Understanding social-ecological systems: Useful tools and concepts

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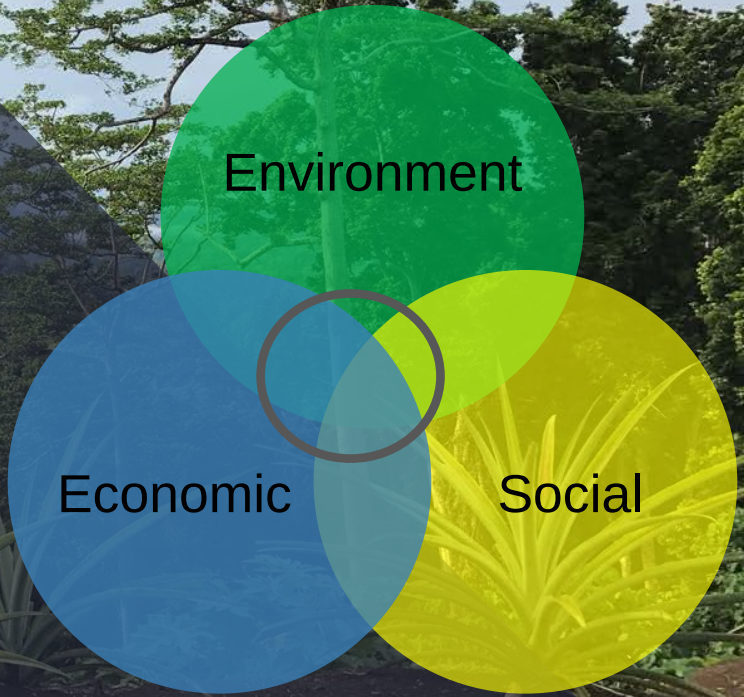
Systems thinking

- Views organisations/landscapes as integrated complex compositions of many interconnected systems
- Understanding patterns and find leverage points



“

“Systems thinking is a very simple, but powerful way to develop DIAGRAMS which specifically help us talk to each other about the parts of a system and how they fit together.

As we build a diagram together we are forced to talk about our underlying ideas and assumptions, so they become much less fuzzy. We may find that we cannot build a diagram that we both agree with.

This is a HUGE step forward, because now we have at least clarified our own understanding, and increased our understanding of the other person's "mental model".

Ed Gallaher
Assoc. Prof. Pharmacology and Behavioral Neuroscience
Oregon Health Sciences University

Entering the System

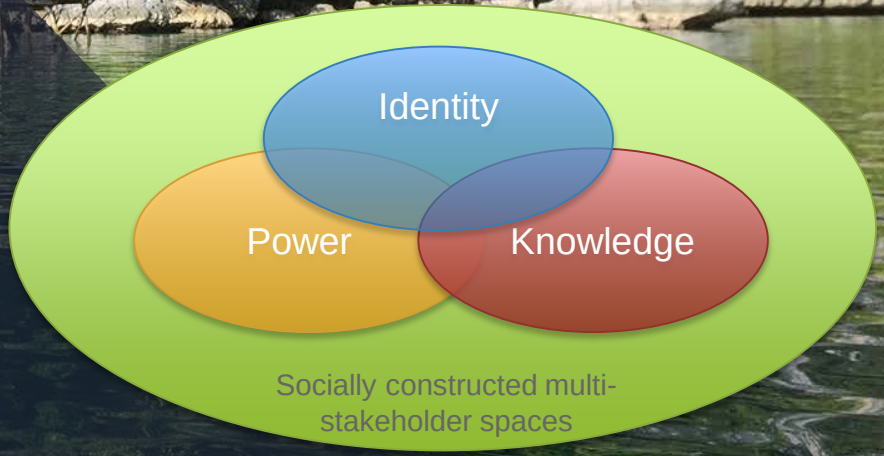
Methods:

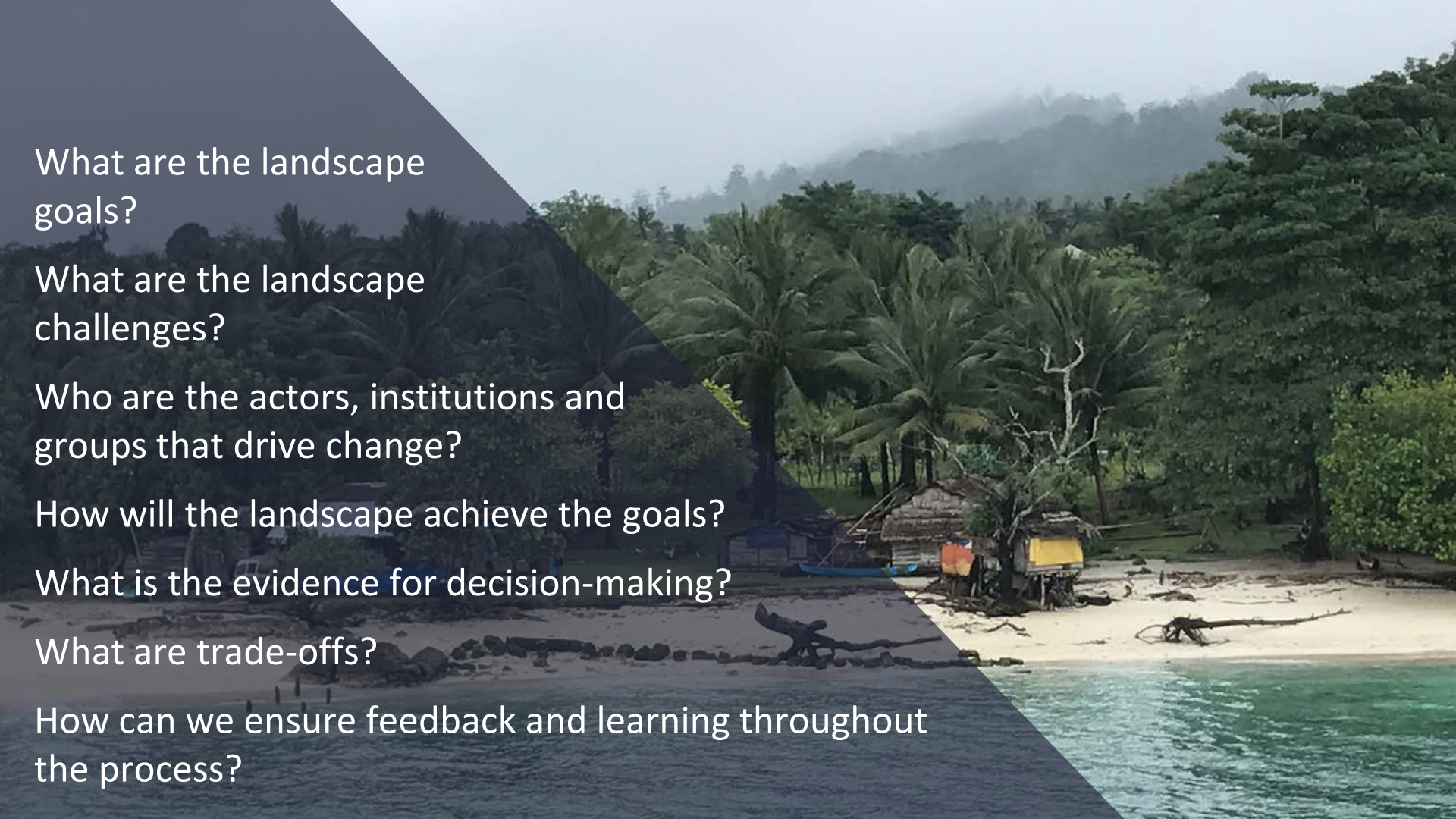
- Actor Network Analysis
- Theory of Change
- Systems Dynamic Modelling

Planners vs Seekers (Easterly,2006)

Appreciative enquiry (Cooperrider, M. 2008)

Constructivism





What are the landscape goals?

