

# **COUNTRY PRESENTATION PAPER**

## **THAILAND**

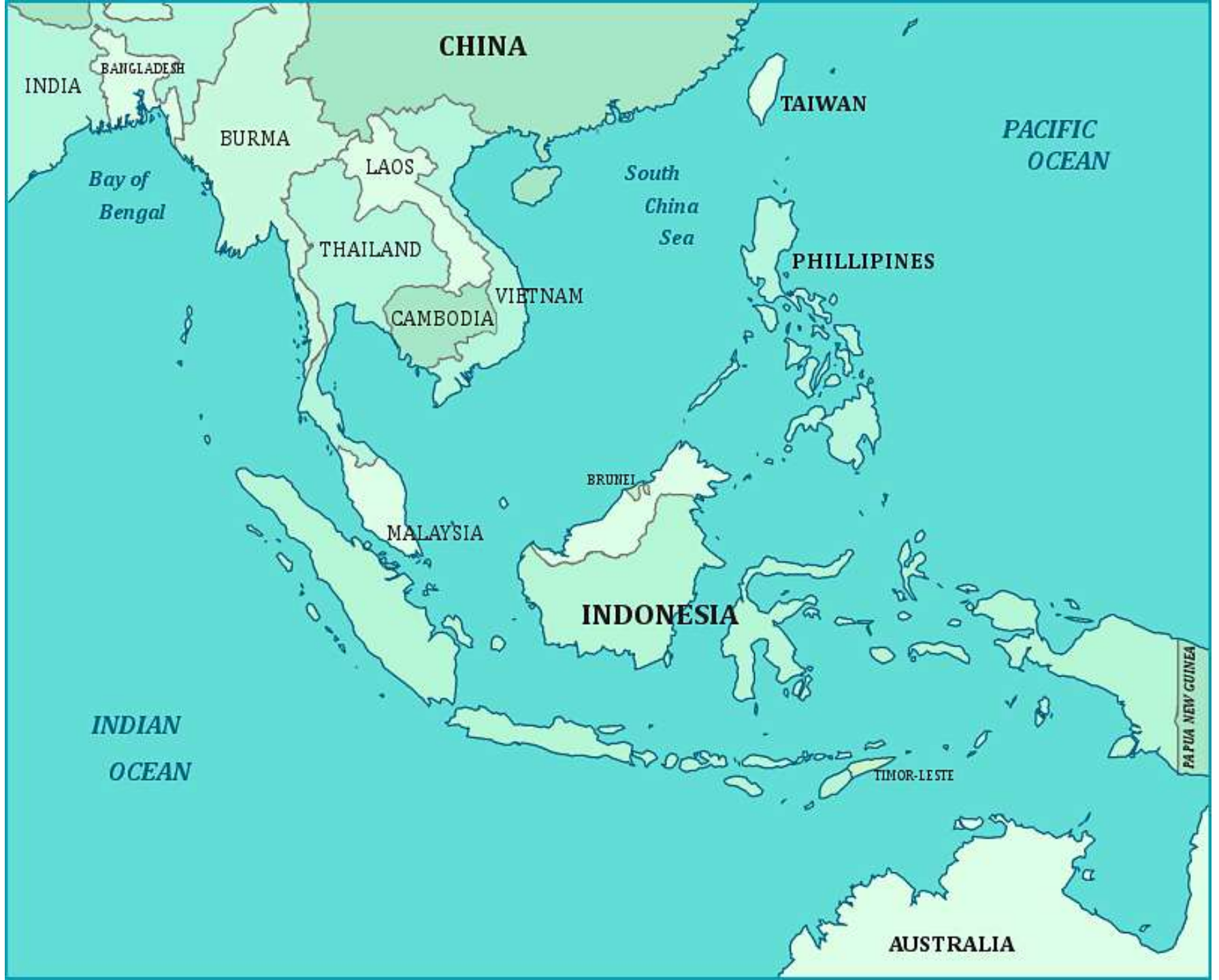
**Regional Roundtable of National Agricultural Machinery  
Associations in Asia and the Pacific**

**Viboon Thepent**

**THAI SOCIETY OF AGRICULTURAL ENGINEERING(TSAE)**

**THAILAND**

**28-30 October 2014**



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# Associations in Thailand

1. THAI MACHINERY ASSOCIATION or TMA was established on November 13, 2001 by operators in the machinery industry who reckoned that Thais should have an opportunity to take part in the development of the country's manufacturing sector, which uses machinery as its principal means of production. They also wanted to promote Thai-made machines as tools that can drive economic development, with the objective of putting more of the business in the hands of Thais.

