Country Presentation Paper - Cambodia
The Tenth Session of the Technical Committee (TC) of CSAM & Regional Workshop on Establishing a Regional Database of Agricultural Mechanization in Asia and the Pacific
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I. Country profile

Cambodia is a country which occupies the southern part of Indochina and borders with Thailand to the north and west, Lao PDR to the northeast, and Vietnam to the east and southeast and it has a 443-kilometer (275 mi) coastline along the Gulf of Thailand. The country has a land area of 181,035 square kilometers (69,898 sq mi) of which nearly 20 percent is under agriculture. It lies entirely within the tropics, between latitudes 10°N and 15°N, and longitudes 102°E and 108°E.

II. Agricultural Production

Cambodian farming systems are largely subsistence oriented and are dependent on rainfed conditions, thereby excessively exposing producers to production uncertainties. Most agricultural activities are based on low inputs and rainfed production systems centered on paddy rice production.

Cambodia grows a range of agricultural crops over a cultivated area of 4,505,267 ha out of its total land area (181,035 km2) (Table 1). Paddy, which is the main crop, occupies about 68% of the cultivated area, followed by subsidiary and industrial crops 21%, rubber plantation 7%, and permanent crops 4%.

Table 1: The cultivated area in Cambodia in 2013

Crops	Cultivated area (ha)	Remarks
Rice crop	3,052,420	Wet & dry seasons, receding, floating
Subsidiary and industrial crops	941,028	Maize, cassava, sweet potatoes, vegetables, all kinds of bean, sesame, sugar cane, tobacco etc.
Permanent crops	183,048	Cashew, banana, oil palm, coconut, mangoes, coffee, durian, pepper, orange, and other fruit etc.
Rubber plantation	328,771	
Total	**4,505,267**	

Source: MAFF, 2014

The share of agricultural sector in the Gross Domestic Product (GDP) for the last four years remained fairly constant (Figure 1). Its contribution was about 33% on average, while industry and services were about 23% and 38% respectively. The increase or decrease of the contribution of agriculture sector was dependent on the other two sectors.

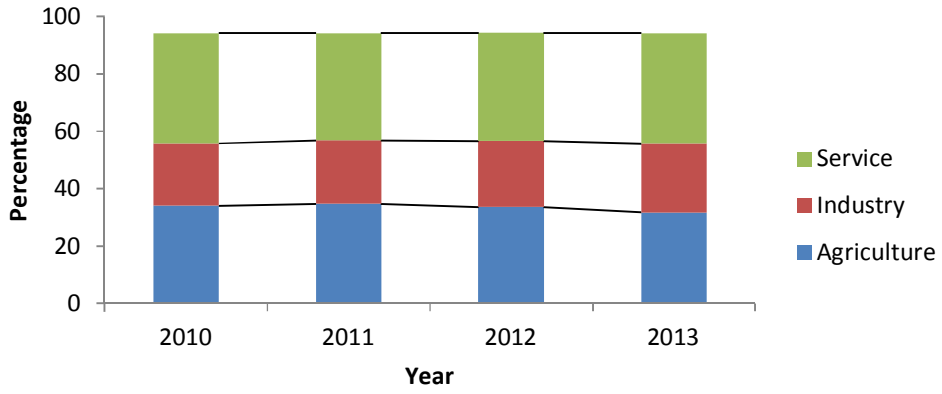

Figure 1: Share of agricultural sector in GDP from 2010 to 2013

III. Status of Agricultural Mechanization

3.1 General situation

Because of migration of young people move out of rural areas to work in urban areas for garment and shoe factories, construction, or migrate to work abroad; climate change; and demand for food is increasing as population growing; farmers have started to use more and more agricultural machineries since 2009 for farming.

In Cambodia, the characteristics of the use of agricultural machinery depend mainly on farm size, crop types and terrain.

Power tillers are used throughout the country by farmers with small land holding size. Large tractors are preferred by owners of larger land size, and rubber, cassava and sugar cane plantations, and other concessional lands granted by the government.

The northwestern region (Pailin, Battambang, Banteay Meanchey) is characterized by large land size per household. There, large tractors and combine harvesters are used.

