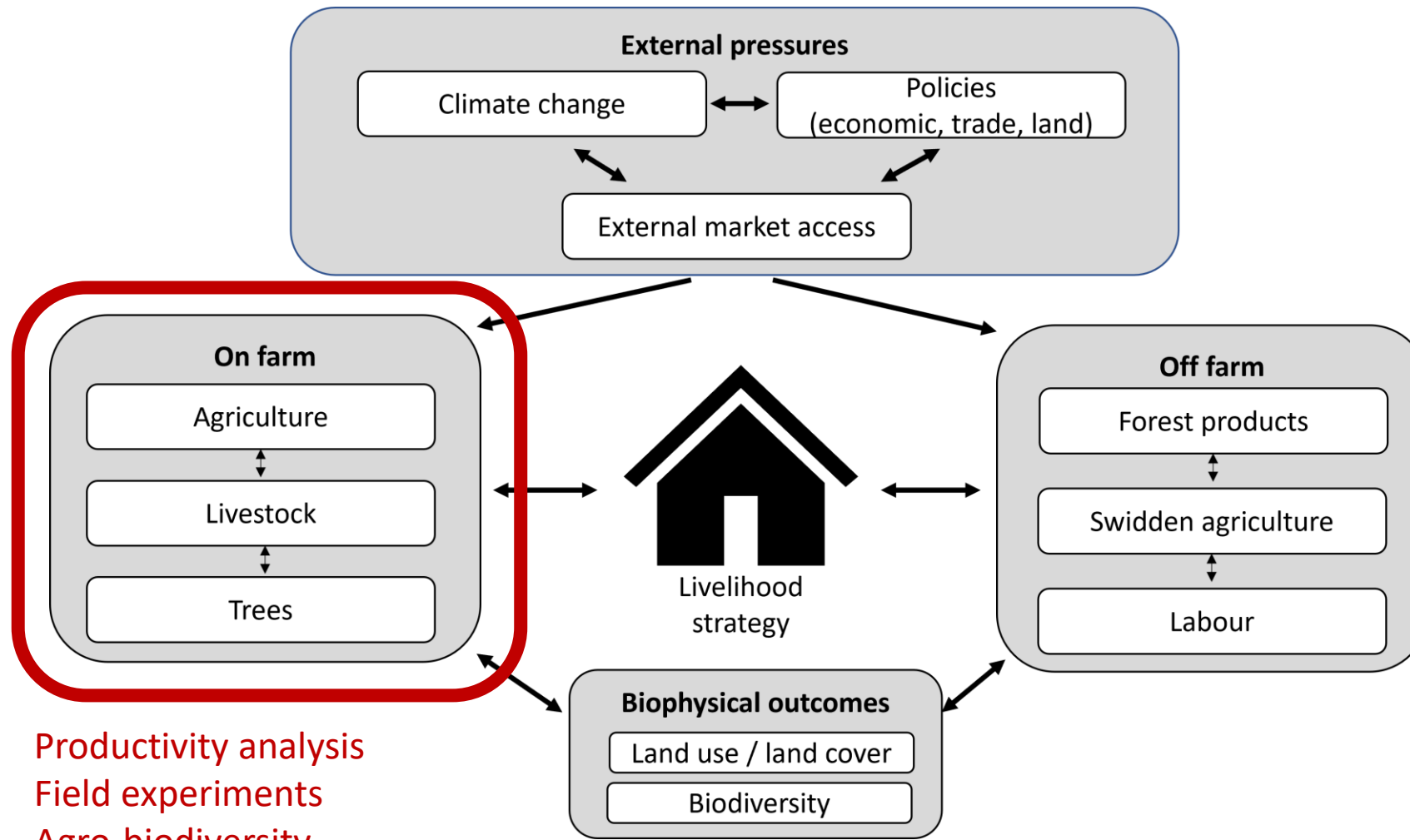


Focus group discussion

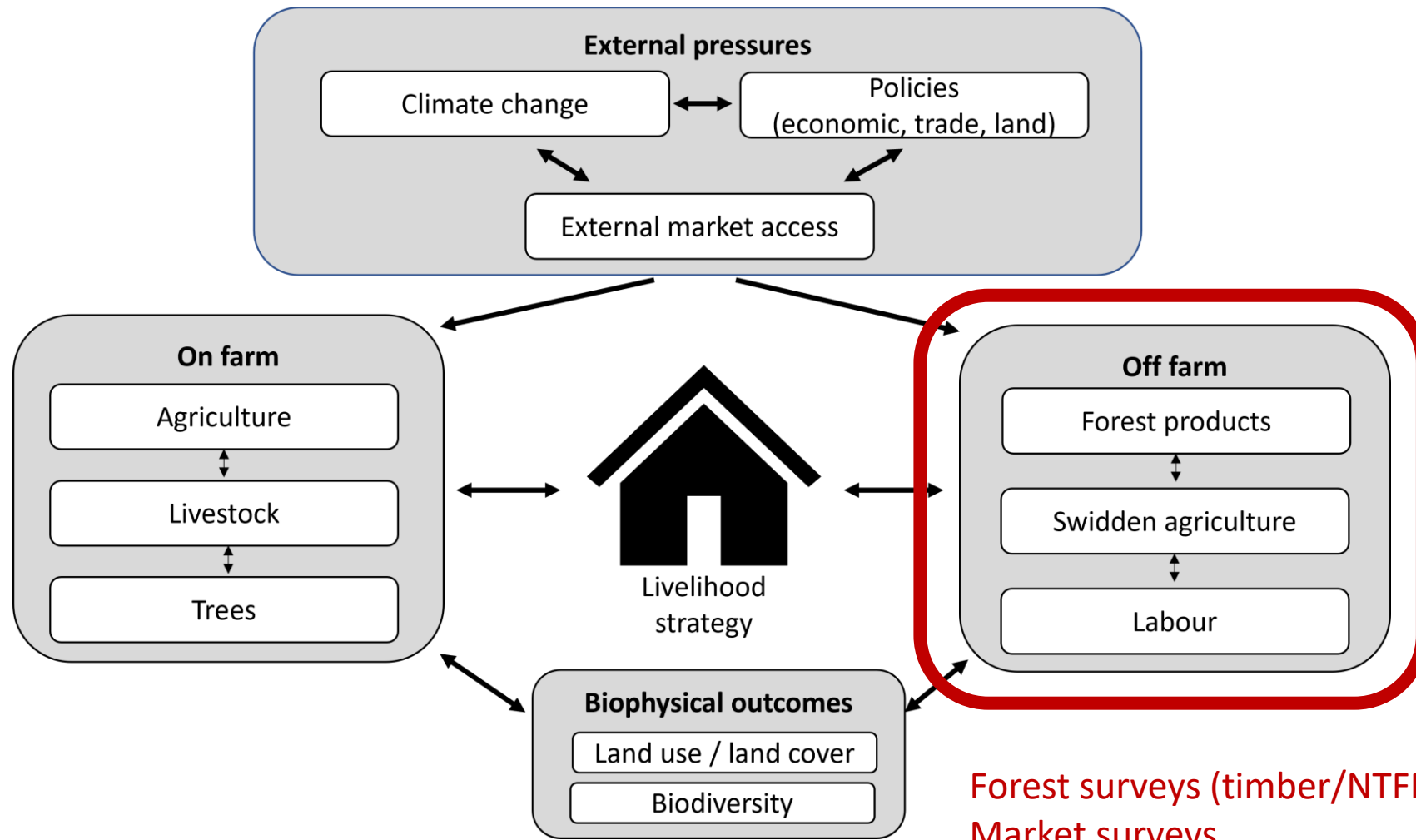


Key informant interviews

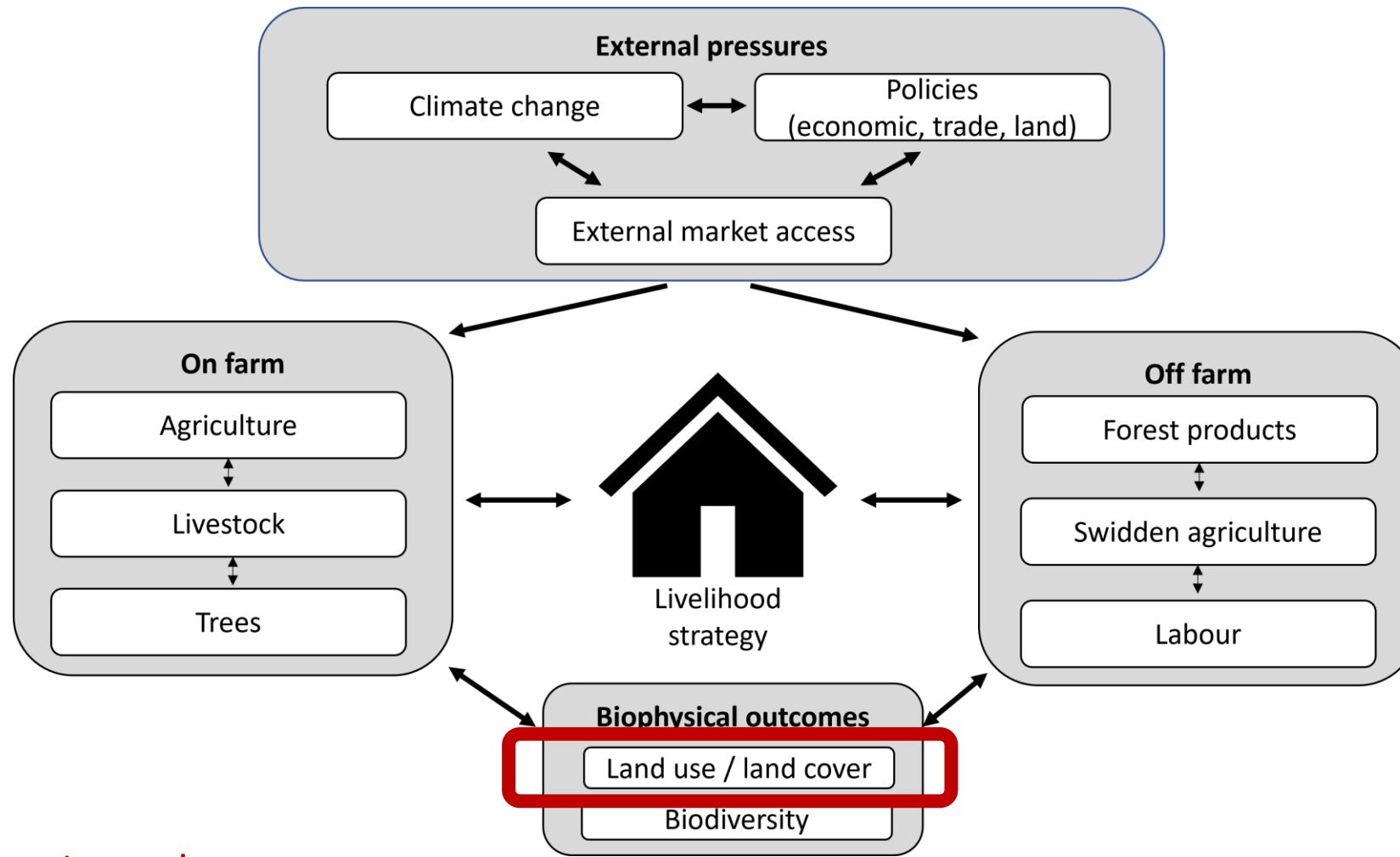




Productivity analysis
Field experiments
Agro-biodiversity
Cultural practices
Gender roles
Socioeconomic variation (e.g. caste)
Economics (Investment-return)
Energetics (e.g. input-output)
Plantation practices

