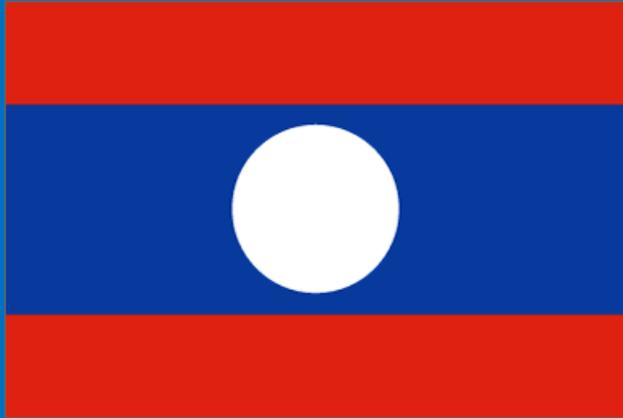


Lao PDR Country Paper

Current Status of Agriculture Mechanization and Marketing



**The 2nd Regional Forum on Sustainable
Agricultural Mechanization**
- Enabling Environment for Custom Hiring of Agricultural Machinery

9-11 September 2014 Serpong, Indonesia

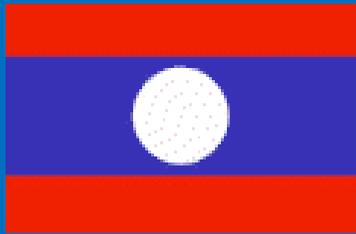
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Introduction

- “ Lao PDR is a landlocked country, limited infrastructure.
- “ Lao PDR is located in Southeast Asia, bordered by Vietnam to the east, Cambodia to the south, Thailand to the west and south, Myanmar to the north west and China to the north.
- “ In 2013, Lao PDR has a population of about 6,7 million and , one Capital is Vientiane city.
- “ The country covers an area of 236,800 square kilometres.
 - . About 20% of the land area is lowland, the other 80% is upland and mountainous.
 - . Agricultural land (3%) and
 - . Area for Agriculture 900,000 hectare.



Geographical Location



China
(505 km in the north)

Vietnam
(2,069 km in the east)

Myanmar
(236 km in the north west)

Thailand
(1,835 km in the west)

Cambodia
(435 km in the south)



The Dual Rural Economy

The Lowlands

- *Transformation Started*
- *Commercial factor and product markets operating*
- *Beginning of farming systems diversification*

The Uplands

- *Subsistence rural economy*
- *Limited markets*
- *Rural poverty*
- *Traditional farming systems*

Key Economic Factors

- “ 80% of the Lao population lives in rural areas
- “ Per capita gross domestic income is about US\$1,646 annually (2013);
- “ In 2008, economic growth was 7.0%:
 - . agriculture = 44.3% of GDP;
 - . industry = 30%
 - . manufacturing & services = 25.7%;
- “ Services sector is growing 8-9% annually;
- “ Mining sector is fastest growing industrial sector: expanding 12% annually:
 - . minerals include: gold, silver, copper, coal, zinc, tin, iron, sapphire, bauxite ore;



Agricultural Production

Trends in area planted and production of major crops

Crop	2005		2006		2007	
	Planted (ha)	Production (tons)	Planted (ha)	Production (tons)	Planted (ha)	Production (tons)
Paddy rice	793,980	2.57 mil.	808,640	2.66 mil.	812,617	2.71 mil.
Maize	86,000	296,860	113,815	403,585	154,255	620,550
Coffee	55,085	25,000	55,465	25,250	58,385	33,200
Peanut	16,650	26,990	18,385	27,600	15,965	35,070
Job's tears	11,900	19,720	10,620	25,450	14,845	36,715
Cassava	6,765	51,300	16,880	174,490	11,015	233,420
Soybean	9,535	11,100	8,920	11,955	8,040	10,455
Cardamom	8,220	2,010	6,955	2,010	6,745	1,605

Food, Agricultural, and Forestry Exports from Lao PDR, 2006

Food, Agricultural, and Forestry Exports from Lao PDR, 2006			
Item	% of total exports	% Annual increase / decrease in export value	Export Value (US\$)
All industries	100.00	37	913,969,000
Wood and articles of wood, wood charcoal	12.75	7	116,434,000
Cereals	1.47	110	13,386,000
Coffee	1.22	-2	11,161,000
Rubber	1.33	69	12,146,000
Oil seed, oleagic fruits, grain, seed, fruit	0.62	13	5,661,000
Edible vegetables and certain roots and tubers	0.22	49	1,980,000
Lac, gums, resins, vegetable saps and extracts	0.19	6	1,766,000
Total Food, Agricultural, and Forestry Exports	17.80		162,534,000

Policies of the Government

“ Economic Development

- “ In 1986, the Government introduced economic reforms in the form of the New Economic Mechanism (NEM),
 - . which aimed at giving increased roles to the market forces and to the private sector in the allocation use of resources.
 - . reforms in macro-economic and trade policies.
 - . During 1996-98, the Government was attempted to mobilise domestic resources, improve public expenditure management, advance trade reforms, strengthen the financial sector, and complete privatisation of non-strategic state enterprises.
 - . The role of the private sector has gradually expanded since the introduction of NEM whose policies have removed regulations that were inhibiting private sector participation.