In northwestern region as well as upland region, large tractors with power more than 50 HP are preferred, of which the majority are MTZ tractors from Belarus; Kubota and Yanmar assembled in Thailand; Mahindra and John Deere from India; and Foton from China. Power tillers are imported from Thailand, China, or Japanese brand assembled in Thailand; their powers range from 12 to 15 HP.

In provinces around Tonle Sap Lake, low-lift engine pump is used to irrigate rice fields. Power tiller is used to drive this pump. In southern provinces such as Takeo, Kandal and Prey Veng, where ground water is sufficient for irrigation in dry season, centrifugal pump is used.

3.2. Status of Database of Agricultural Mechanization

In Cambodia, the statistical data on agricultural machineries and equipment is still limited and not in-depth. Most data are based on data collected by district agricultural

offices and there is a lack of data on agricultural machineries' distributors, local manufacturers of agricultural machineries and equipment.

The number of farm machinery has been increasing widely since 1990s especially in land preparation, irrigation, threshing and recently harvesting. The numbers of tractors increased repeatedly at the rate of 145% during the last 10 years (3,857 units in 2004 and 9,467units in 2013). The provinces around Tonle Sap Lake and dry season rice areas in the south have higher growing rate. The number of power tillers significantly increased at the rate of 648% during the last 10 years (20,279 units in 2004 and 151,701units in 2013).

Similarly, the increased rate of threshers in the same period was 182%. Water pumps were also widely used in irrigated areas around Tonle Sap Lake and dry season rice in the south (140% increases). For the last 4 years, combine harvesters were introduced with a growth rate of 384% (947units in 2010 and 4,580units in 2013).

Around 9,500 tractors and 151,700 power tillers have been used in 2013 and mainly imported from Belarus, China, Japan, India, US and Thailand. More and more foreign manufacturers are interested to do business in Cambodia. Local manufacturers of farm machineries and equipment, usually, produce thresher, water pump, local-made truck for transportation, trailer, implements and spare parts such as cage wheel. Due to their limited technological capacities, they can manufacture only simple machines which do not required sophisticated production process or tools. Normally, they are still small scale and family owned with a few workers and operate seasonally and to supply to local market.

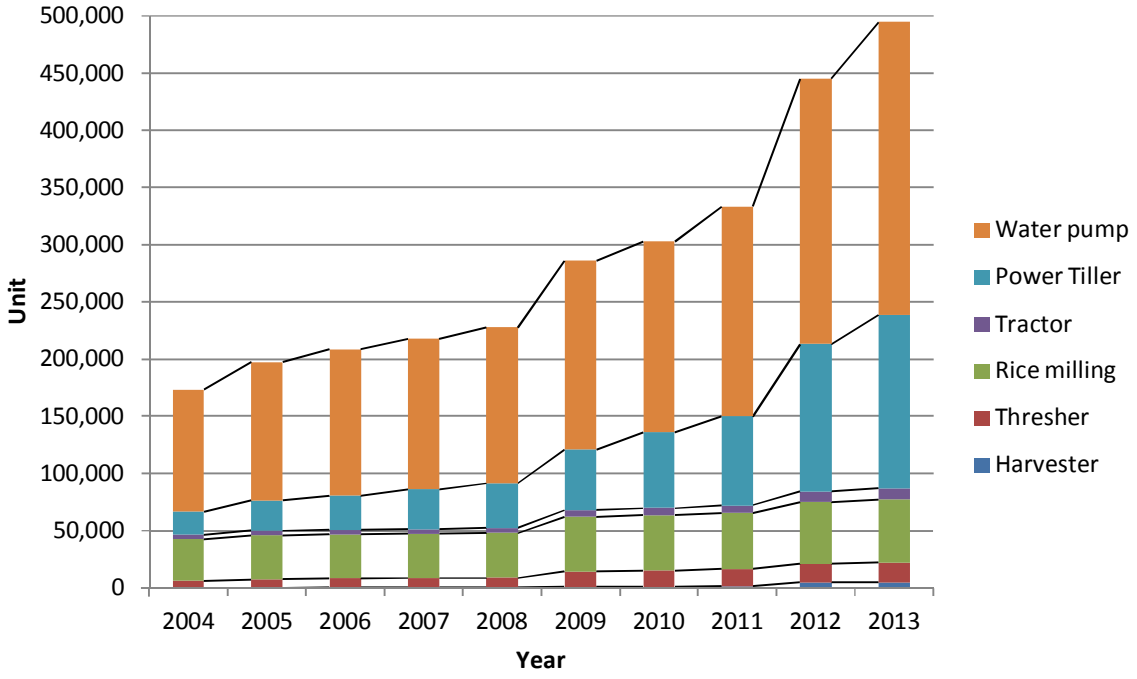

Figure 2: The number of agricultural machinery in Cambodia from 2004 to 2013 (DAEng, 2014)