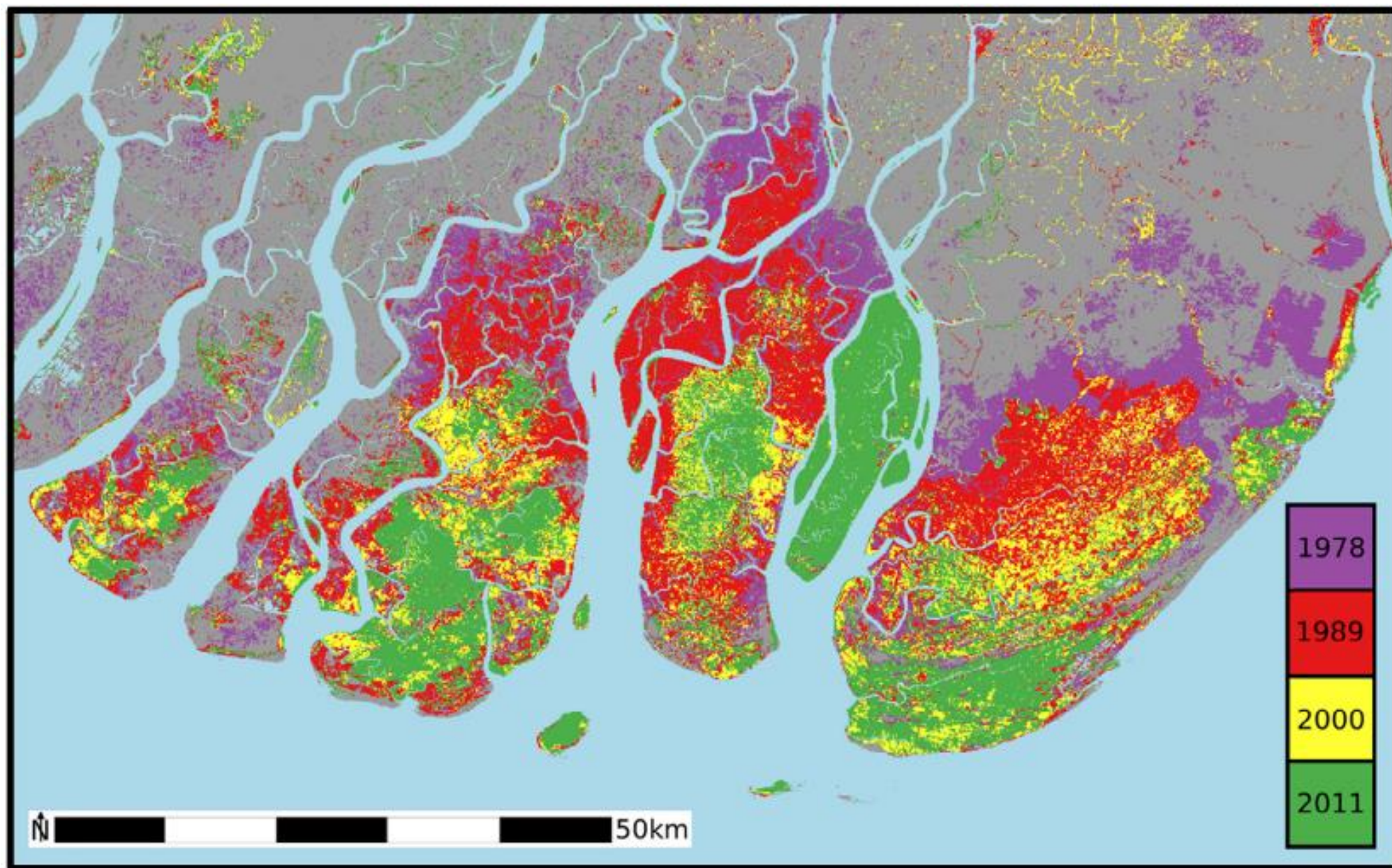


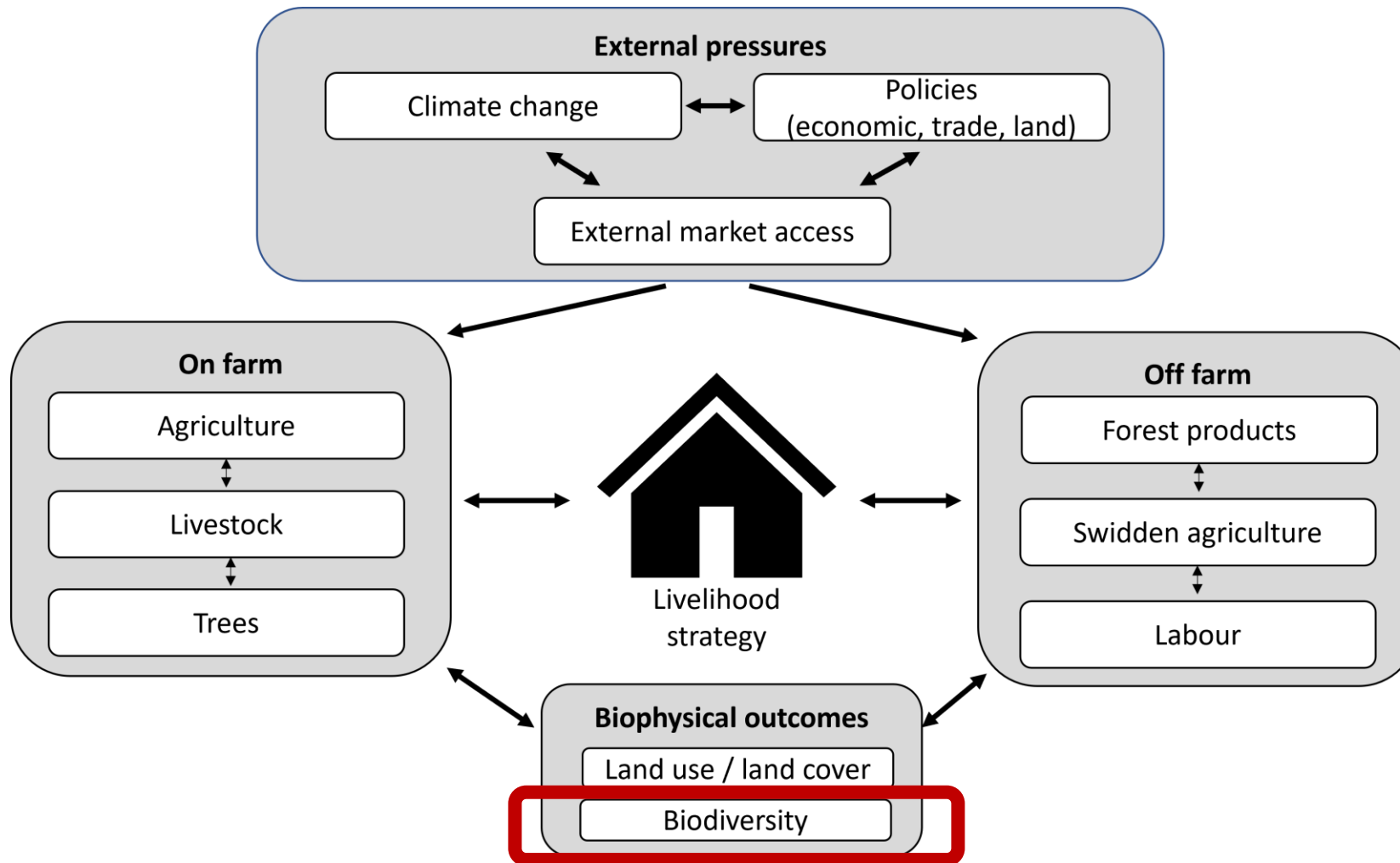
Forest surveys (timber/NTFP)
Market surveys
Culture / traditional practices
Migration / remittances / economics
Forest ecology (disturbance, succession)
Gender and changing women's roles
