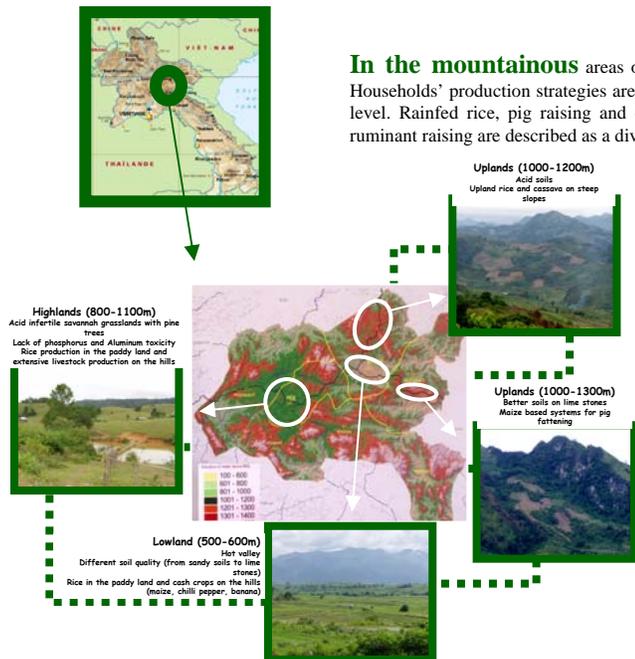


Impact of Urban Development and Market Access on Farming Systems Evolution in Xieng Khouang Province, PDR Lao

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In the mountainous areas of South East Asia, lowland paddy rice is often presented as the cornerstone of farming systems. Households' production strategies are usually analyzed according to two factors: access to lowland and households' rice self-sufficiency level. Rainfed rice, pig raising and off-farm activities are associated to households lacking paddy rice whereas cash crops and big ruminant raising are described as a diversification process run by families having already met their paddy rice needs (castella *et al*, 2002).

A survey of 73 households conducted in three districts of *Xieng Khouang* Province revealed that these traditional schemes are being slightly modified by (i) the increasing of local and regional urban consumption demand and, (ii) the better access to market in relation with roads construction or rehabilitation. Households were divided into different archetypes according to their food security strategy. Paddy rice and marketable products' respective importance in terms of labour, surface allocation and generated income were analyzed for each type. Agro-ecological situation appeared to be as important as households' rice self-sufficiency level to explain the difference in market response inside the household typology.

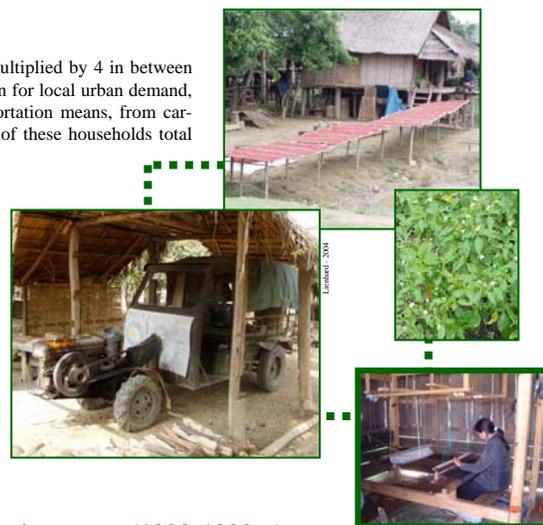
Households living in the Highlands (800-1100m)

This area is mainly covered by acid, infertile savannah grasslands with pine trees. Only 5% of the total surface is cultivated and rice paddy land represents 80% of this cultivated area (PAFO, 2003). Most households are involved in two main activities: paddy rice and livestock production. Rice crop residues are used to feed pigs and poultry; cattle and buffaloes are raised on natural pastureland and fed with rice straws after rice harvest and threshing. Extra-paddy rice and livestock sales allow to improve family livelihood (television, motorbike) and make on-farm investments (cultivator, husking machine).

New economical opportunities have introduced changes such as (i) an increase of fish ponds surfaces (multiplied by 4 in between 1996 and 2003, PAFO, 2003) and all animals sales (ii) an intensification of dry-season legumes production for local urban demand, (iii) an increase of silk weaving activity for tourism demand and (iv) a massive investment into transportation means, from car-cultivator to big truck. Livestock activities with both ruminants and non-ruminants represent 80 to 90% of these households total income.

Households living in the Lowlands (500-600m)

Crops diversification is more important in this warm valley. Crops are cultivated both on lowland and upland. Paddy rice, livestock and cash crops are the basis of the farming systems. When paddy land is not lacking, households are diversifying either into perennial cash crops (mainly banana trees) or annual cash crops (maize or chilli pepper) in the uplands. When paddy land is not sufficient enough to insure families' rice self-sufficiency, upland rice is then grown. In the last decade, cash crops and livestock activities importance has increased in all households' type with market enlargement. Watermelon, garlic, chilli pepper, maize or banana, initially produced for local market are now widely exported to Vientiane and Vietnam.



Households living in the uplands and sloping areas (1000-1200m)

Paddy land access is still limited in this area and farming systems are mainly based on slash and burn for upland rice or maize cultivation, livestock and gathering activities. Last decade changes include an increase of (i) cattle population (raise of 35% between 1996 and 2003; PAFO, 2003) and cattle sales; (ii) maize production for sale or for pig fattening with the emergence of non-rice based cropping systems in the lime stone production area; (iii) generated-income coming from gathering and hunting activities for urban demand; (iv) seasonal migration for labour sale (v) investment into transportation means (motorbike and small trucks) when rice-self sufficiency is achieved.

Conclusion and recommendations:

Upland development strategy for mountainous area in Lao PDR is still widely based on paddy land extension through irrigation and drainage network improvement, terraces implementation, lowland rice varieties improvement etc. even if:

- ✓ Paddy rice importance is decreasing in all farming systems: even when rice crop remains the main or even the lonely cultivated crop, income related to rice production never exceed 50% of total households agricultural income ;
 - ✓ Costs for paddy land implementation and maintenance are high ;
 - ✓ Projects aiming at extending paddy land did not succeed at reducing slash and burn importance;
 - ✓ Conflicts for water use between rural and urban areas will raise more acutely every year.
- There is therefore a need to work on more efficient cropping and fodder systems in the uplands in order to better respond to livestock and cash crops steady extension.

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