The major machineries imported over the last 10 years are equipment, power tillers, rice mills, water pumps, combine harvesters, tractors, dryers, and threshers (Figure 3). They were either brand-new or second-hand. Overall, the number of units imported per category per year fluctuated. There was no observed pattern of increase or decline. Thresher had the lowest number of units imported, that might be cause by the wide availability of local-made. Small dryer with capacity less than 6-10 tons per day had also lower number compared to other machines since the use of dryer might be most of farmers favor to sell their paddy at paddy fields after harvesting to the middle men or rice milling owners. Most of the rice milling owners have their own dryers with capacity more than 30-50 tons per day and they prefer to buy wet paddy from the fields in order to get better quality of rice after milling.

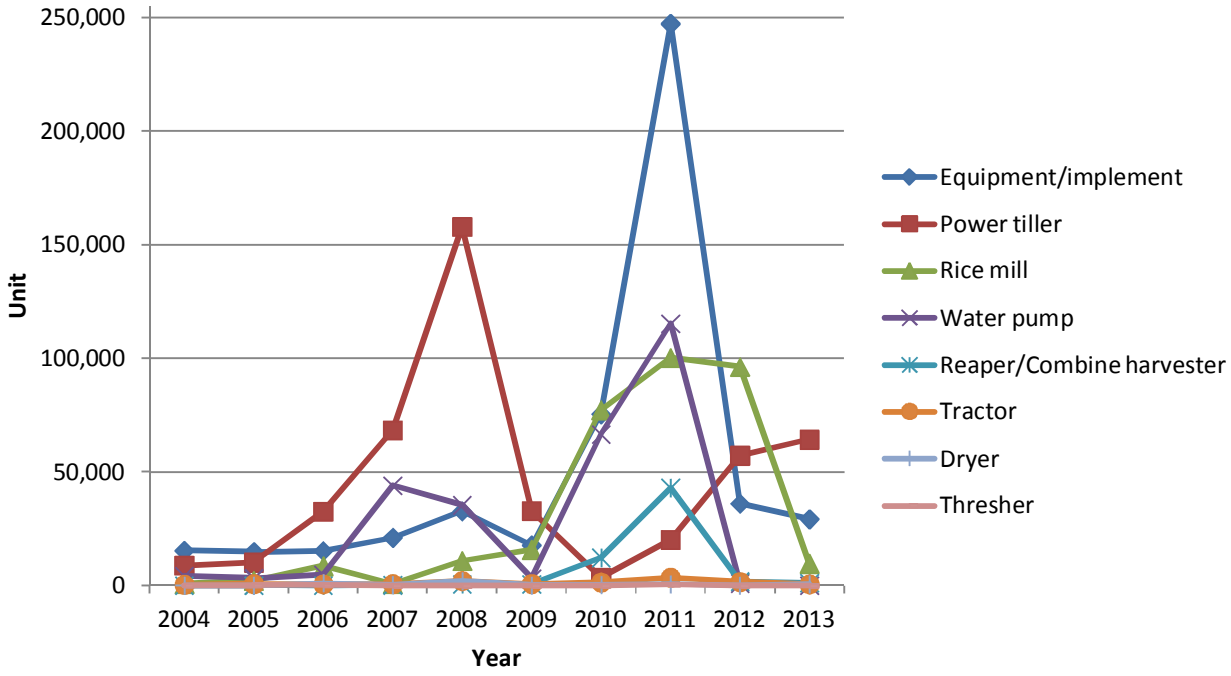

Figure 3: Number of imported agricultural machineries and equipment from2004 to 2013 (General Department of Customs and Excise, 2014)

IV. Supporting Policies

The strategic plan on agricultural mechanization was developed by the Department of Agricultural Engineering since 2011. This strategic plan aims at enabling access to mechanization, skill development, strengthening of commodity chains, and improving policy, legal and regulatory environment. It will serve as the four key drivers in promoting agricultural mechanization; however, it is not functioning and lack of funding to implement it.