What are the landscape challenges?

Who are the actors, institutions and groups that drive change?

How will the landscape achieve the goals?

What is the evidence for decision-making?

What are trade-offs?

How can we ensure feedback and learning throughout the process?

ACTOR NETWORK ANALYSIS

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Why study networks?

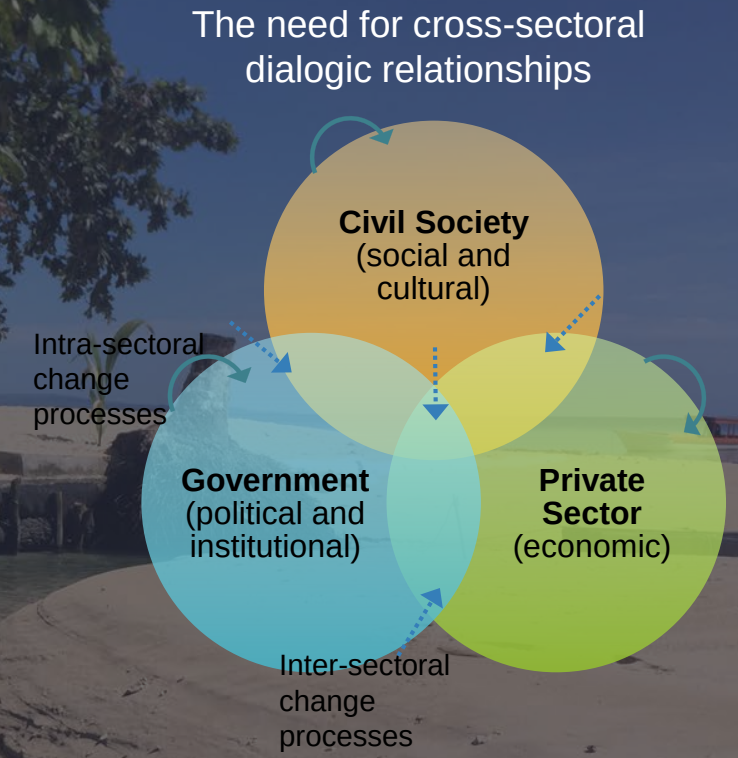
Many economic, political and social interactions

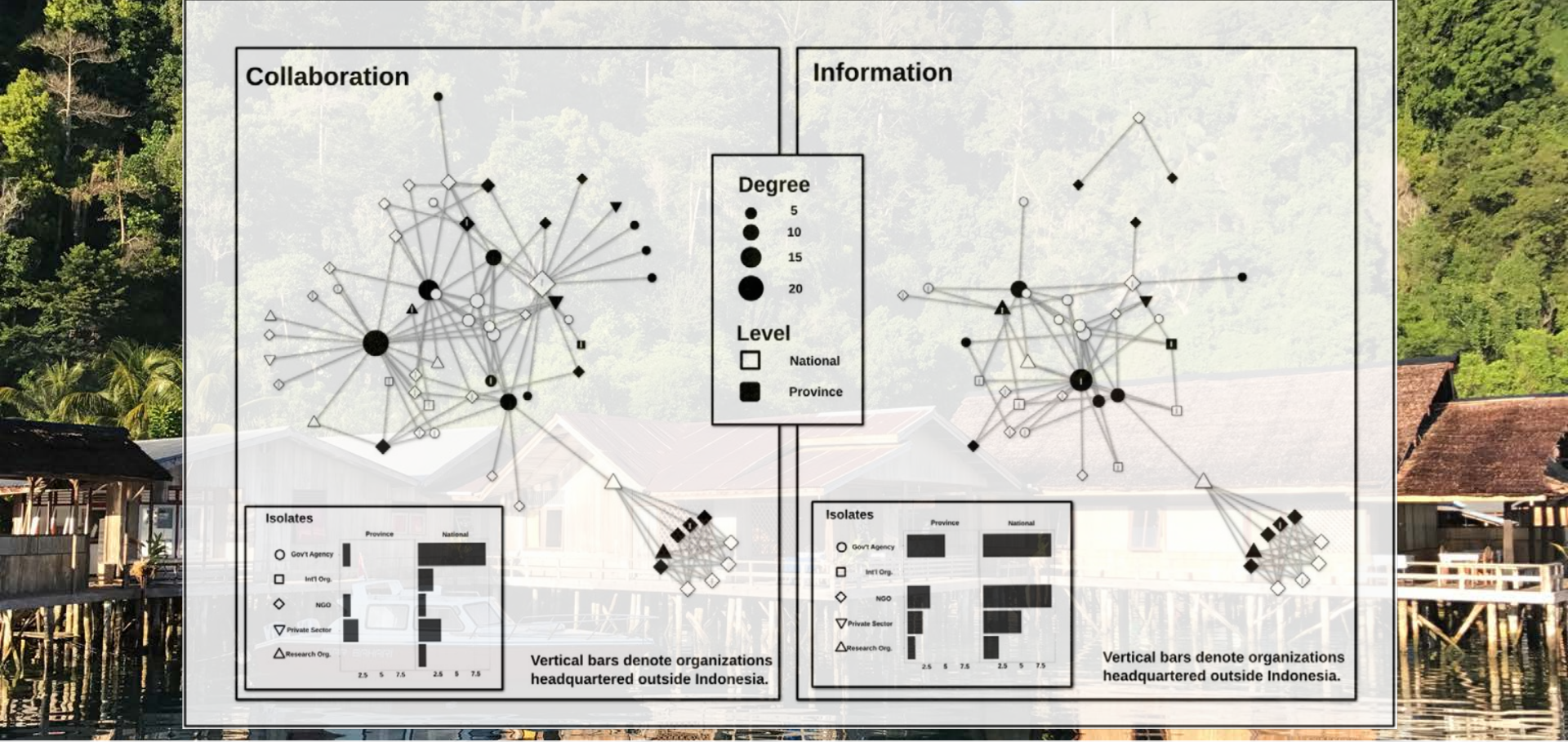
are shaped by the local structure of relationships:

- Sharing of information, favours, risks…
- Transmission of viruses, opinions…
- Trade of goods and services
- Markets (different locations and scales)
- Political alliances

