



Mitigating the negative impacts of the maize boom on landscapes and livelihoods in Lao PDR

Jean-Christophe Castella, Christine Ornetsmüller,
Guillaume Lestrelin, Peter H. Verburg, Pascal Lienhard



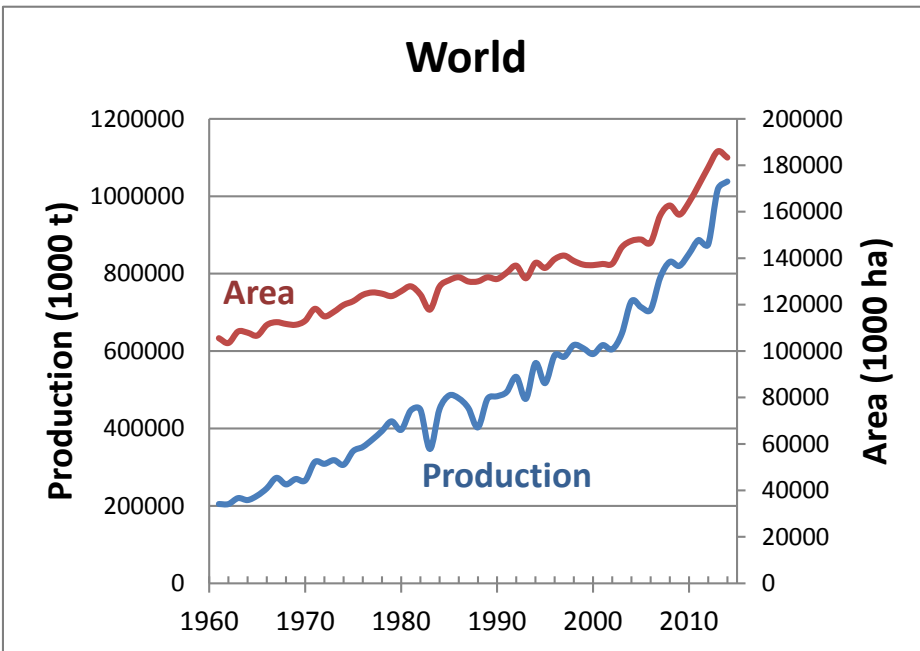
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Outline

- Maize boom trajectories in Southeast Asia
- A framework for understanding boom crop trajectories
- Gaming-simulations to reveal underlying mechanisms
- The maize boom from the bottom-up
- Lessons for timely and relevant intervention

Maize boom trajectories



Source: FAO Stat

Rank Country Production (1000 MT)

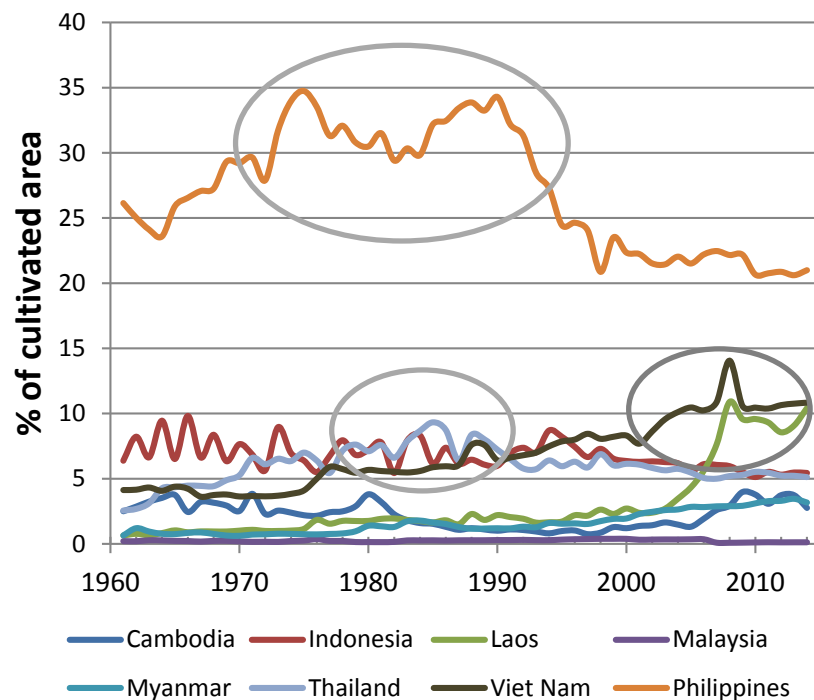
1	United States	386,748.00	
2	China	216,000.00	
3	Brazil	83,500.00	
4	EU-27	60,279.00	
5	Argentina	36,500.00	
6	Ukraine	27,000.00	
7	India	24,500.00	
8	Mexico	24,500.00	
9	Russian Fede	14,500.00	
10	South Africa	13,000.00	
11	Canada	12,500.00	
12	Indonesia	9,600.00	
13	Philippines	7,900.00	
14	Nigeria	7,200.00	
15	Serbia	7,000.00	
16	Ethiopia	6,300.00	
17	Egypt	6,000.00	
18	Tanzania, Unii	5,500.00	
19	Turkey	5,500.00	
20	Thailand	5,200.00	
21	Pakistan	5,200.00	
22	Viet Nam	4,950.00	

