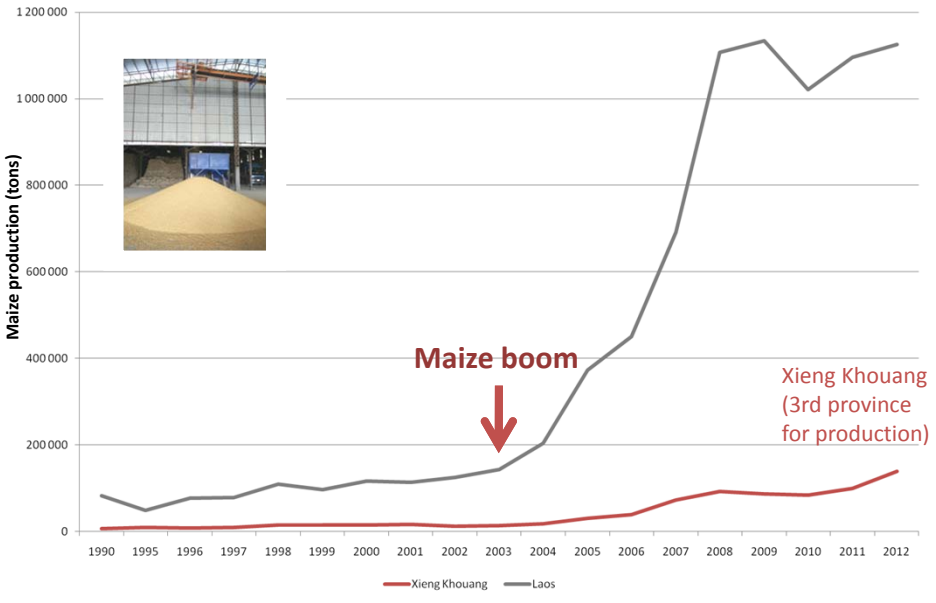
Sustainable land management and agricultural development in Kham basin, Xieng Khouang

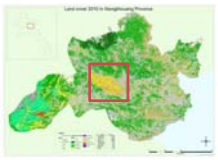
Research-action in support to PAFO's Land Regeneration Initiative