Social network influences behaviour

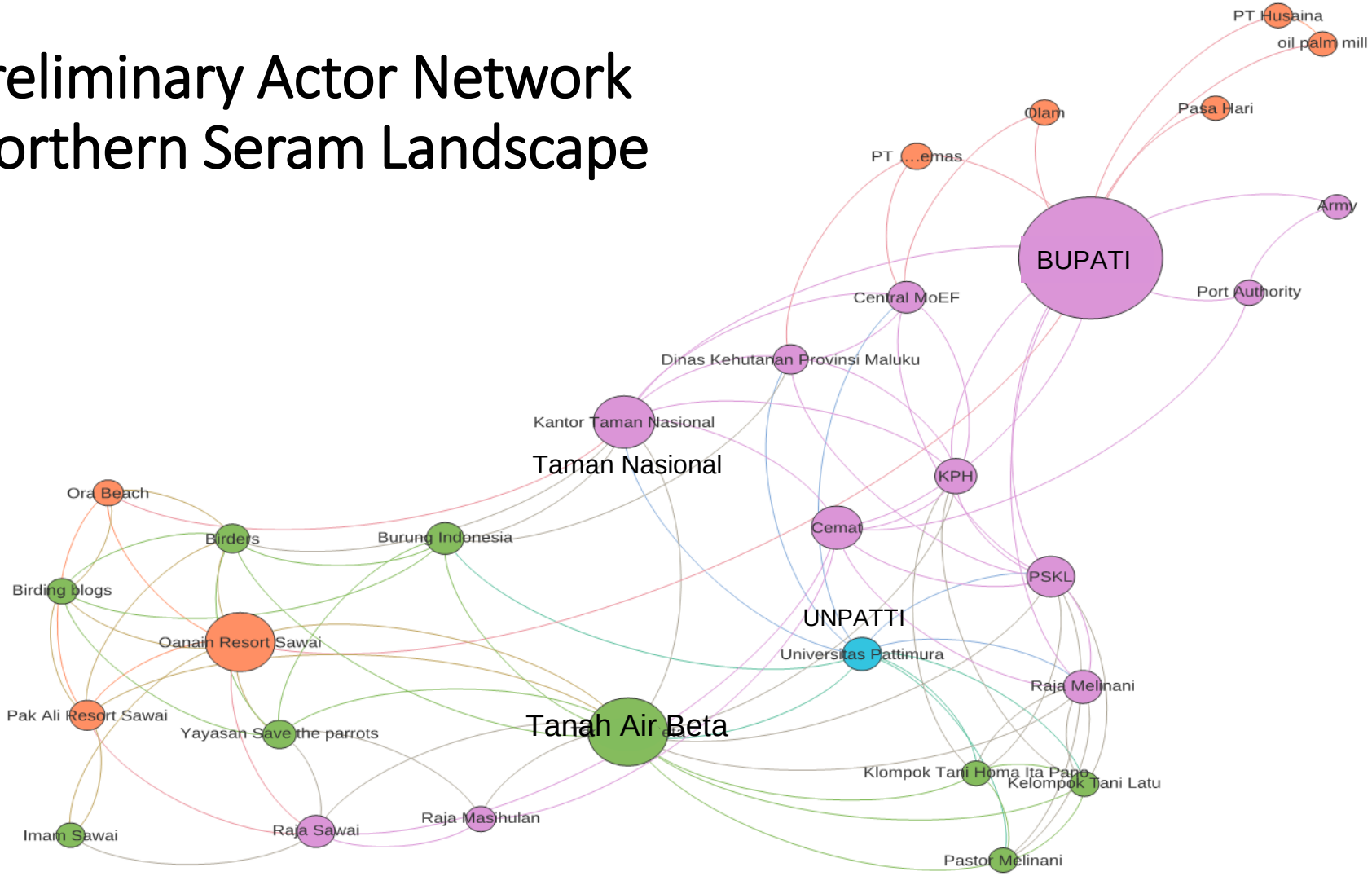
- Crime, employment, human capital, social media





Collaboration and information-sharing networks, organisations sized by degree, organisation types by shape and governance level colour. Organisations based outside Indonesia denoted by vertical gray bar (Gallemore et al, 2015)

Preliminary Actor Network Northern Seram Landscape



THEORY OF CHANGE

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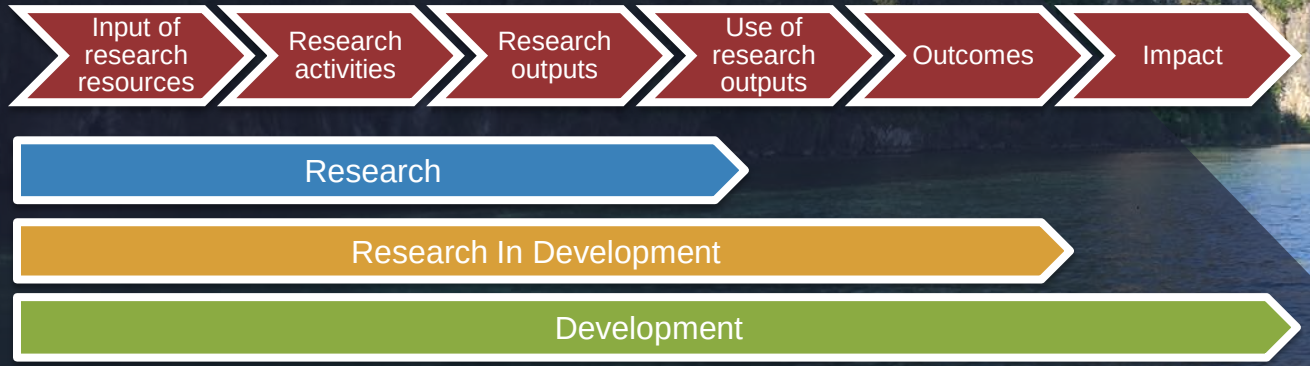
What is a Theory of Change?

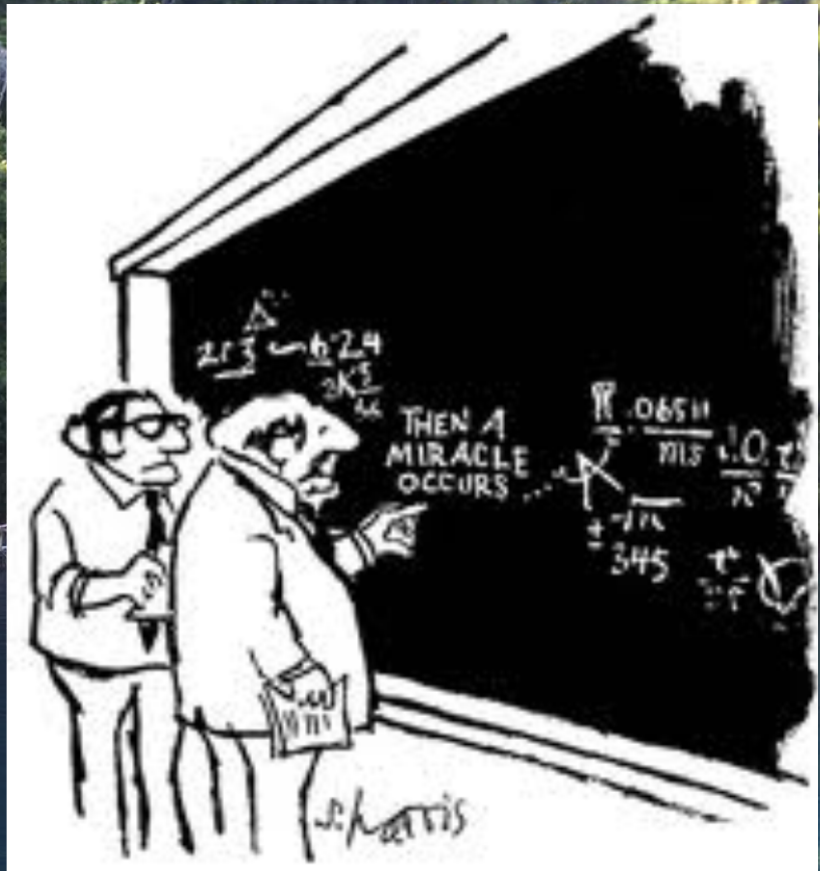
- How an endeavor is expected to, is, or has contributed to make change happen
- Different to logical frameworks (logframes)?
- Causal model – inputs lead to outputs
- Feedbacks and institutional learning