Source: Index Mundi

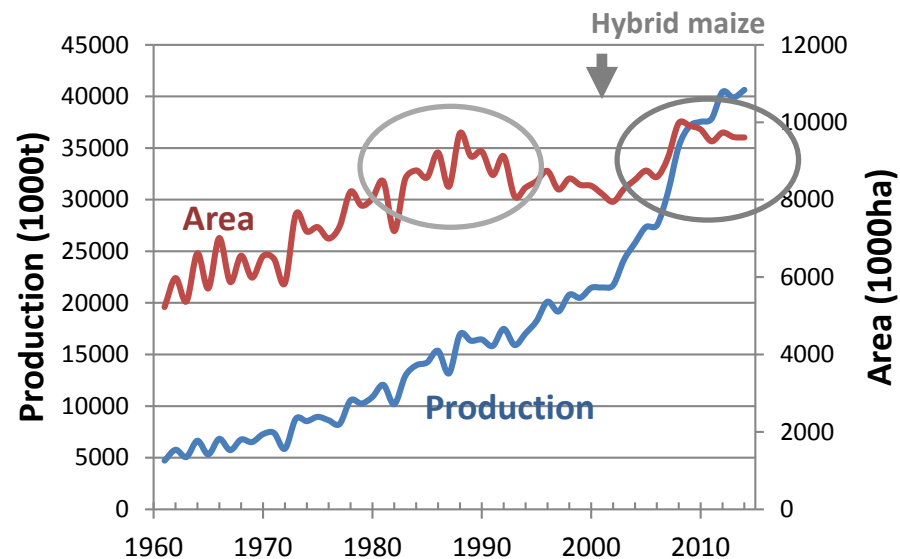


Maize boom trajectories

Change in maize cultivation



Southeast Asia

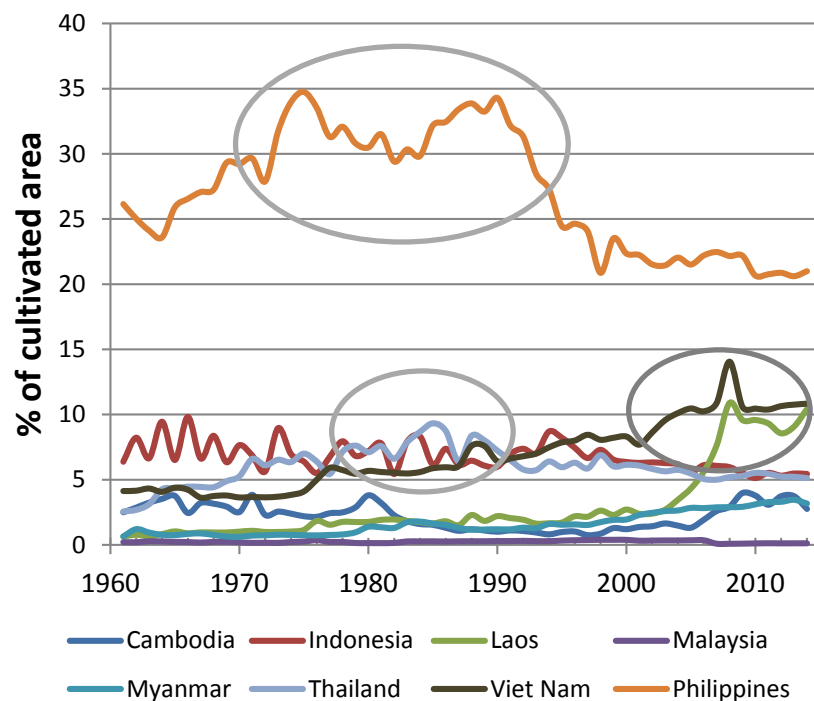


Source: FAO Stat

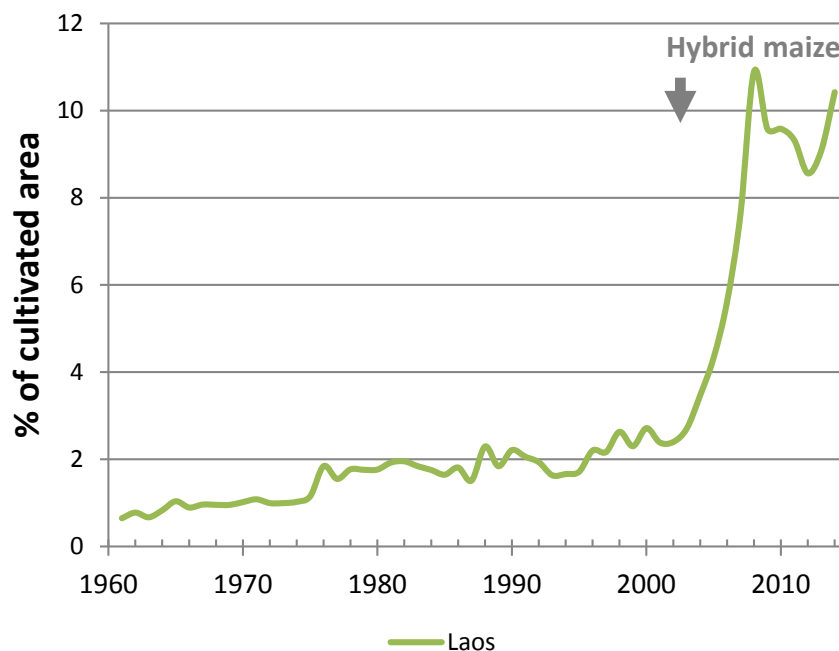


Maize boom trajectories

Change in maize cultivation