Demographics (human geography)



Remote sensing
Land use/cover mapping
Field-based land interpretation
Spatiotemporal LULC change analysis (modeling)
Historical transects (site history)







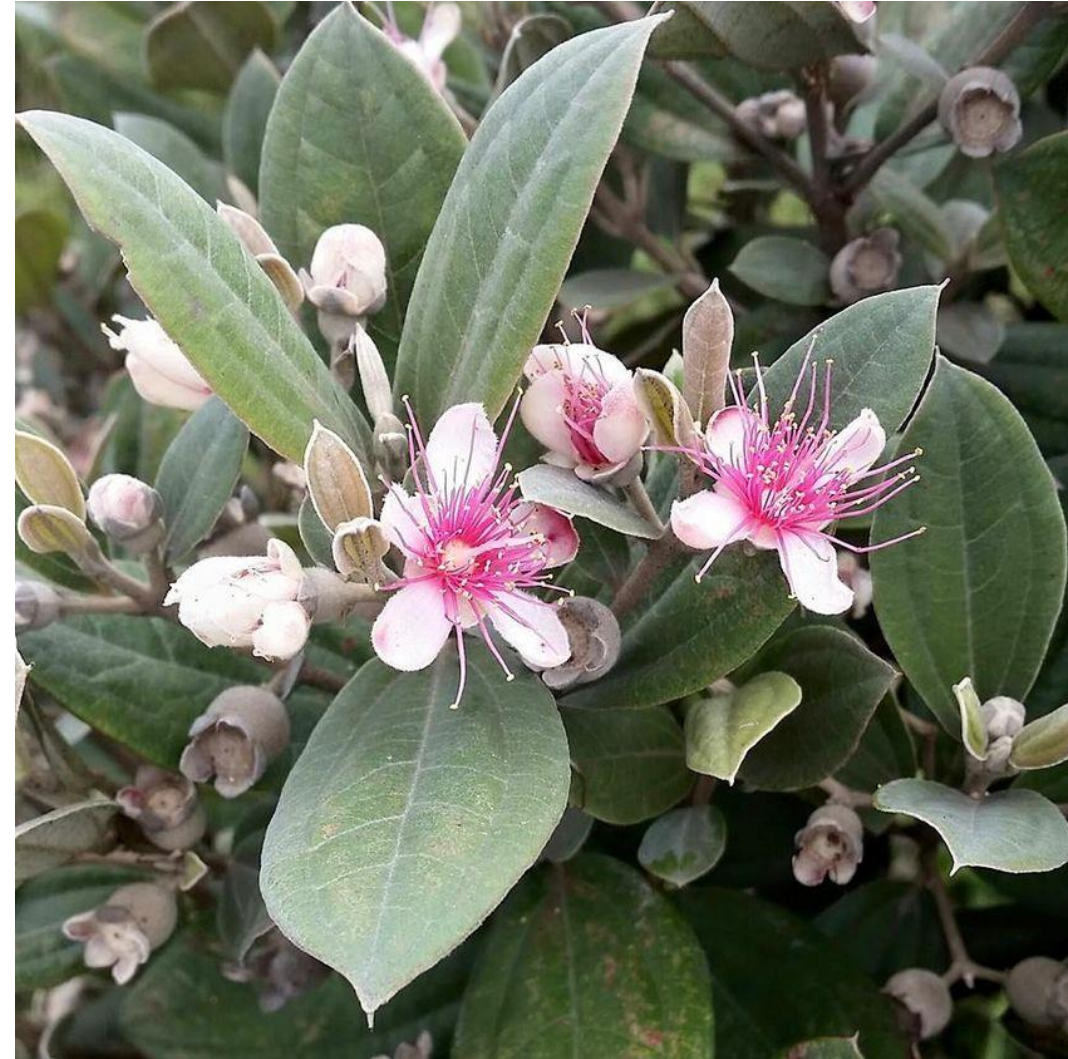
Forest inventories
Taxon-specific surveys