*This is never a linear process

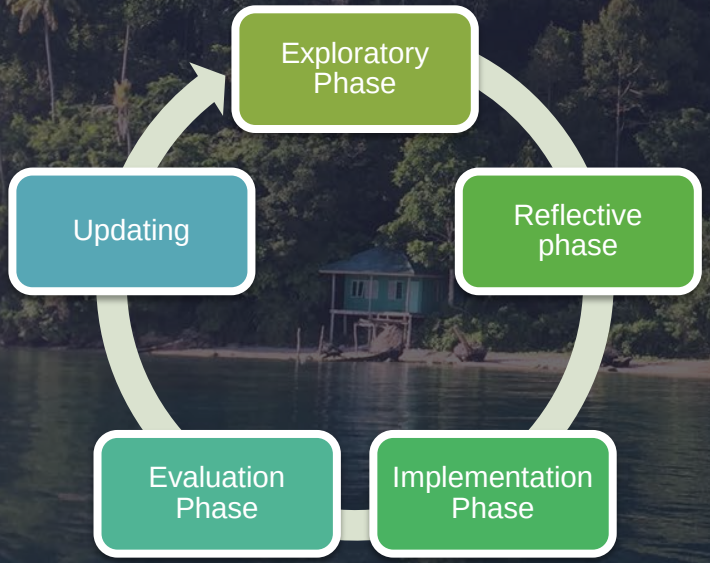
Make things explicit

- How will something work?
- Deadly assumptions
- Common vision
- ~~Ideology based~~
- ~~Anecdote based~~
- **Evidence based**



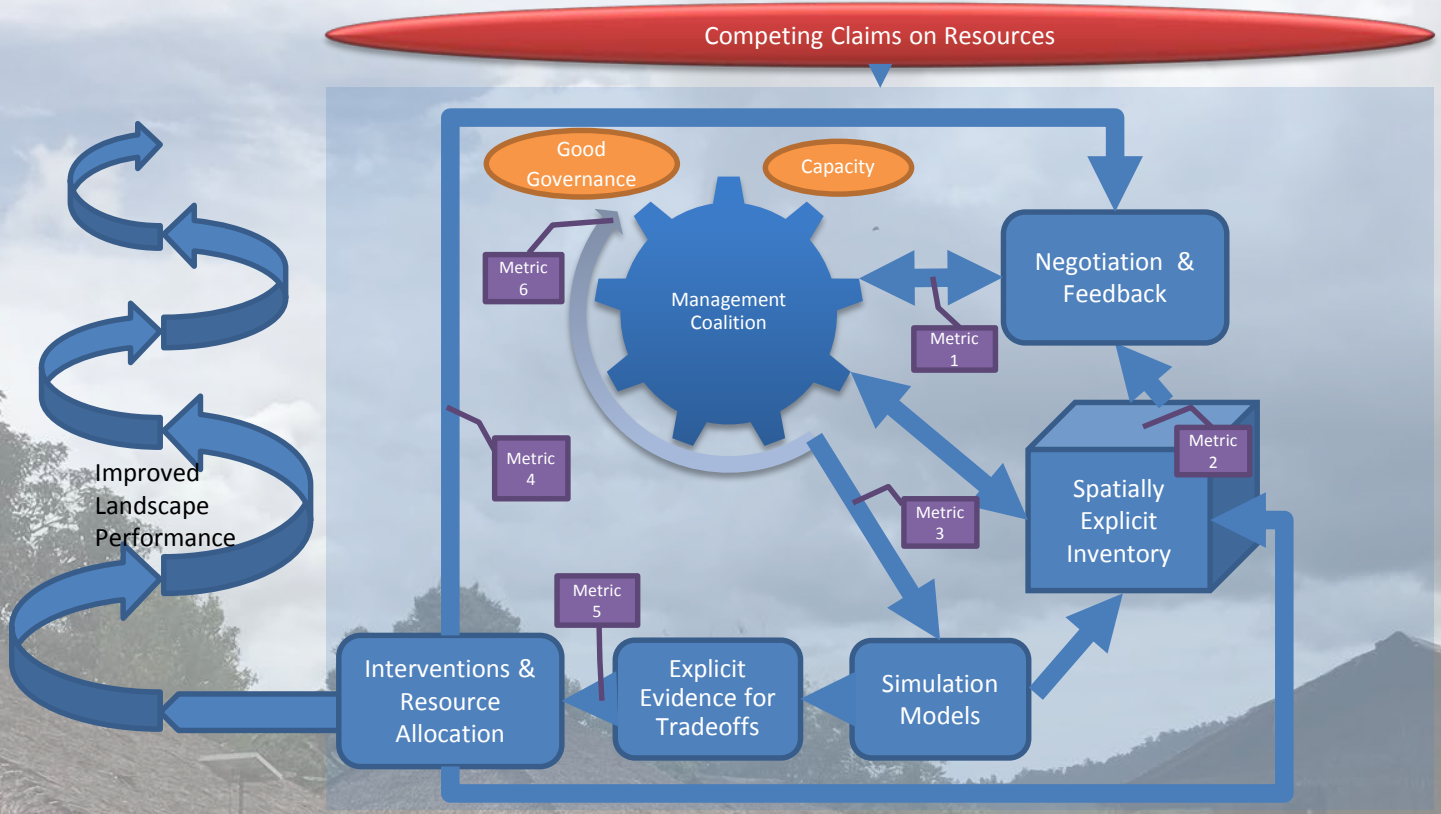
"I think you should be more explicit here in step two."