Change in maize cultivation

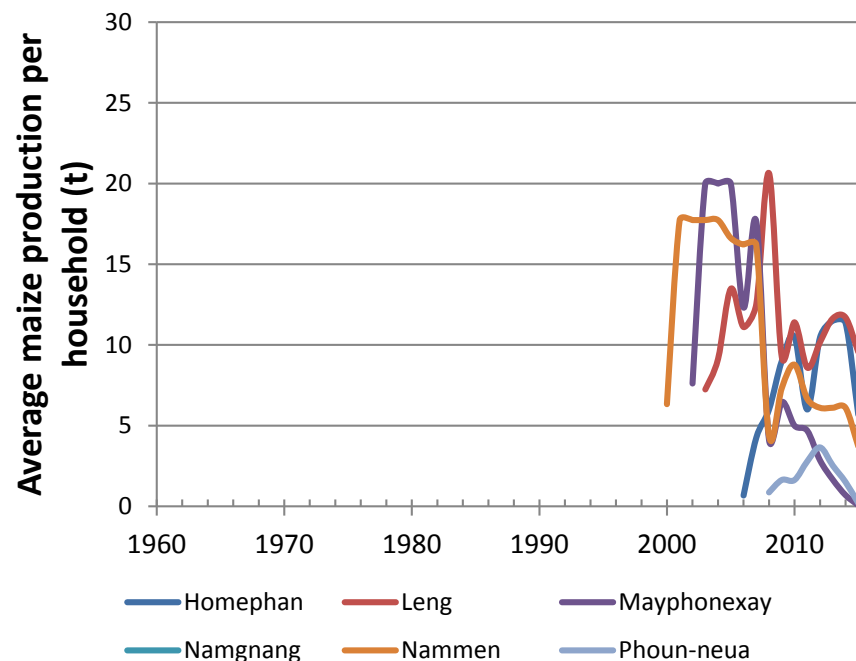


Source: FAO Stat

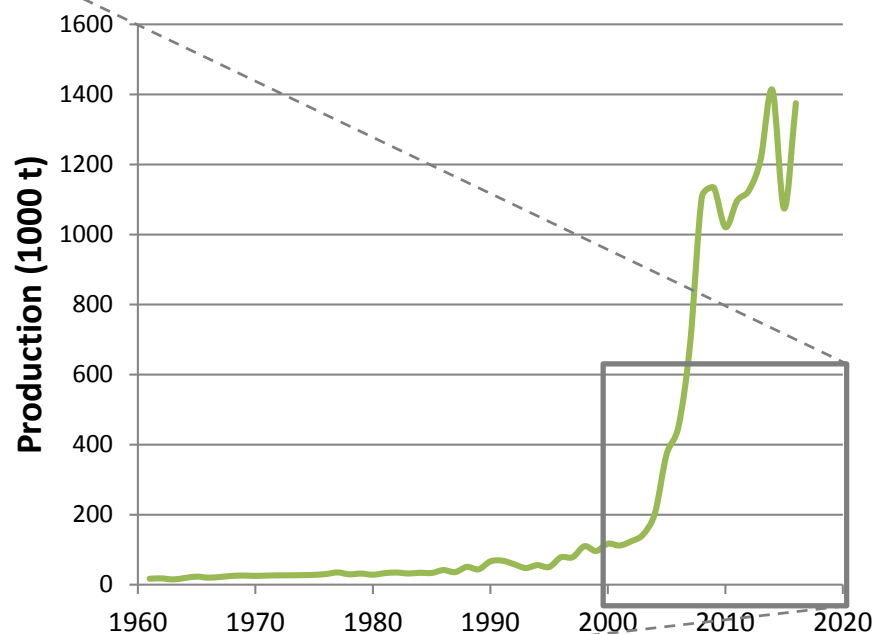


Maize boom trajectories

Maize production at village level



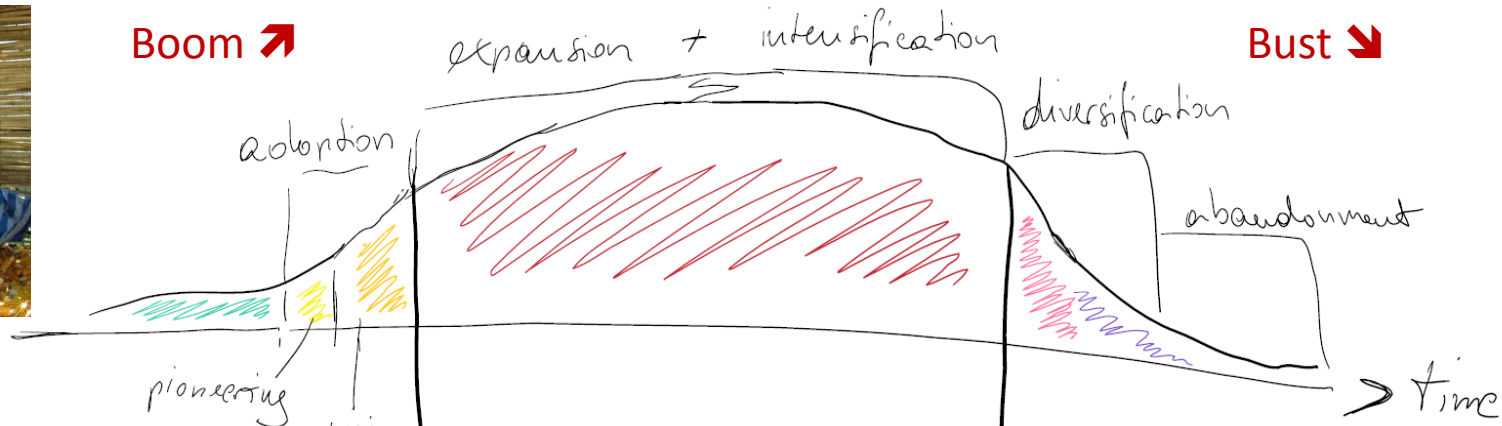
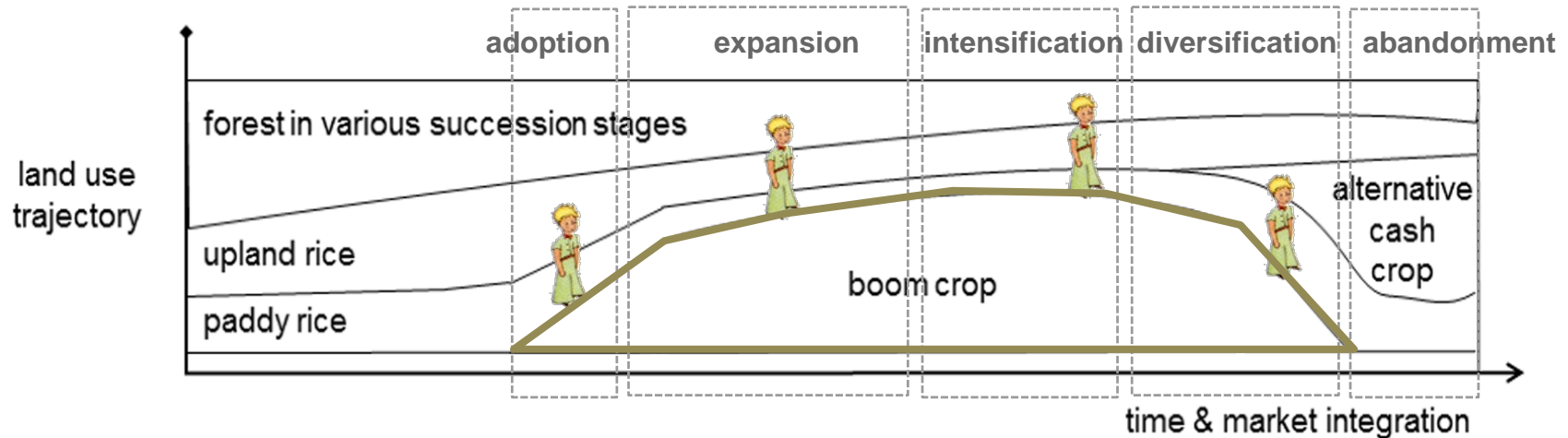
Maize production in Laos