Photo: Sean Pang

Botanical photography, aka “botanical tourism” (the late J.F. Maxwell)



Thotupola 28/5

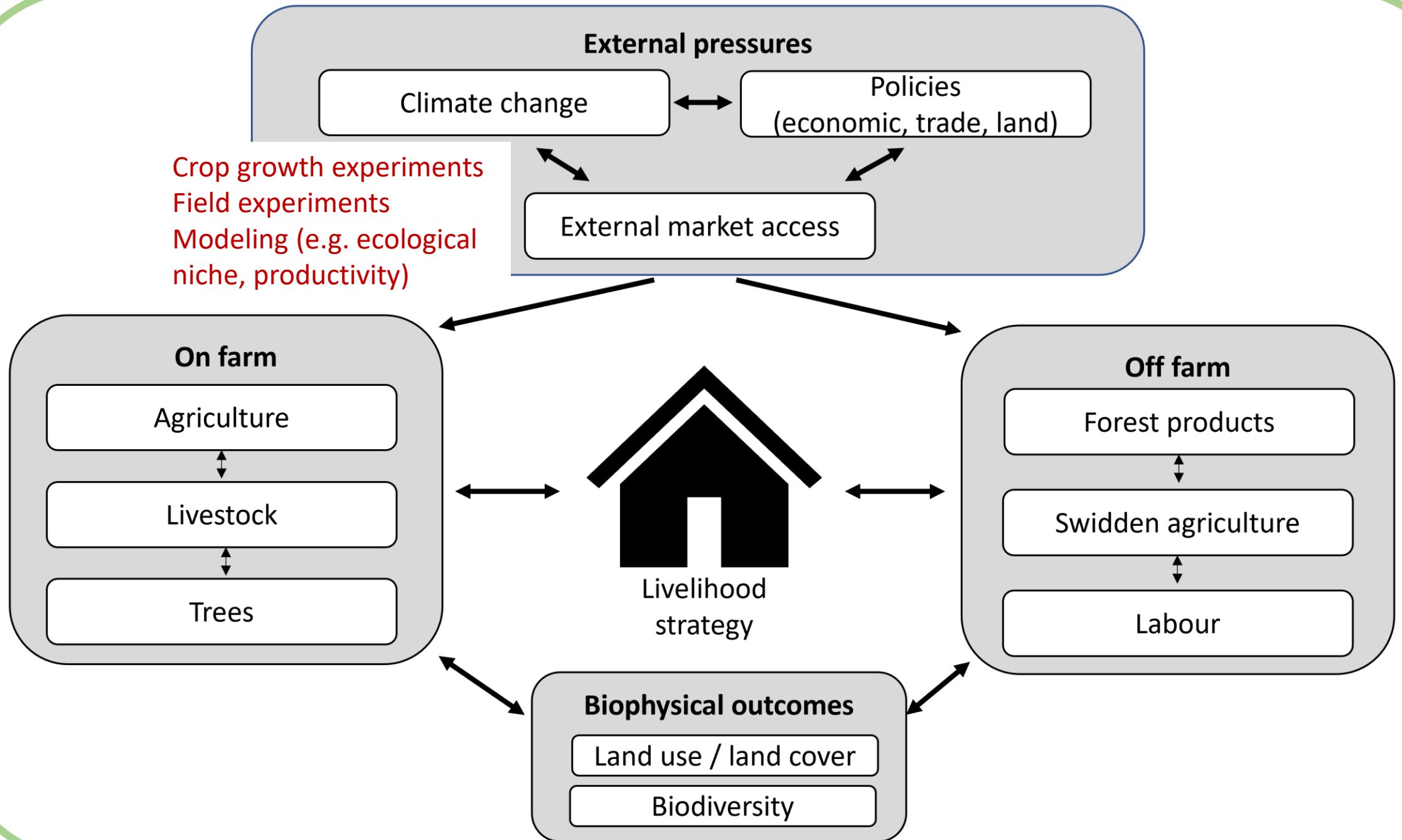
- 1 - *Glochidion pycnocarpum*
- 1 - *Eurya* ~~ceylanica~~ ~~ceylanica~~ *ceylanica* or *chinensis*
- 1 - *Psychotria zeylanica* / *nigra*
- 1 - *Neolitsea fuscata*
- 2 - *Elaeocarpus coreaceus*
- 1 - *Plectranthus inflatus*
- 1 - *Actinodaphne nobochina*
- 1 - *Cinnamomum ovalifolium*
- 2 - *Rhododendron arboreum*
- 2 - *Rhodomyrtus tomentosa*
- 2 - *Calophyllum*
- 1 - *Litsea ovalifolia*
- 2 - *Syzygium sclerophyllum*
- 2 - *Osbeckia lanata*
- 1 - *Hedyotis coccinea*
- 2 - *Osbeckia aspera*