Development Strategy:

The overall development objectives of the Government are to continue focusing on the structural transformation of the economy and the improvements of the living standard of people especially in remote areas.

- . To achieve these goals the Government has identified eight National Priority Programmes, which are outlined in the Socio-Economic Development Plan. These include:

1. *Food Production Programme (Achievement of food self-sufficiency, mainly increasing rice production)*
2. *Commercial Production Programme (from subsistence crops to cash crops, increase of agricultural exports through diversification, commercialization and processing of production: cash crops, livestock, forest products)*
3. *Stabilization and Reduction of Shifting Cultivation Programme (Stabilization of slash-and-burn agriculture by resettlement of upland farmers, by terracing, and by supporting alternative agricultural activities including agro-forestry and livestock)*
4. *Integrated Rural Development (Acceleration of rural development with special emphasis on the seven major plains of the country by introducing improved technology including irrigation)*
5. *Infrastructure Development (Expansion of the infrastructure network: communication, transport)*
6. *Human Resources Development (Improvement of human resources development to create a skilled work force capable of meeting national development demands)*
7. *Improved Socio-Economic Management and Foreign Economic Relations*
8. *Services Development Programme (Improvement of services sector development including tourism)*

Tackling problems: strategic view of the Lao PDR Government



“ The **Ministry of Agriculture and Forestry** has developed **4 Goals & 13 Measures** to guide its work.

Agriculture & Forestry Sector Strategy

4 Goals & 13 Measures

Goal 2: Commodity Production:

- “ Supply raw materials & agriculture & forestry products to processing industries & the service sector.
- “ Increase export share of agriculture & forestry products to 1/3 (approximately US\$1 billion) of the total export value of commercial &
- “ services sectors (US\$3.48 billion) by 20103



Smallholders in the Agriculture & Forestry Sector Strategy

4 Goals & 13 Measures

❖ **Measure 2: Survey & Allocation of Agriculture & Forestry Production Zones**

- Zoning for rice production & increasing productivity in irrigated & non-irrigated areas
- Zoning for intensive agricultural production & development of new cooperative system;
- Review of the land lease policy;

❖ **Measure 4: Extension Services & Human Resources Development**

- Promotion of high productivity & low cost production technologies.
- Capacity building of DAFO; development of technical staff & establishment of technical & information service centers for village development groups.

❖ **Measure 5: Establishment of Village Development Groups linked to Sector Development**

- Implementation of the Politburo Order to establish village cluster development groups (*koum ban patthana*); moving development towards the grassroots level.

❖ **Measure 6: Organizing Production & Establishing Economic Structures from the Local / Grassroots Level**

- Strengthen production groups in pilot areas; formation of production cooperatives for marketing systems, processing services, communications, savings & credit.

❖ **Measure 8: Increase Productivity (through the application of fertilizer, compost, improved seeds, advanced technology)**

- Support intensive use of technology to increase agricultural & forestry productivity.

Agriculture and Mechanization

- “ 70% of population lives in rural areas relying on farming, fishing and natural resources .
- “ The major staple food is rice (sticky rice and white rice) and following by corn and legumes
- “ weak awareness and lack skills and technologies, farm operation usually causes negative impacts to environment and health of the farmers in term of overuse herbicide, pesticide and burning crop residues in the field.
- “ In the past, traditional production methods which include draft animal power, man power were mainly implied in agricultural activities.
- “ During 1980s which introduced application of mechanization through DOA (Vernkham Agricultural Machinery Center in Vientiane) but could not continue.

Agriculture and Mechanization

- “ At present, application of traditional production method based on animal power, particularly in Lowland areas gradually reduce and shift to mechanization, for instance, small hand tractors are play a dominant role in agricultural activities, following medium & large tractors ranging from 37-95 HP and other related farming equipment such as transplanting machine; harvester; seed dryer and rice mill.
- “ The most suitable way to implement this full-scale mechanization approach is by the way of pilot projects in various production conditions.
- “ The pilot schemes must allow the full operation capacity of the machinery in order to
 - . establish the cost-benefit analysis under real production conditions; this means that the plantation area shall be at least 50 ha to justify the investment for mechanization.
- “ Only practical experience in the field can provide the necessary and essential information about specific local needs and necessary modifications.
- “ Training needs for farmers must be identified and training provided.
- “ Essential services must be implemented and coordinated with machine manufacturers.
- “ For a successful implementation of mechanization the following issues are essential:
 - . Farm Mechanization Planning,
 - . Mechanization & Farm Management,
 - . Technical training including operation & maintenance

Status of Custom Hiring of farm machines

“ Machinery Requirement for Improved Rice, corn Production System

1. Land leveling equipment:

- . Small farmers are planting rice in small plots with numerous dikes to keep water because the land is not level. This situation makes it difficult to use mechanization.
- . the land leveling equipment so far not service in farmers field only in research station and some pilot project here lack of information.