Source: FAO Stat



A conceptual framework for intervention on boom crop trajectories



Living with the maize boom

- 2003-2009

PCADR -
Conservation
agriculture project



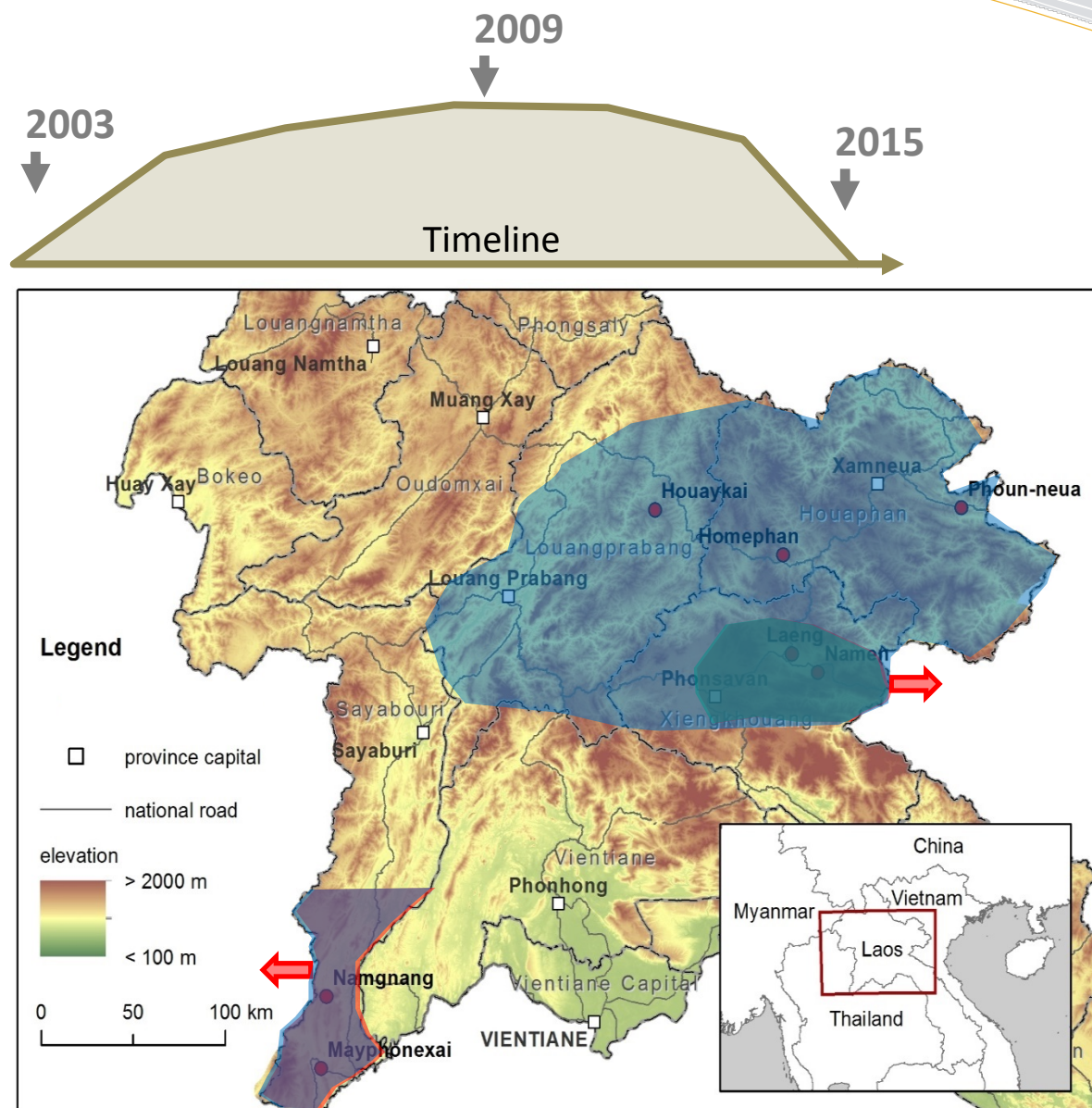
- 2009

PAMPA – Impact
assessment
project



- 2015

EFICAS - lessons
from previous
projects



Disentangling the mechanisms of the boom

exploring local contexts

width

1 - Focus group

to reconstruct village trajectory with village committee and farmers pioneering in maize

connection to interviewees

legitimacy by village leaders

2 - Individual interviews

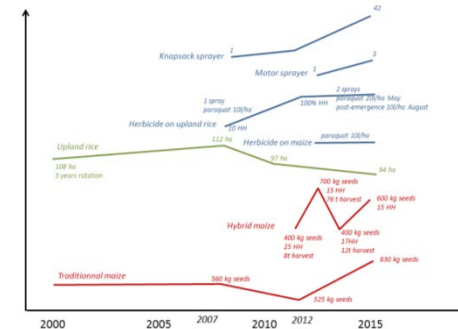
to reconstruct household trajectories of active speakers in focus group and complementary farmer types (e.g. cover rich and poor)

parameters for game

definition research question

3 - Game

to explore a selected research question for a decision and its context through game development, simulations with smallholders and debriefing