① Rachel - Leena
② Hao Wen - Jia Ying

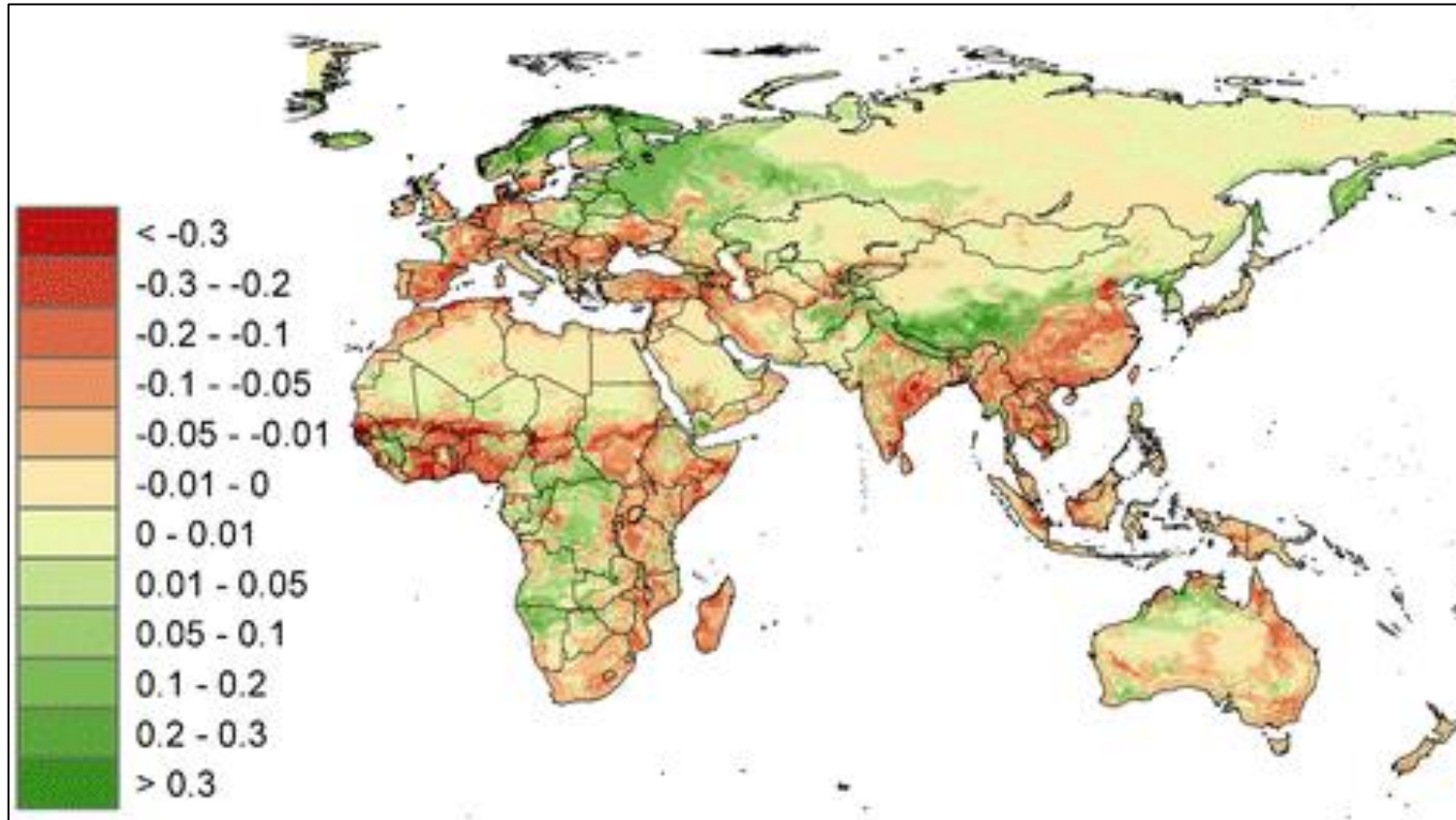




Crop growth experiments
Field experiments
Modeling (e.g. ecological
niche, productivity)