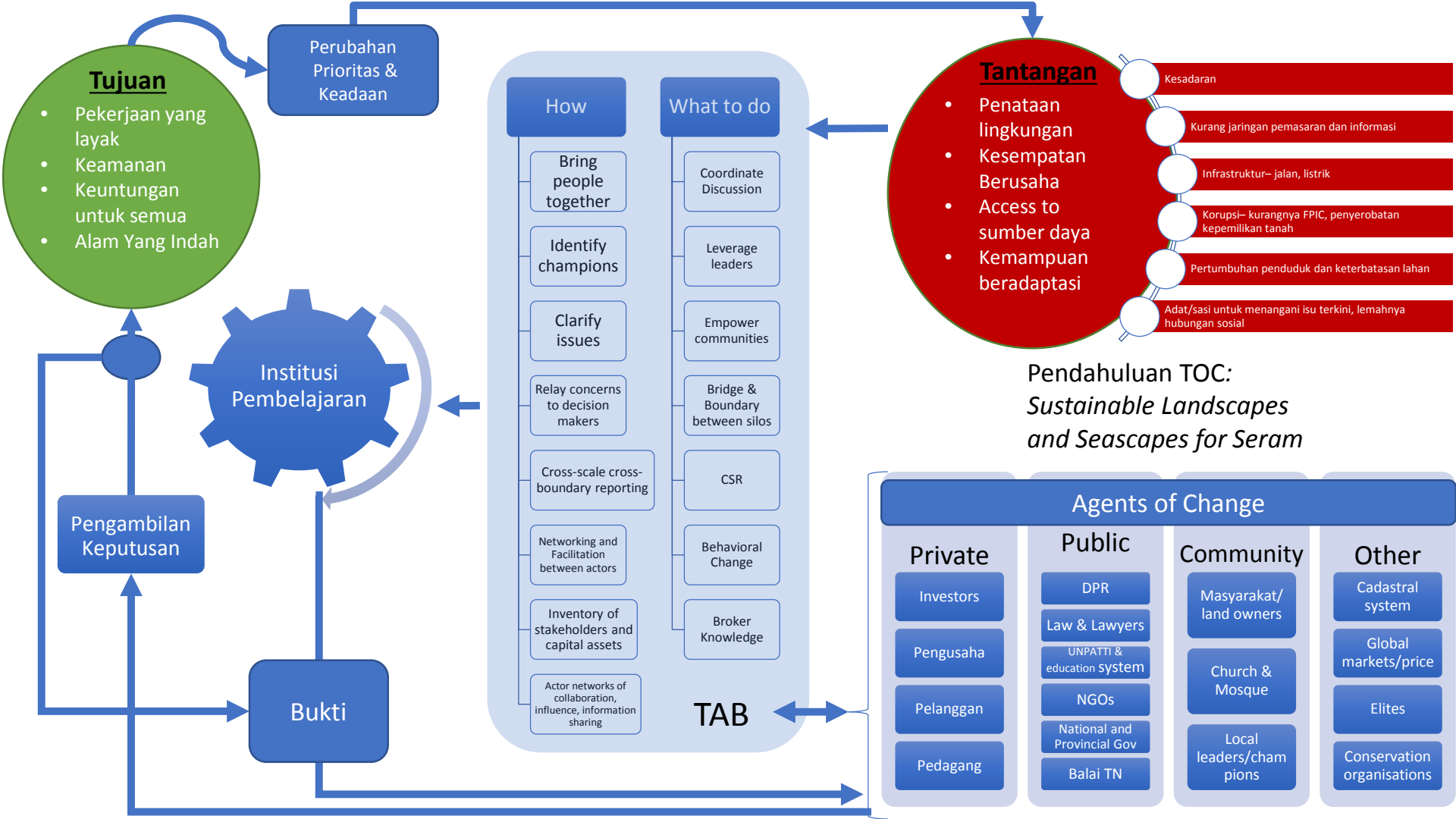
Landscape Approaches are about Process and Governance



Process	Activity
Stakeholder scoping	Actor Network Analysis
Stakeholder Engagement	Facilitation workshops, Problem ID, PRA, Visioning, models, Inventory
Negotiation and commitment	Land use, institutional framework, rights and responsibilities, accept transparent tradeoffs
Intervention	Resource allocated
Updating	Inventory updated, negotiations, reflections, refine models

Theory of Change





Pendahuluan TOC:
Sustainable Landscapes and Seascapes for Seram

SYSTEMS DYNAMIC MODELLING

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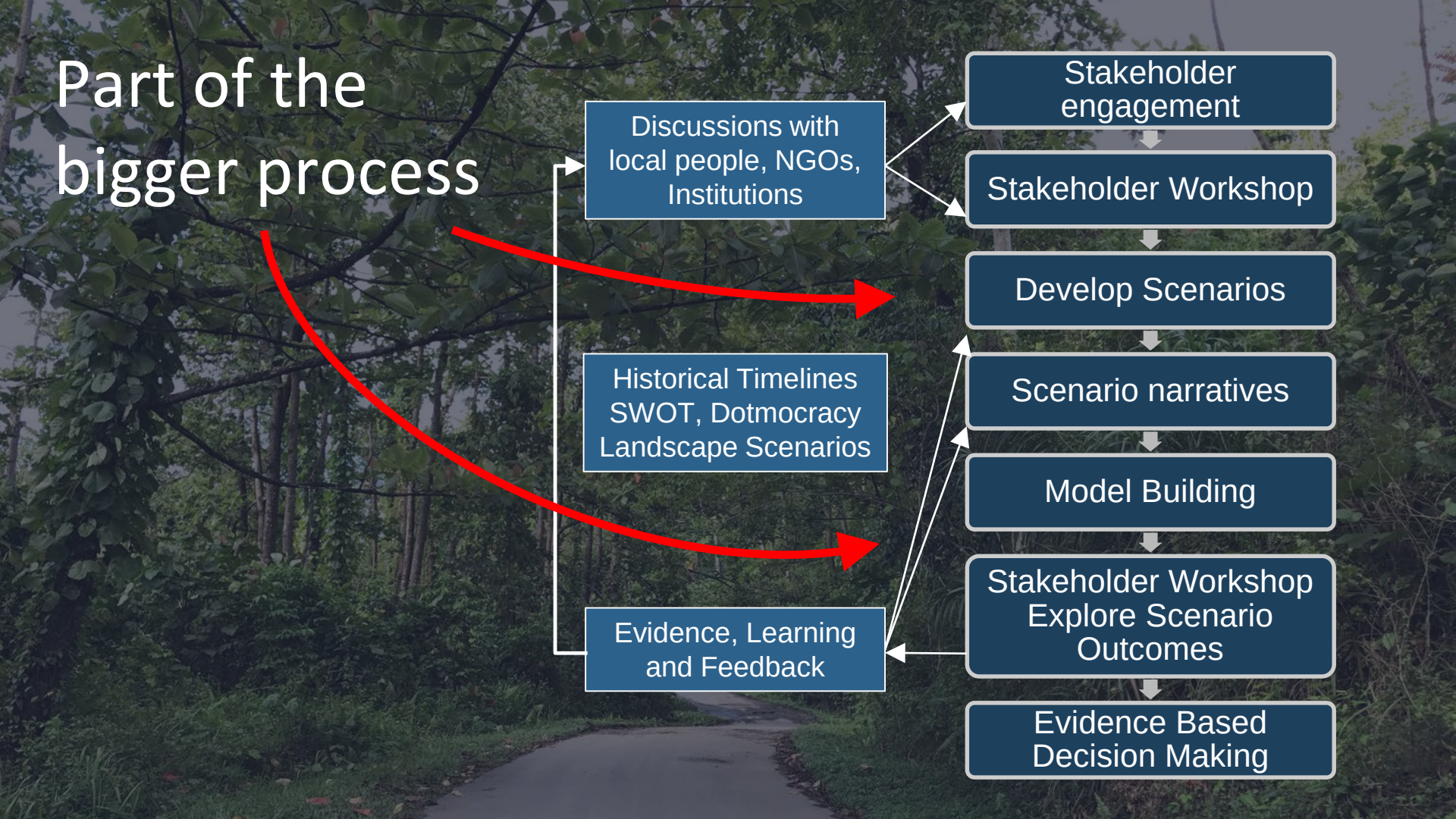
Why Systems Modelling?