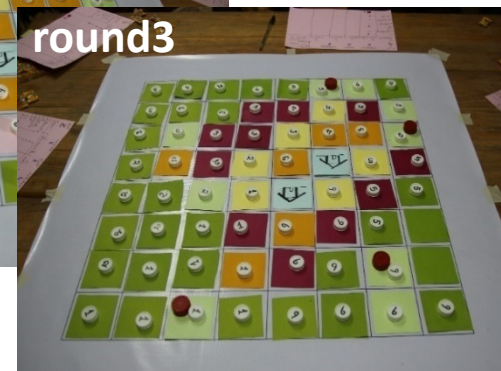
round1



round2



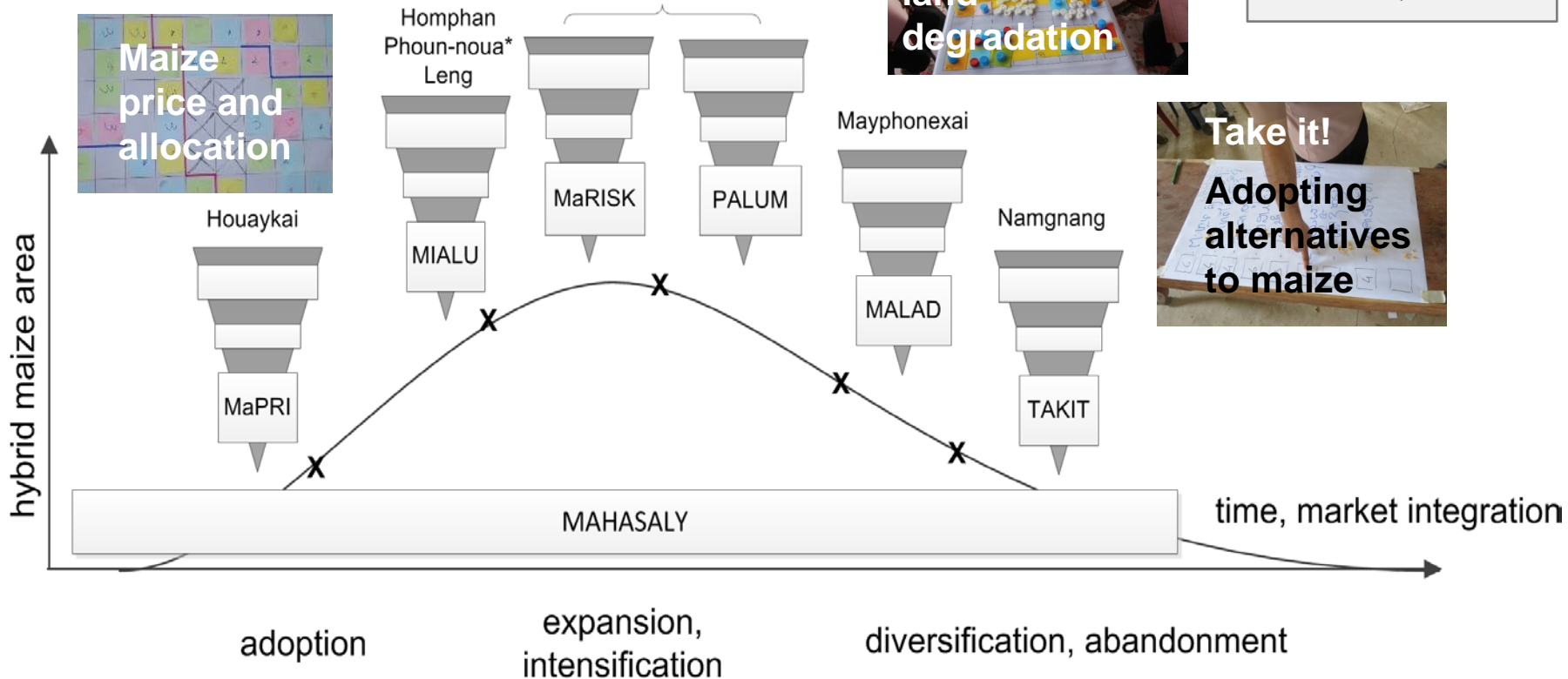
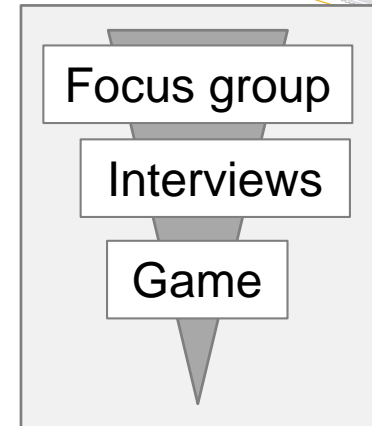
round3