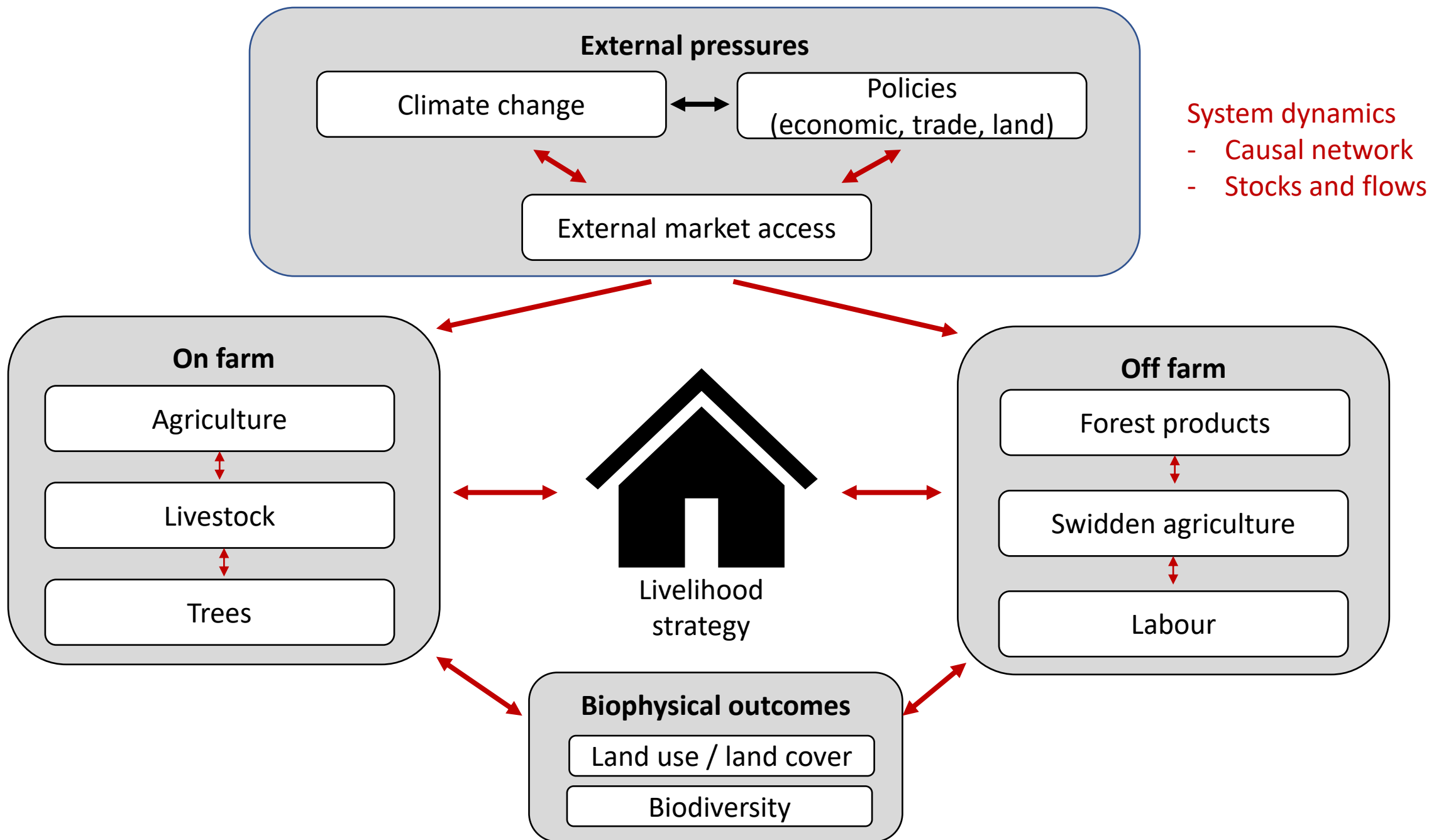


Global (or regional) assessment of the climate change – agriculture interface: ecological niche modeling

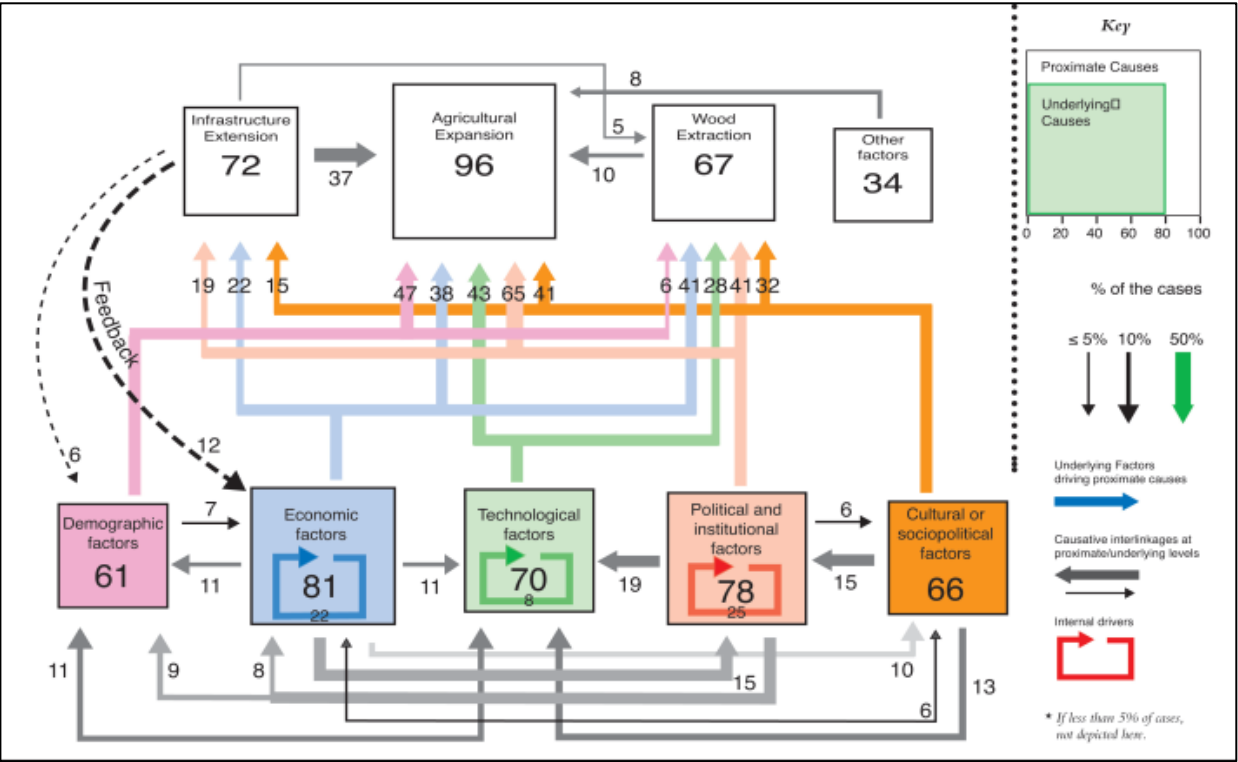


Modeled change in suitability for agriculture under the A2a scenario of climate change for the year 2050 between current and future conditions (i.e., *change = future-current*). Positive values denote better conditions, negative values indicate worsening.