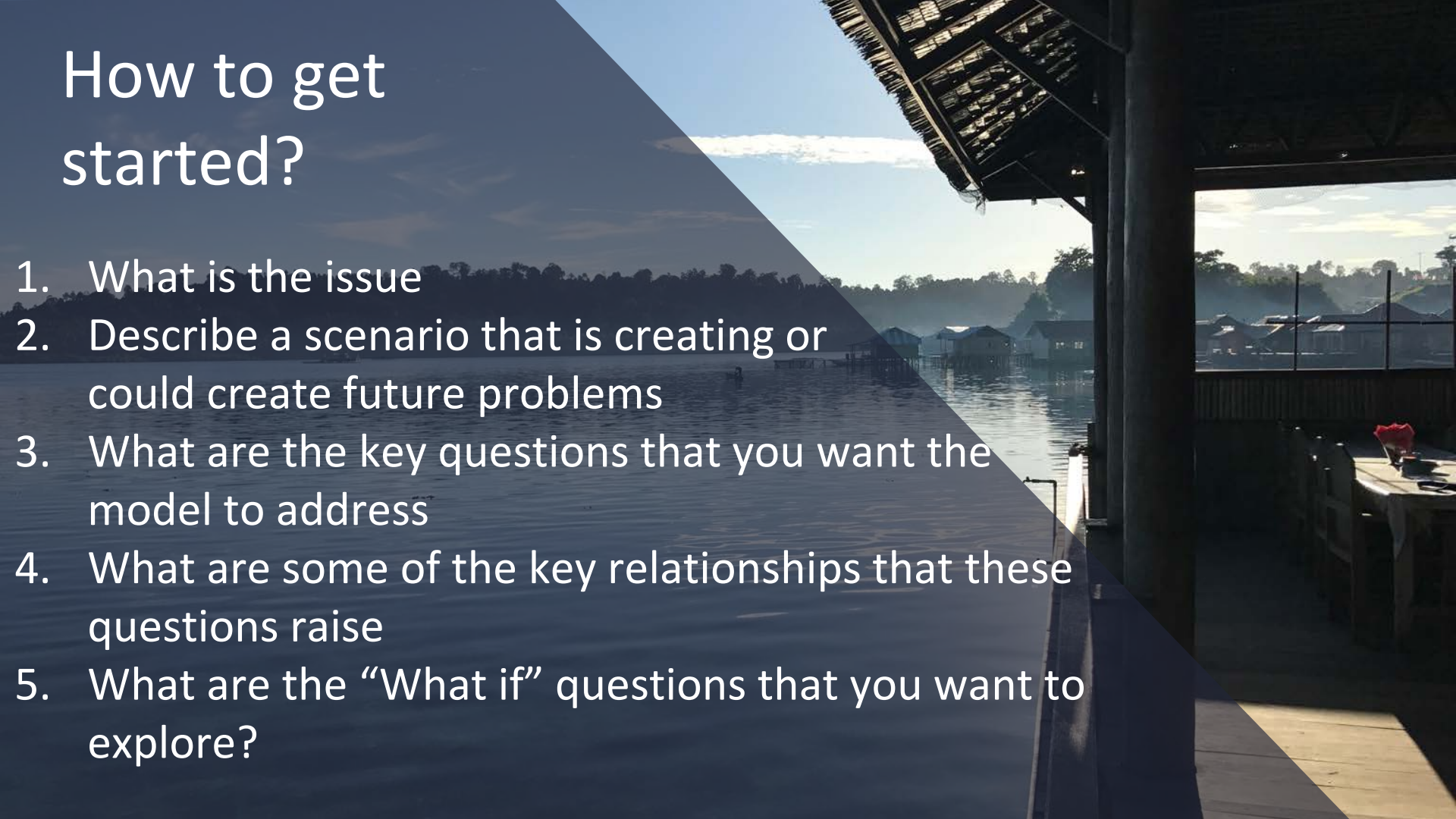
- Communication, visualisation and discussion
- Explore landscape scenarios
- Understand trends and relationships
- Quantify trade-offs
- Capacity building among stakeholders