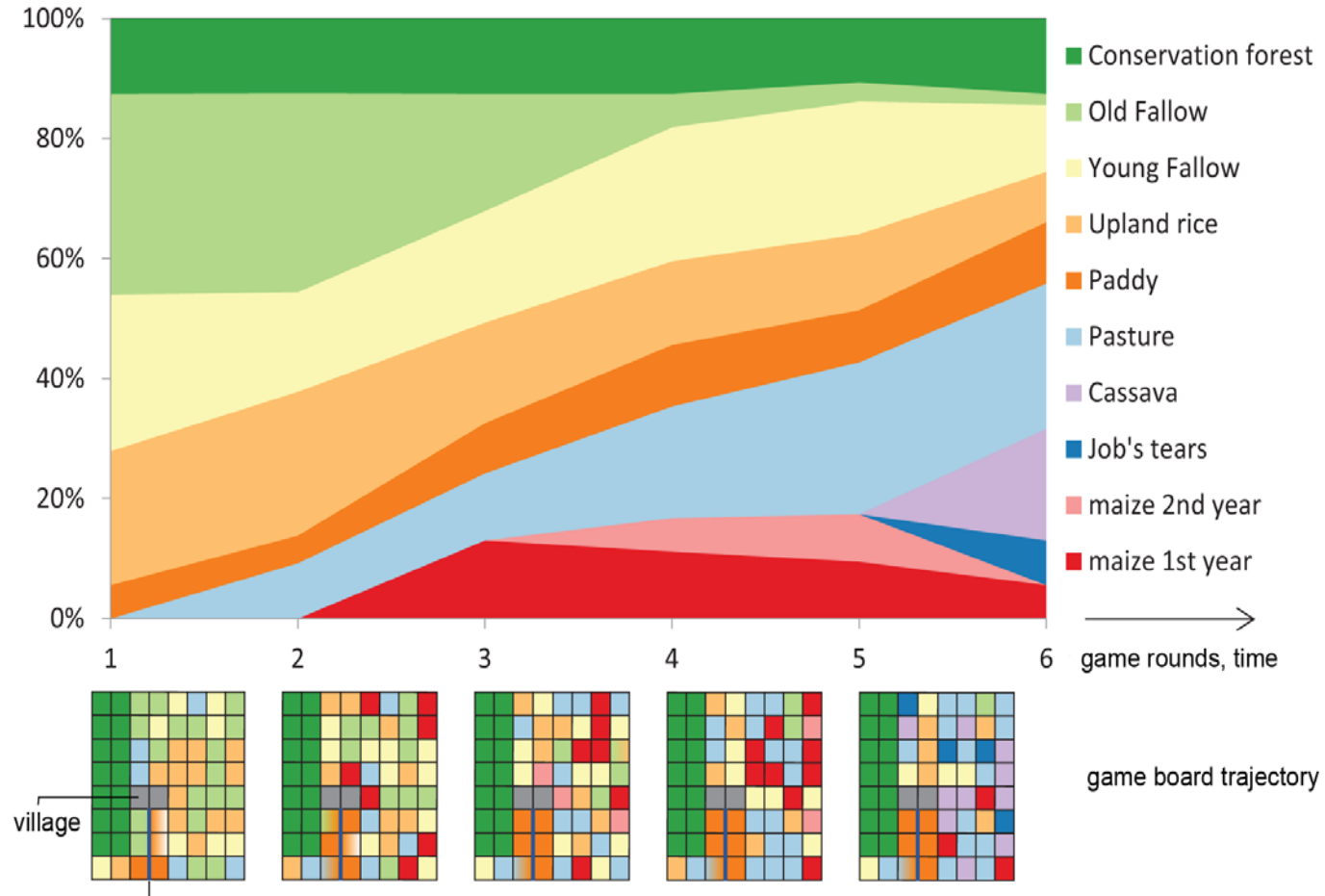
depth

Multi-scale gaming approach to the boom

- decision making embedded in local contexts
- generalizing to emergent level of the boom

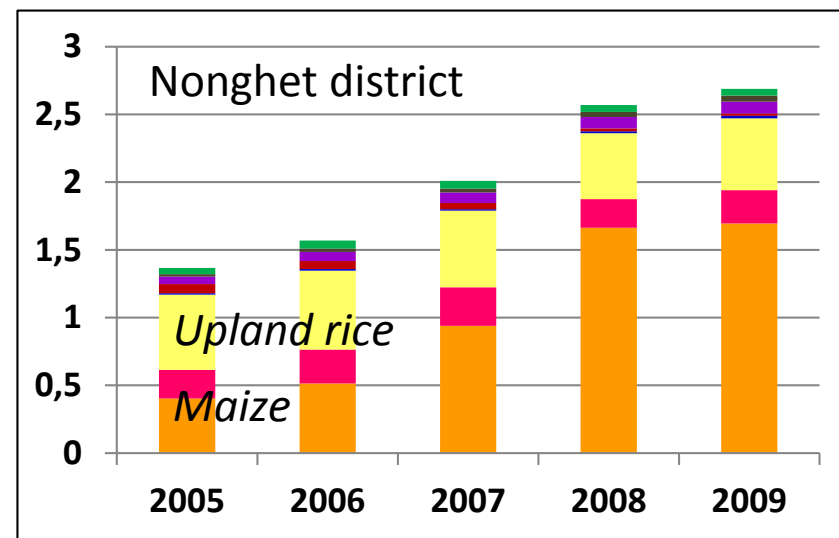
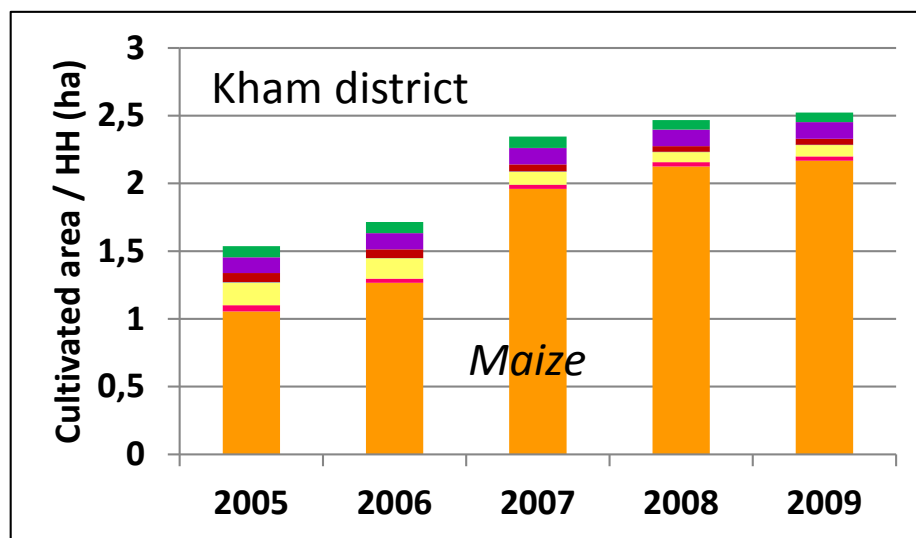


Maize boom game 'mahasaly' validation workshop with experts