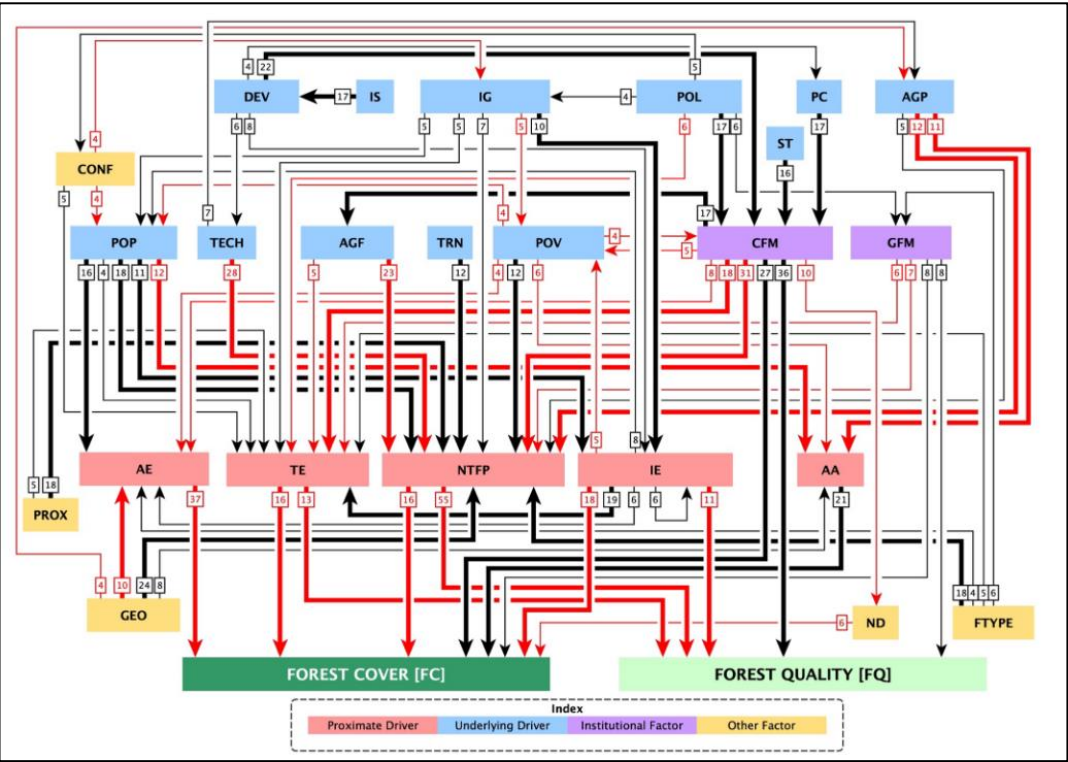
Beck 2013



System dynamics approach to whole-system relationships: causal network analysis



Causative pattern of **tropical deforestation** (n = 152 cases).
Geist and Lambin 2002



Causal network diagram showing the relationships between proximate and underlying drivers, institutional factors, and other factors of **forest change in the Himalayas**.
Verma et al. 2021

Respect for the culture and the lives of people from whom we learn



An aerial photograph of a tropical landscape. In the foreground, there is a dense, lush green forest. A river or stream flows through the middle ground, surrounded by a mix of forest and open areas. In the background, a range of mountains is visible under a clear sky.

FOR-247

Methods and Tools in Tropical Forestry

To come later: the non-glamorous methods and tools

Organization

Team management

Data handling (university policies)

FPIC

Quality control: error checking and data entry

Open science



FOR-247

Methods and Tools in Tropical Forestry

The rest of the course

Date	Topic	Lecturer
6 Sept	Open	
8 Sept	Introduction	Prof. Edward Webb
13 Sept	Land change	Prof. Edward Webb
15 Sept	Land cover tutorial 1	Johanness Jamaludin
20 Sept	Land cover tutorial 2	Johanness Jamaludin
22 Sept	Inventory	Adrian Monge
27 Sept	Biodiversity	Dr. Eshetu Yirdaw
29 Sept	Livelihoods and resilience mechanisms 1	Prof. Markku Kanninen
4 Oct	Discussion (land cover classification)	Johanness Jamaludin
6 Oct	Livelihoods and resilience mechanisms 2	Prof. Markku Kanninen
11 Oct	Value chains	Dipjoy Chakma
13 Oct	Open	
18 Oct	Field course meeting (only for FOR-248 participants)	All
20 Oct	Open	



FOR-247

Methods and Tools in Tropical Forestry

The rest of the course

Date	Topic	Task (if applicable)
15 Sept	Land cover tutorial 1	Task 1: Basic land cover analysis (due 20 Sept)
20 Sept	Land cover tutorial 2	Task 2: Visual interpretation of land cover (due 27 Sept)
27 Sept	Biodiversity	Task 3: Biodiversity inventory (due date TBD)
29 Sept	Livelihoods and resilience mechanisms 1	Task 4: Livelihood interviews (due 6 Oct)
20 Oct		Task 5: Integrated preliminary assessment for study site

Evaluation and grading

Task 1: 20%

Task 2: 20%

Task 3: 20%

Task 4: 20%

Task 5: 20%

FOR-247

Methods and Tools in Tropical Forestry



Discussion / questions