A landscape approach to co-designing climate change adaptation and mitigation strategies with farming communities

Eco
Friendly
Intensification &
Climate resilient
Agricultural
Systems

EFICAS project

EUROPEAN UNION

AGENCE FRANÇAISE DE DÉVELOPPEMENT

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BACKGROUND:
Agroecological transition is not a straightforward process

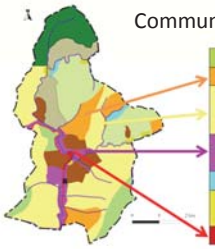
Over the past decades a large range of technical options have been tested successfully in the northern uplands of Lao PDR to support a sustainable intensification of upland agriculture. Today, soil conservation techniques are well known by most stakeholders, including village communities, but they are not spontaneously adopted.

The reasons for low adoption are often not related to the cropping techniques themselves but to external causes, such as the roaming cattle and buffaloes that damage cover crops, the limited knowledge of existing market outlets, or simply because farmers find it less labor consuming to till their land or to use chemical products instead of organic practices.

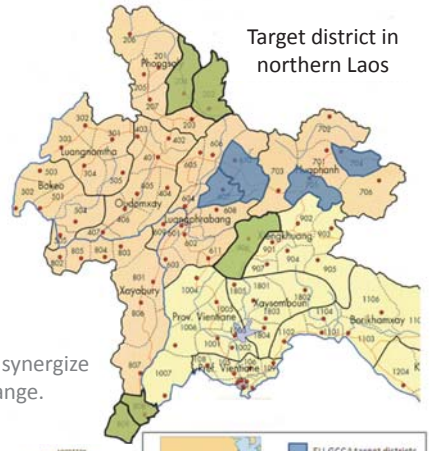
OBJECTIVES: operationalizing climate smart agriculture

Climate smart agriculture (CSA) is about managing trade-offs between (i) intensification (i.e. sustainable productivity increase), (ii) mitigation and (iii) adaptation to climate change. The synergies between these three pillars of CSA have been explored through a territorial approach that combines participatory land use planning and sustainable intensification of agriculture.

Community-based agricultural development plan



Land Use	Planned activities
Permanent crop	Want to fence permanent crop area with barbwires.
Rotational crop	Want to plant new crops to feed animals or improve the soil. Are not interested in improved fallows because.
Plantation	Wish to plant coffee and castor beans and increase teak plantations.
Improve pasture	Want to create an improved pasture area.
Paddy	Improved irrigation for the existing paddy area; Build new paddy areas up to 9.6 ha.
Garden	Would like to increase and improve home gardening.



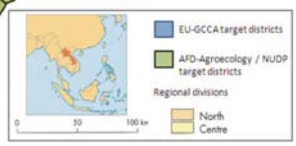
Target district in northern Laos

METHODS: synergizing landscape planning and agricultural intensification

The approach developed by the Eco-Friendly Intensification and Climate resilient Agricultural Systems (EFICAS) Project in Laos is based on an in-depth understanding of the patterns and drivers of land use changes.

- It engages local communities in collectively planning their land use.
- Multiple stakeholder groups are involved in negotiating and supervising landscape level intensification patterns that synergize mitigation (e.g. carbon sequestration, soil conservation) and adaptation (e.g. resilience enhancement) to climate change.

KEY LESSONS: the cornerstones of climate smart agriculture



Designing heuristics

A system can be considered as "smart" (thus self-adaptable) only if he has some capabilities of self-observation to assess its own behaviors as part of iterative design loops. The new engineering science relevant to CSA therefore consists in studying and designing heuristics, i.e. approaches to problem solving, learning, or discovery not guaranteed to be optimal but sufficient for the immediate goals. Indeed, the complexity of the environment implies imperfect anticipations which reveal our cognitive limitations when attempting to project ourselves over long periods of time. Planning without final goals gives more value to the problem solving processes than to the solution to problems itself.

Timing is everything

In a co-design process with communities, defining the right timing for interventions is a key to success. Windows of opportunities should be systematically defined to match specific technical or organizational innovations to local circumstances and trajectories of change.

External intervention in the absence of locally adapted support, long term presence and monitoring is meaningless to local communities and therefore extension artifacts (e.g. seeds, equipment) end up untended and often abandoned. Bridging planning and extension activities requires scientists to spend sufficient time in the field. Dedicating time and attention to local transformative processes pays off.

Agroecological practices

CONCLUSIONS

Landscape approaches emphasize adaptive management, stakeholder involvement, and multiple objectives. Identifying relevant '**heuristic mechanisms**' and '**windows of opportunity**' provide greater impacts on livelihoods, ecosystem services and resilience to climate change.

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