EFICAS-NUDP/CA workshop, Tuesday, July 5th 2016, Vientiane

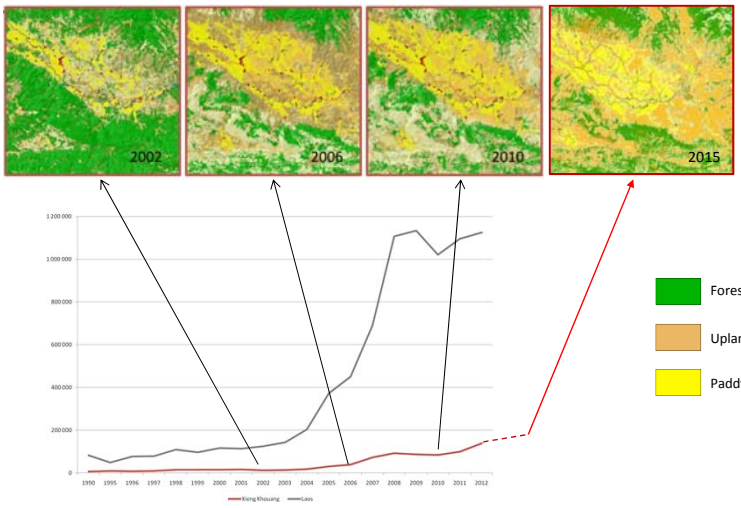
The 'maize boom' in Laos



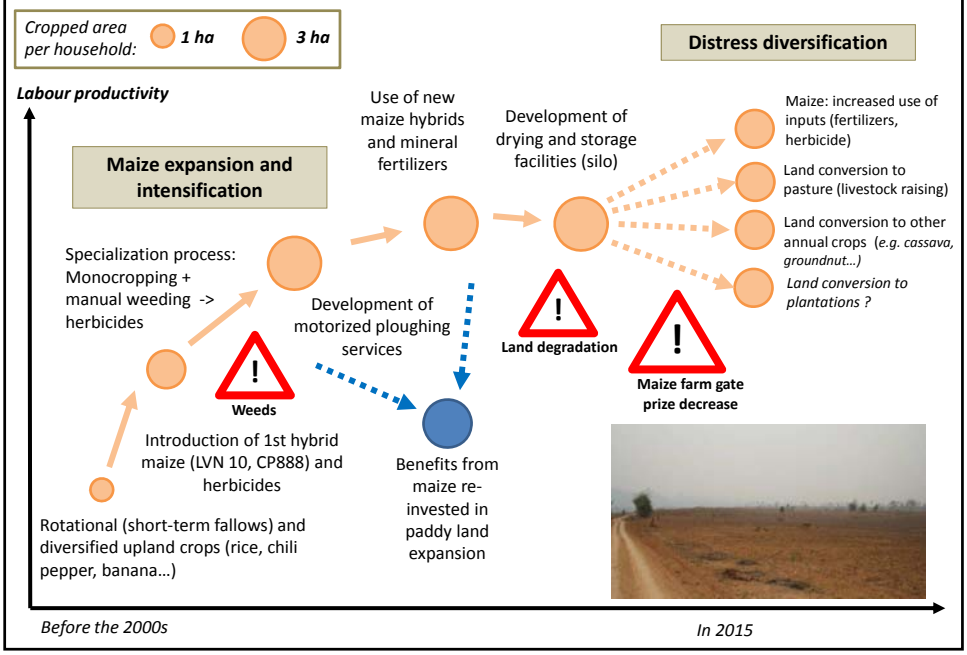
The 'maize boom' in Laos



Land use change in Kham basin in the 2000s



Agrarian transition in Kham district



PAFO Land Regeneration Initiative

Key activities in Kham basin

(1) **Agricultural diversification:** Establishment of pasture plots for cattle fattening

(2) **Improved soil fertility management:** Introduction of legume crops in association/rotation with maize

(3) Sensitization on **residue management**, **reduced tillage** and **safe use of pesticides**

(4) **Subsidization of a mineral fertilizer** imported from Vietnam




PAFO Land Regeneration Initiative

Key constraints / possible failure factors

- ***Market***: Absence of diversified market demand and/or absence of producer-trader arrangements, notably for legume crops
- ***Organizational***: Local crop-livestock management non adapted to dry season legume crops cultivation
- ***Coordination***: Limited communication between stakeholders (producers, traders, local government agencies, projects) to move forward more efficiently on the different issues (technical, organisational, value chains)
- ***Cropping systems****:* Absence of adapted methods and tools to assess the sustainability (socio-economic, environmental) of alternative cropping systems




Proposed activities		Main partners
0. Current activities	0.1. Establishment of pasture plots for cattle fattening	Lead: PAFO
	0.2. Development of maize-legume crops associations/rotations	
	0.3. Sensitization on residues management/tillage/pesticides	
	0.4. Subsidized mineral fertilizer and credit schemes	
1. Coordination and information-sharing	Roundtables and workshops involving development and private sector projects active in and around Kham basin	Lead: PAFO Contributors: all interested organizations/projects
2. Value chain studies	Value chain studies Laos-Vietnam on market opportunities for different commodities	Lead: EFICAS Key contributors: NUoL, ACIAR (study HP-SL)
3. Land-use planning	Piloting of TABI FaLUPAM (Longpiou village cluster)	Lead: TABI Key contributors: PAFO, DoNRE
4. Communication & negotiation processes	Innovative methods and tools to facilitate information-sharing, negotiation and collaboration between stakeholders	Lead: EFICAS Key contributors: PAFO
5. Multi-criteria assessment of CS	Methods and tools to assess the sustainability (economic, environmental, social) of cropping systems	Lead: EFICAS (2 pilot villages) Key contributors: PAFO

Communication and negotiation processes

- Serious simulation games to help stakeholders:
  - Grasp the impacts of their individual and collective practices and interactions
  - Reflect collectively about alternative practices and design technical-organizational innovations
- In Kham district, EFICAS is developing and experimenting a multi-level simulation game that will link:
  - Two coordination levels: land users at local level + traders and agricultural services at district level
  - Two key constraints faced by the current Land Regeneration Initiative: crop-livestock integration in the landscape + producer-trader interactions around legume crops value chains

➢ Core objective: fostering interactions between the production, market and policy "worlds" so that stakeholders can become aware of others' needs and constraints and debate of potential "win-win" scenarios

Communication and negotiation processes

Level-1 game: local land users facing decreasing productivity of maize

- Simple and adaptable rules to foster interactions / negotiations between players
- Different game boards to reflect local diversity in tenure, labour and financial configurations and to foster reflexion on inter-individual and spatial coordination