2. Tractors:

- . A tractor itself does not provide a tool to improve productivity. Only in combination with the right equipment, tools and skilled driver it can be of the anticipated benefit.
- . In general, the first plough operation by using tractor, rotary mulcher and heavy power-tiller cost about 25 US\$ per ha, however, majority of small farmers are using small hand tractor due to farmers can easily invest in this machines with affordable cost.

Status of Custom Hiring of farm machines

Planter/transplanting machine:

- “ Services on rice transplanting are also practicing among small farmers, one service package including seedling and transplantation cost about 233 US\$ per ha.
- “ In general, rice transplanting is manually operated; considering as high labor consumption.



Status of Custom Hiring of farm machines(cont')

" Harvester:

not playing a role in productivity improvement. It is only replacing manual manpower in the harvest operation in some areas.

The cost of harvest operation by combined harvester is about 38 US\$ per ha, while small mowing machines are playing a role in harvest operation by several small farmers.

The cost of harvest operation by this small machine is about 12 US\$ per ha, but it needs another step for **threshing**. usually charge in kind method, not cash; for instance, one bag will be withdrawn from 20 bags as fee for thresh operation. It is generally carried out among farmers in Lao PDR.

" Flat bed dryer for Rice & corn:

Post-harvest losses account for about 15-20% for Lao PDR. To obtain good quality rice paddy and corn, the moisture content of the paddy and corn needs to be reduced from over 20% at harvest time to safe level of 14% within 24 hours. The cost of drying operation for rice and corn is about 6 and 4 US\$ respectively.

" Silo-dryer:

A silo in vicinity of production area is considered necessary to keep the grain for a longer period and prevent for losses due to moisture and rodents etcõ however, silo-dryer is rarely used by small farmers .

" Rice mill:

Rice mill brings value addition to farmers while good quality white rice, corn with adequate packaging promotes marketing and brand recognition.

The cost of rice milling operation is about 38 US\$ per ton; or free of charge; if a custom takes back the rice bran.





Supporting Policies

Strong policy support in promoting rice value chain in the province with organic and machinery use.

Contribution from development agencies in promoting rice value chain and processing.

- “ Abundant natural resources and suitable land areas for growing rice.
- “ Regional linkage (Infrastructure): market road to Thailand, Vietnam and Cambodia.
- “ Potential market channel to Vietnam (Quota 70,000 tons/year of mill sticky rice) and China.

Social and Economic Benefits

- “ In average, one farmer hold arable land 1.5 to 3.0 hectares in central and southern part of the country which mostly are for rice farming activities both in wet and dry season.
- “ In general, small farmers cannot own expensive farm equipment units and machines; however, they are making use of modern technology like tillage equipments, harvester and thresher through hiring service.
- “ This has helped the farmers to improve the timeliness of field operation, to increase land productivity and economic return.
- “ As result of application of mechanization among farmers have proved to be improved a living standard farmers whom cannot afford to invest on modern farm equipments.
 - . In addition, majority of farmers have owned small hand tractors, which help reducing operation time on land preparation; if comparing to traditional methods.
 - . Custom hiring of application of thresher also has widely operated in farmer community; this has totally replaced rice threshing operation by manual.

Challenges and Constraints faced

“ **Farmers’ perspective:** it has been observed that

- . majority of small farmers have been insufficient capacity in production planning (quality & quantity) to meet market demand;
- . have limitation technical knowledge of post-harvest handling and marketing techniques;
- . difficulty in accessing financing for market-oriented farm-based activities and
- . labor is becoming scare due to industry competition for workers (especially garment industry).

Government’s perspective: In reality, it has been found several challenges and constraints such as

- 1). Farmers do not diversify cropping patterns;
- 2). Extension technicians do not meet technical needs of farmers organizations;
- 3). Foreign agribusiness investors lack experience working with Lao farmers;
- 4). Difficulty to organize farmers in groups (legal framework still unclear, powerful private commercial interests, lack of understanding from both farmers and extension staff);
- 5) Linkages between agribusiness and farmers are not easy to establish (due to trust does not exist for farmers or companies don’t respect contracts, paradigm shift for agricultural extension organization now need to look at the market, not only at production; Agreed quality standards are still to be established and Infrastructure needs further improvements);
- 6). Farmers have a low access to information, technology (on farm process) and knowledge, finance, labor and land (land titling and mapping is in progress and needs to be continued);
- 7). However, agricultural commodity production and marketing models are developed; yet needs to be strengthened and replicated at large scale

Solutions and Suggestions

- “ Establishing machinery cooperative in each level and share the service
- “ Promote private sector to service on farm machine and marketing
- “ Diversification of agriculture and introduction of related farming equipments for small farmers
- “ Provision of knowledge on pre- post harvest technologies and marketing techniques to farmers