Part of the bigger process

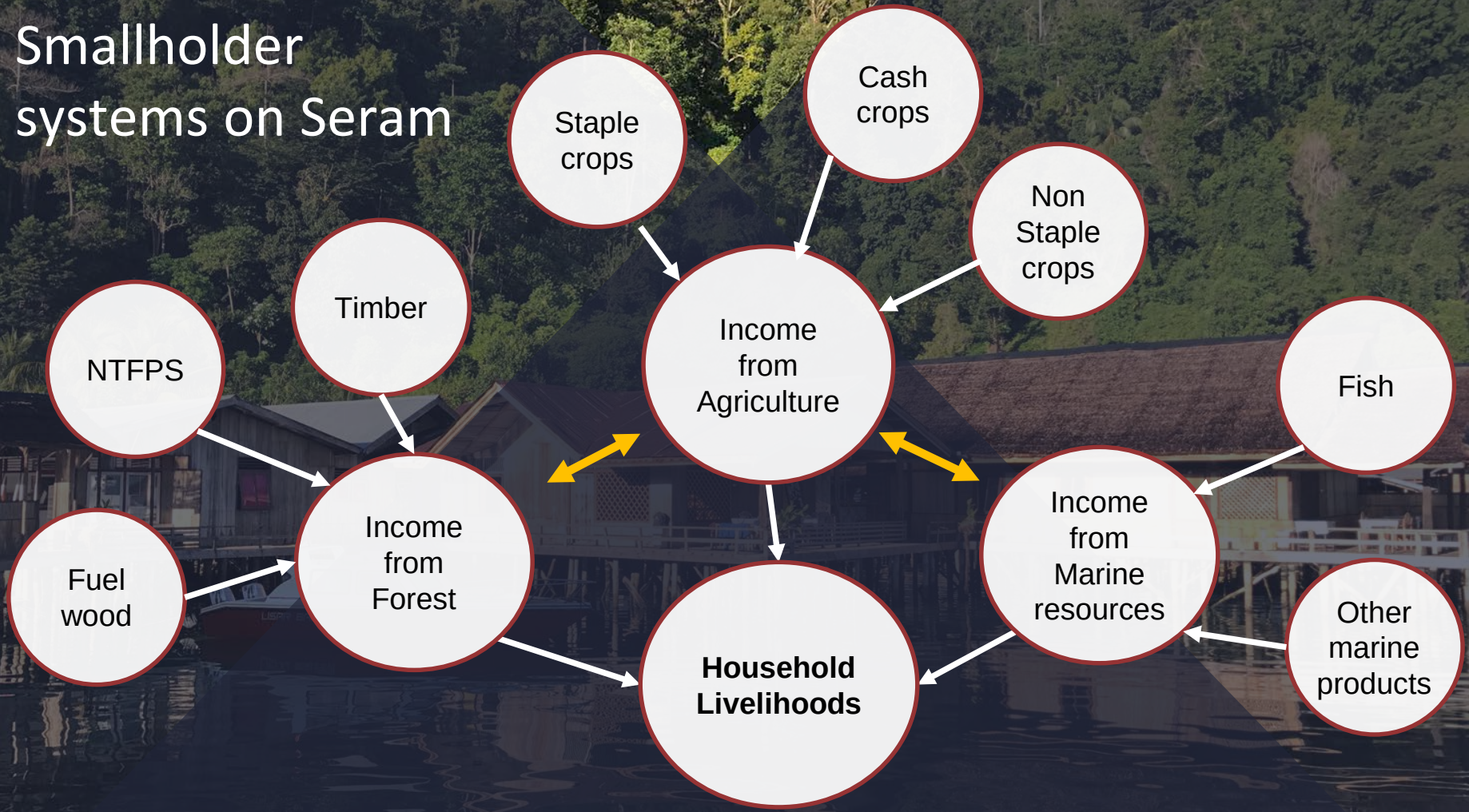


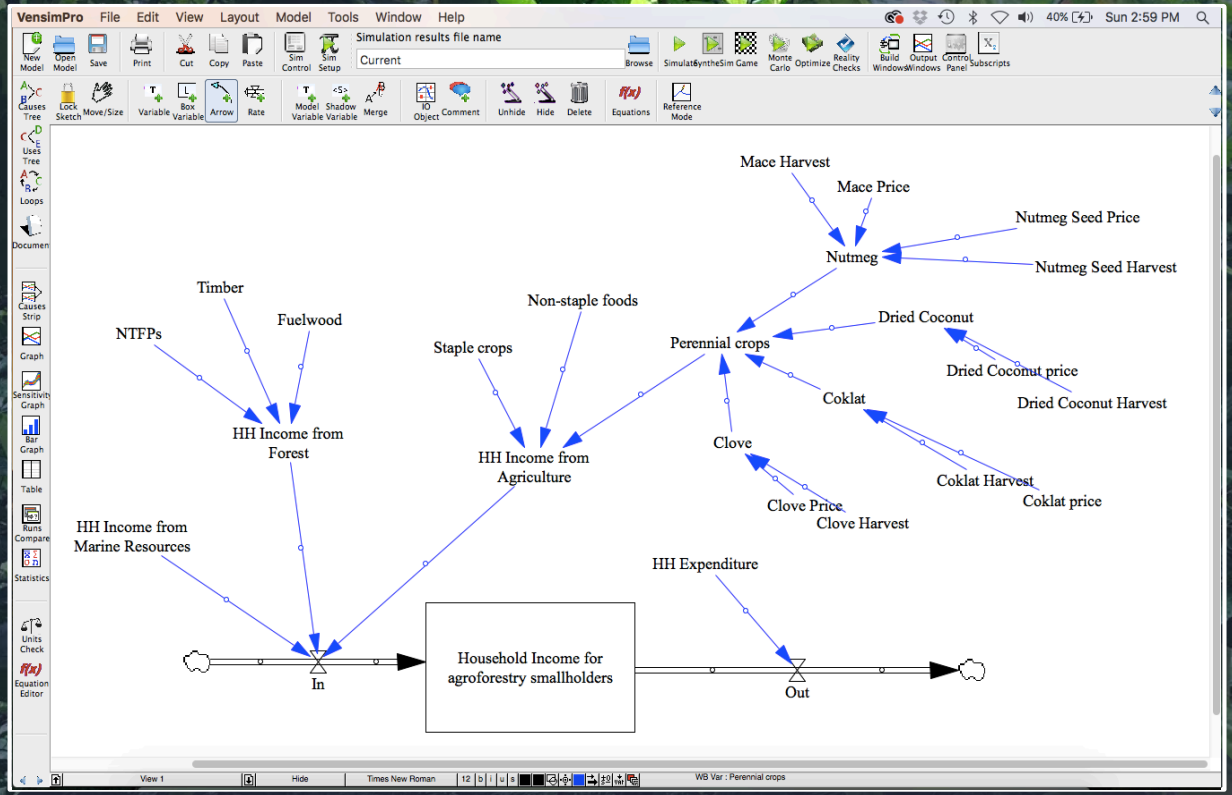
How to get started?

1. What is the issue
2. Describe a scenario that is creating or could create future problems
3. What are the key questions that you want the model to address
4. What are some of the key relationships that these questions raise
5. What are the “What if” questions that you want to explore?