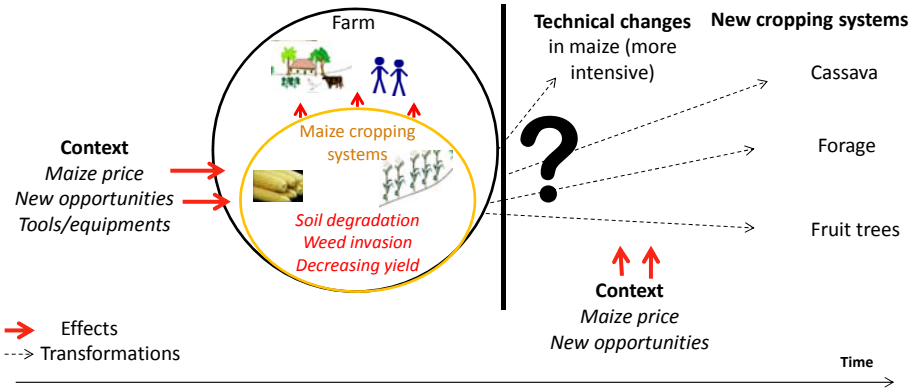
- Series of simulated events (e.g. livestock damages on crops, commercial proposals by traders) to which players must respond through both individual and collective strategies
- *Ongoing... Implementation in Kham this week, before design of the level-2 game involving traders/district staffs*

Proposed activities		Main partners
0. Current activities	0.1. Establishment of pasture plots for cattle fattening	Lead: PAFO
	0.2. Development of maize-legume crops associations/rotations	
	0.3. Sensitization on residues management/tillage/pesticides	
	0.4. Subsidized mineral fertilizer and credit schemes	
1. Coordination and information-sharing	Roundtables and workshops involving development and private sector projects active in and around Kham basin	Lead: PAFO Contributors: all interested organizations/projects
2. Value chain studies	Value chain studies Laos-Vietnam on market opportunities for different commodities	Lead: EFICAS Key contributors: NUoL, ACIAR (study HP-SL)
3. Land-use planning	Piloting of TABI FaLUPAM (Longpiou village cluster)	Lead: TABI Key contributors: PAFO, DoNRE
4. Communication & negotiation processes	Innovative methods and tools to facilitate information-sharing, negotiation and collaboration between stakeholders	Lead: EFICAS Key contributors: PAFO
5. Multi-criteria assessment of CS	Methods and tools to assess the sustainability (economic, environmental, social) of cropping systems	Lead: EFICAS (2 pilot villages) Key contributors: PAFO

ASSESS CROPPING SYSTEMS CONSIDERING THE DYNAMIC OF FARMING SYSTEMS AND THEIR CONTEXT

What opportunities for sustainable innovative cropping systems ?

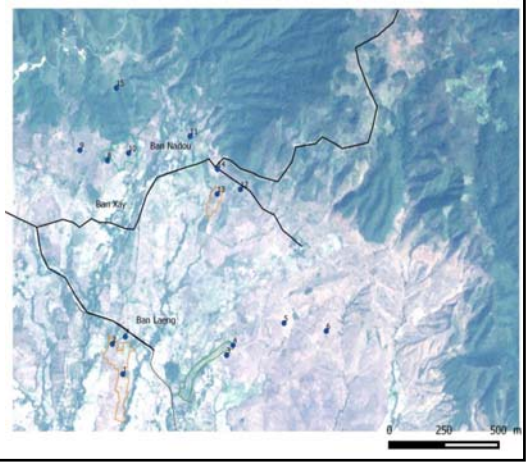
Kham district, XK



What are the **processes that lead to the increase of environmental impacts and the diminution of agronomic performances** of maize cropping systems?
What is the **speed** of the degradation of agronomic performances?
What are the **relevant indicators** to consider **the dynamics** of farming systems and their context?
What are the **opportunities for sustainable innovative cropping systems** when there is a dynamic of intensification and simplification of maize cropping systems ?

1) In-farm experimental design
15 fields, 37 sub-plots
Objective = to have the higher diversity of cropping situations:
good yield/low yield, top/bottom of the slope, high slope/flat land
gradient of intensification (herbicide, fertilizer, plowing) + innovative cropping systems

2) Agronomic/environmental indicators
Weed scoring, soil analysis, practices, rain/temperature, pest, yield, water/nutrients fluxes



Conclusion

Towards a more integrated intervention framework

Develop ***multi-criteria assessment*** methods and tools to assess the sustainability of alternative cropping systems

Addressing technical-ecological constraints

Engage village communities into ***participatory land-use planning*** (focus on crop-livestock interactions & structuring of production areas)

Addressing organizational constraints

Enhanced ***coordination and information-sharing*** between stakeholders to move forward more efficiently on the different issues (technical, organizational, market)

Evaluate the potential for development of ***value chains*** for different commodities (e.g. legume crops, cattle-forages)

Addressing market constraints

Experiment innovative approaches to facilitate ***communication and negotiation*** processes (e.g. serious simulation games)

Addressing organizational constraints

PAFO – Land Regeneration Initiative
Establishment of pasture plots for cattle fattening
Development of maize-legume crops associations/rotations
Sensitization on residues management/tillage/pesticides
Subsidized mineral fertilizer and credit schemes

Thank you for your attention!






EFICAS project