The maize boom from the bottom-up

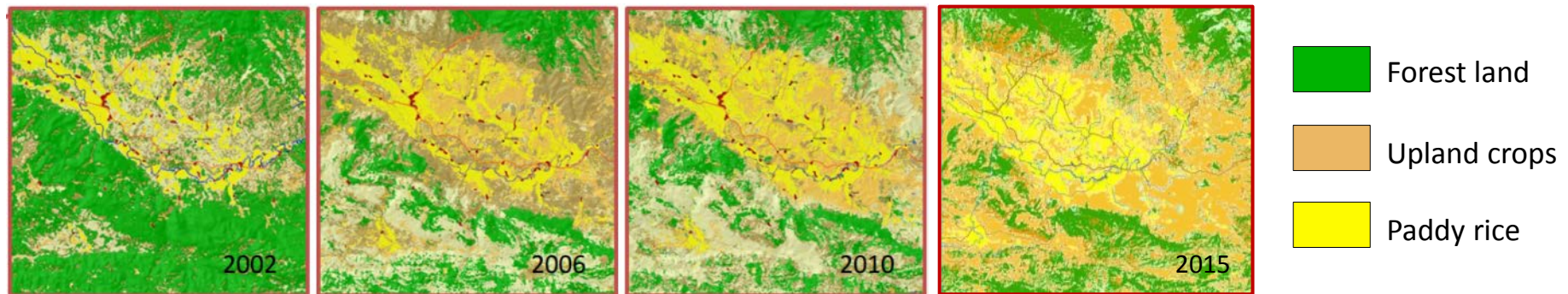
- Impacts on livelihoods
 - General increase of land holding size
 - Commodification of the land
 - Income increase... and also indebtedness
 - Economic differentiation, inequalities (GINI index ↗)