There are four key drivers in promoting agricultural mechanization as below:

1. Enabling Access to Mechanization;
2. Promoting of self-help group (saving group) among farmers to mobilize local financial resource to invest in mechanization;
3. Commercialization of Agriculture Technologies; and
4. Better Policy, Legal and Regulatory Environment.

The Royal Government of Cambodia offers zero tariffs for import of farm machines and equipment. In addition, VAT of 10% is also exempted. Loans are provided by some dealers because there are demands of such loans to buy expensive machines such as tractor and combine harvester. Some dealers operate their own microfinance scheme to provide loan for buying their machines and some provincial branches of larger dealers also have their own scheme of loans. Beside this, there are several banks and micro-finance institutions that offer loans.

V. Challenges and Constraints faced

5.1 Major obstacles on the promotion of farm mechanization

There are several issues and obstacles related to the promotion of farm machinery in Cambodia are described as below:

1. Policy and Strategy on Agricultural Mechanization;
2. Human Resources;
3. Budgets;
4. Irrigation and drainage systems;
5. Cooperation;
6. Credits;
7. Repair and Maintenance; and
8. Local Manufacturers.

5.2 Other issues relevant to the farm mechanization.

• A change from traditional labor intensive production and post-harvest operations to labor saving technologies and mechanization is appearing in Cambodia and in response to rising labor scarcity and the increasing women works in agriculture due to the propensity of more men migrating to urban areas or neighboring countries than women. Besides this, women access to public services, training, extension and credit is limited when compared to men. Further technologies are more relevance and designed to suit the physical constructs of male workers and thus women workers are lack appropriate technologies encouraging for them.

• Rural youth represents a potential resource for rural development and they have potential for the innovation and risks taking that are often the core of smallholder agriculture. Nevertheless, most of them migrate to find off farm job at urban areas or neighboring countries.

• Young generation is not interested to study for degree related agricultural mechanization. Enrollment at university is low compared to other programs. This may due to the less significant role of agricultural mechanization in the past.

• Some farmers owned un-necessary machine which did not match with their farm size or they did offer for custom service work, therefore low utilization rate of machines and resulted in high fixed cost of machine and cost of production.

VI. Solutions and Suggestions

There are some key driving factors should be considered as below:

- Develop national policy to enhance agricultural mechanization sub-sector in Cambodia to ensure the import of agricultural machineries and equipment with high quality, suitable for Cambodian conditions and affordable price;
- Improve data collection and management systems for agricultural machineries and equipment to be comprehensive which is compatible which can be shared and used by other countries.

- Support and encourage local manufacturers to produce local products with reasonable price, safety, quality and suitable for local geographical conditions;
- Improve farm infrastructure and land leveling;
- Provide in-service training for extension officers and manufacturers to improve their knowledge and skills;
- The establishment of Agricultural Machinery and Equipment Testing Center;
- Focus more on the development of small-scale and family-owned manufactures;
- Strengthen agricultural machinery and equipment supply networks and promote the manufacturing base on agricultural operations and processing technologies;
- Promote environmentally friendly mechanization practices that will result in sustainable economic growth;
- Promote agricultural machinery custom hiring service that will make extensive use of agricultural machines economically and efficiently;
- Establishment of adequate repair, maintenance and parts supply lines, as well as local stocks;
- Credit scheme should be available for all sizes and types of agricultural machinery and equipment;
- Enhance research and development of new agricultural machineries and equipment which are needed at the present or in the future and appropriate for different geographical conditions;
- Support agricultural mechanization strategy (AMS) to be fully functioning;
- Establish laws, guideline, and other related regulations to improve the efficiency of the management of agricultural mechanization and protect the benefits of all stakeholders; and
- Improvement of collaboration both inside and outside the region as well as building good relationships between public institutions, private sector, development partners, farmers and other stakeholders to enhance efficient management of agricultural mechanization in Cambodia.

Thank you for your kind attention!