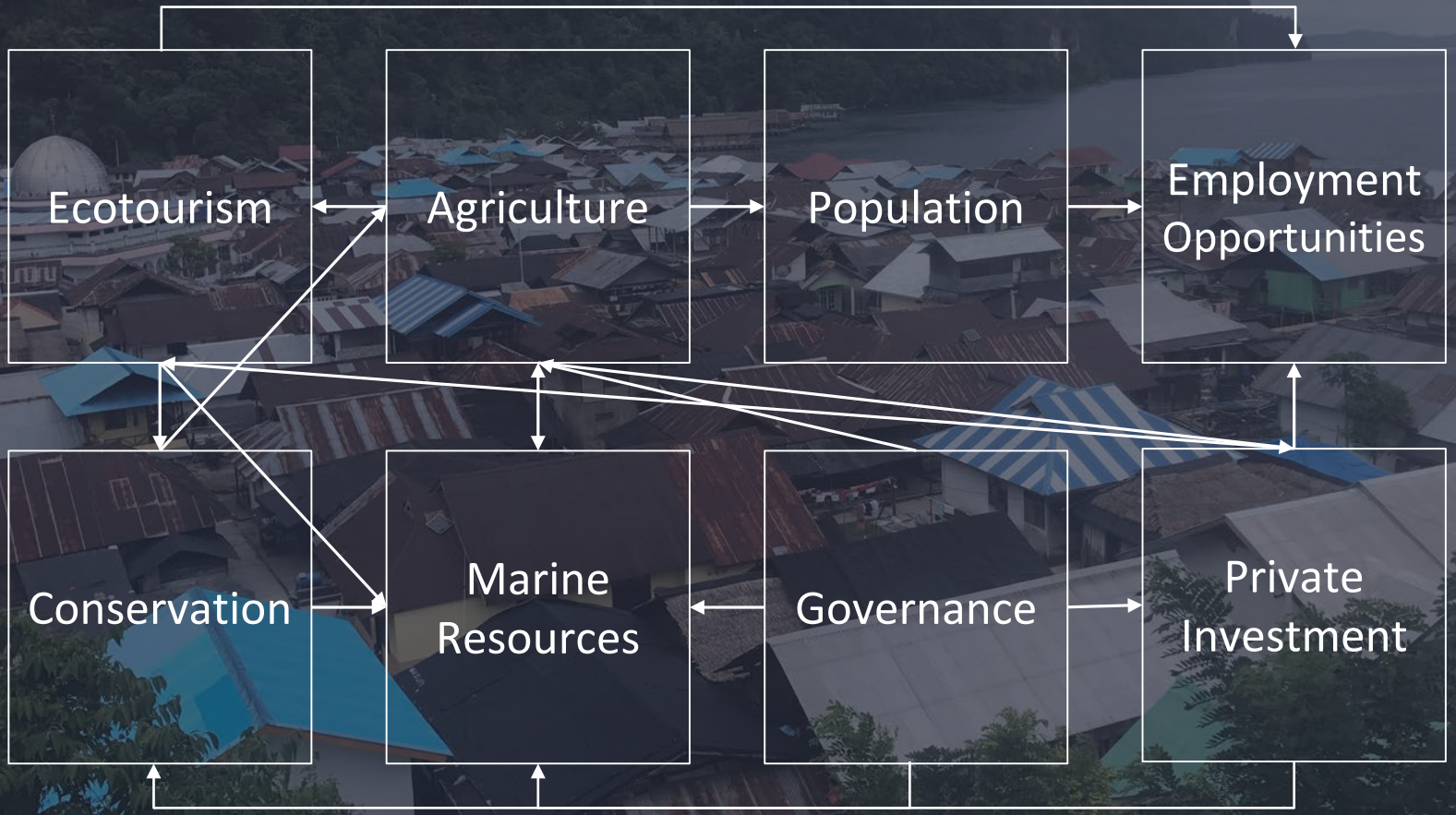


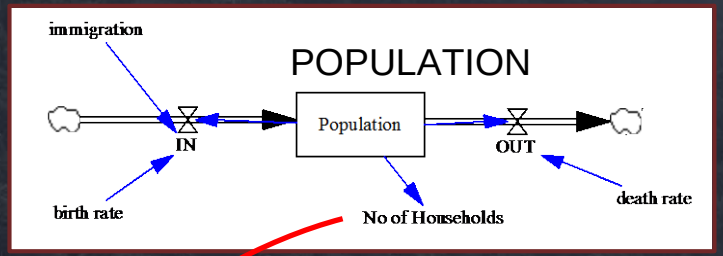
Smallholder systems on Seram

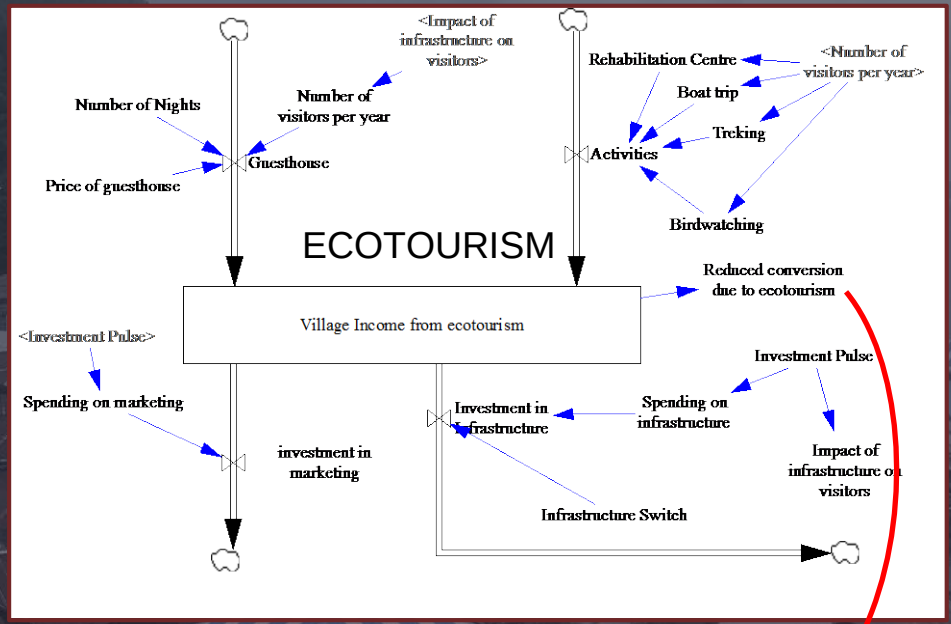


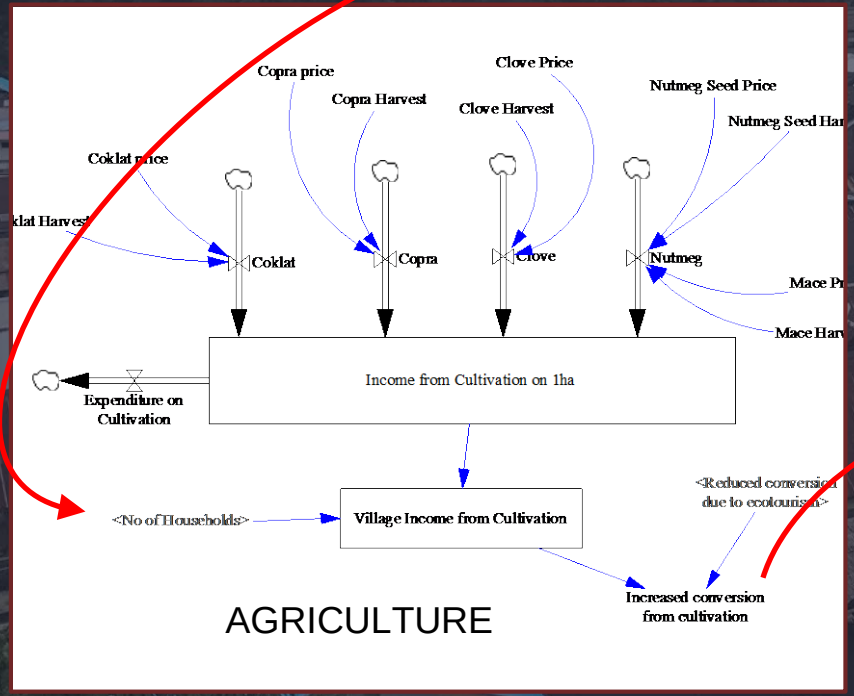

VensimPro File Edit View Layout Model Tools Window Help
Simulation results file name
Current
Mace Harvest
Mace Price
Nutmeg Seed Price
Nutmeg
Nutmeg Seed Harvest
Timber
Fuelwood
NTFPs
Non-staple foods
Staple crops
Perennial crops
Dried Coconut
Dried Coconut price
Dried Coconut Harvest
Coklat
Coklat Harvest
Coklat price
Clove
Clove Price
Clove Harvest
HH Income from Forest
HH Income from Agriculture
HH Income from Marine Resources
HH Expenditure
Household Income for agroforestry smallholders
In
Out

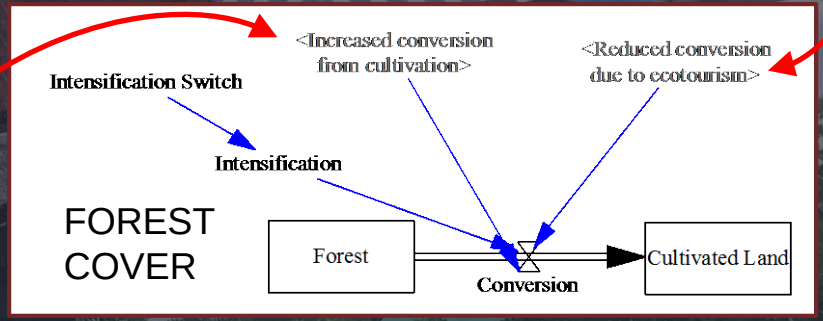
Modelling Complex Systems




POPULATION
immigration
Population
IN
OUT
birth rate
No of Households
death rate


ECOTOURISM
<Impact of infrastructure on visitors>
Number of Nights
Number of visitors per year
Guesthouse
Price of guesthouse
Rehabilitation Centre
<Number of visitors per year>
Boat trip
Activities
Trekking
Birdwatching
Reduced conversion due to ecotourism
Village Income from ecotourism
<Investment Pulse>
Spending on marketing
investment in marketing
Investment Pulse
Investment in infrastructure
Spending on infrastructure
Impact of infrastructure on visitors
Infrastructure Switch


Copra price
Copra Harvest
Clove Price
Clove Harvest
Nutmeg Seed Price
Coklat price
Coklat
Copra
Clove
Nutmeg
Income from Cultivation on 1ha
Expenditure on Cultivation
<No of Households>
Village Income from Cultivation
<Reduced conversion due to ecotourism>
Increased conversion from cultivation
AGRICULTURE


<Increased conversion from cultivation>
<Reduced conversion due to ecotourism>
Intensification Switch
Intensification
FOREST COVER
Forest
Conversion
Cultivated Land

Identify trade-offs and promote discussion

land

MDPI

Article

Estate Crops More Attractive than Community Forests in West Kalimantan, Indonesia

James D. Langston [1,*], Rebecca A. Riggs [1,*], Yazid Sururi [1], Terry Sunderland [2] and Muhammad Munawir [3]

Mosaic of land uses including oil palm and rubber surrounding Kenyabur Baru, West Kalimantan

How can we - as students and educators and partners – help meet the needs of practitioners and policymakers while helping to answer relevant questions for people living in the landscape?