The maize boom from the bottom-up

- Impacts on environment
 - Deforestation – biodiversity loss
 - Land degradation (tillage erosion)
 - Pollution by herbicides
 - Landscape simplification

Land use change in Kham basin in the 2000s



Complex landscape mosaics



Maize monocropping

Opening the black box of the maize boom

- Why are booms repeating again and again?
Why don't 'they/we learn'? Who learns?
- Boom as a gateway to capital-intensive agriculture
Transforming frontier landscapes and livelihoods

Shifting cultivation



High input monocropping

cash crops vs
food crop

price inputs
trust building with trader
contracts are sacred
market stability

Market literacy

no input vs
debts

need to reimburse
interest rate
labor productivity
economic calculation

Financial literacy

local
network

motorcycle
TV

changing
aspirations

children
education

commercial
network

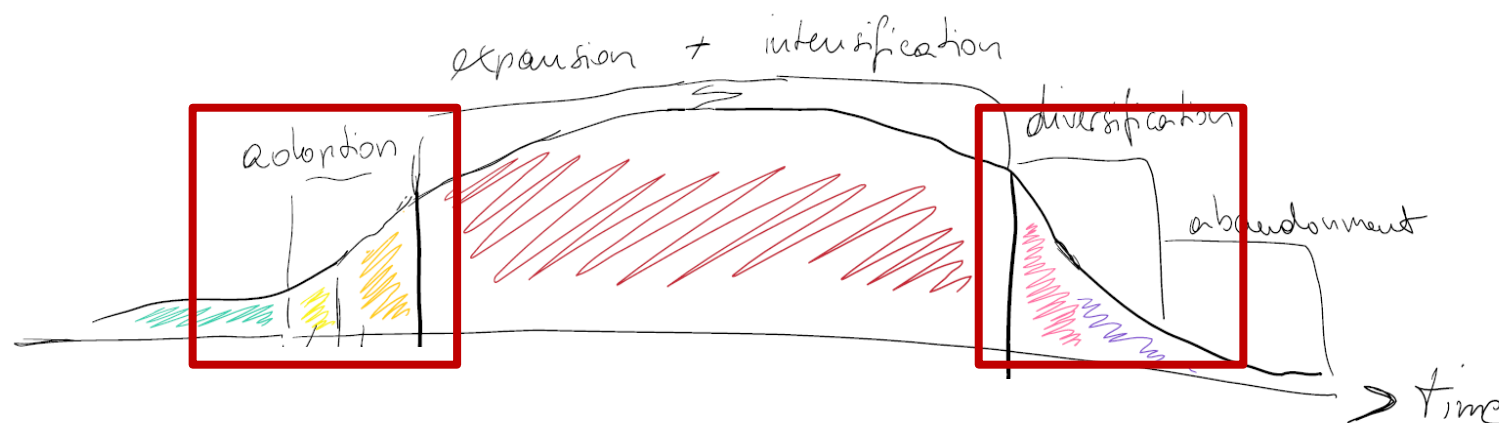
Knowledge networks

Mahanty S., Milne S. (2016) Anatomy of a boom: Cassava as a 'gateway' crop in Cambodia's north eastern borderland. *Asia Pacific Viewpoint*, 57: 180–193.

Ornetsmüller C, Castella JC, Verburg PH. (submitted) A multi-scale gaming approach to elucidate farmer's land use decision making in the maize boom of Laos. *Ecology and Society*

Thinking out of the 'black' box of the boom

- Windows of opportunity
 - **No technical intervention** possible during the expansion-intensification phase of the boom,
 - Two opportunity windows for intervention



Initial stage of the transition
from subsistence to
commercial farming

Aftermath of the
boom: advanced
land degradation

Thinking out of the 'black' box of the boom

- Windows of opportunity
- Short term benefits vs long term investments
 - Maize money is often reinvested into long term, more **sustainable agricultural investments**, e.g. paddy terracing, tree plantations; and in **children's education**
 - Strategies to **minimize income loss during transition** from maize to alternatives – relay income sources, e.g. tractor service, off-farm jobs,
 - > combine short and long term perspectives in policy designs (e.g. forest, poverty alleviation) and PES mechanisms



Take home messages

- Land science looks ex-post at land use trajectories; participatory simulations helped **capturing rapid changes** and a-priori, **early warning signs of booms**,
- Mitigating impacts of boom crops requires considering **both the whole trajectory** of change and **contextualized decision-making**,
- **Windows of opportunity** were identified for timely intervention -> engaging stakeholders into **transformative landscape approaches**

Thank you for your attention...

For more information: www.eficas-laos.net