## Objectives

- To be a center for buyers and sellers and a business coordinator for exchanging expert knowledge and disseminating machinery information.
- To promote and develop export knowledge and working skills for SME lathing plants.
- To support and develop instructional and training programs for the machinery industry
- To research and develop new technology for developing higher capacity of the machines.
- To coordinate with the membership of associations of clubs concerned with machinery and metal technology

2. Agricultural Machinery Manufactures Industry Club was established in 1980, which is under the Federation of Thai Industry.

### 3. Thai Society of Agricultural Engineer (TSAE)

TSAE was established on February 19, 1976 by a group of engineers, consisting of academics, engineers, scientists, industrialist and others interested in the field of agricultural engineering. It sees it as essential to have a central knowledge of those in the field of Agricultural Engineers in Thailand.

#### Objectives

- To promote the study and dissemination of science in agricultural engineering and Bioengineering
- To promote fellowship, honor and welfare of its members.
- To promote the charity, sports and entertainment.
- To promote the dignity of the profession in Agricultural Engineering.
- To coordinate between the various institutions both internal and international.

# Thailand is an agricultural country



**Location:** Thailand is located in the center of peninsular Southeast Asia. Burma is to the west, Laos to the north and east, Cambodia to the southeast, and Malaysia to the south. The south coast of Thailand faces the Gulf of Thailand.

**Size Total** of 514,000 square kilometers

Crop production is the most important sub-sector of agriculture. In 2010, it contributed approximately 61.8% of gross agricultural output of Thailand, followed by livestock (15.6%), fisheries (22.4%), forestry (0.02%) and others (0.18%). The five most important crops in terms of cultivated area and value of production in Thailand are rice, maize, sugarcane, cassava and soybean with the area of 10.75, 1.11, 1.14, 1.03 and 0.16 million ha respectively.

Farm machineries in Thailand are essential in land preparation. For dry land soil preparation mainly large four-wheel tractors with disc tillers are used while locally made power tillers (8-12hp) are popularly used for the wetland cultivation. In some area, farmers have changed their planting practice from transplanting method direct seeding method by using rolling injection planters or seedling transplanted essentially in maize and soybean land. In the harvesting process of rice, the adoption of local rice combine harvesters has been rapidly expanding during last decade. In addition, sugarcane harvesters and corn combine harvester were used in custom service since 1995.

In the present, most of the agricultural equipment used in Thailand is locally produced such as tractor, power tiller, disc plough, disk harrow, water pump, sprayer, threshing machine, reaper, combine harvester, cleaning equipment, dryer, rice milling machines, and processing equipment etc.

However local machines produced from small manufacturer, are not standardized in quality, efficiency and durability. Some agricultural machines are imported from overseas by companies for Thai agricultural productions.



Mechanization play very important role in the present agricultural production of Thailand. Labor shortage and necessity to reduce production cost have obviously shown off. Undoubtedly, demand for agricultural machinery will remarkably increase during next ten years.

Agricultural mechanization for rice production is the most progressive compare to other crops. The Central plain region is the highest progressive mechanization and nearly full mechanization then increased and expanded to other regions of the country.





Table1. Major products of Local manufacturer in Thailand in 2001

Machine	Production in units per year
Two wheel walking tractors	80,000
Large tillage implements	3,000
Small tillage implement	90,000
Threshing machines	2,000
Combine harvester	600
Sprayers with hand operated	60,000
Irrigation pump	55,000

Source: The Agricultural Engineering Research Institute

In 2012, 4- wheel tractors and rice combine harvester produced in Thailand was estimated about 40,000 and 3,000 units annually.

According to the Department of Industrial Works, it was reported that there were 2,809 industries which produced and repaired agricultural machinery in 2009, as shown in Table 2.

Table 2 Number of Agricultural Machinery Industry

Type of Machines	No. of Industry
Walking tractor	275
Tillage equipment	329
Planter	16
Sprayer	447
Harvesting machine	386
Others	164
Repair and maintenance	1,192

Source: Department of Industrial Work

## Specifications of agricultural machinery commonly used

At present agricultural machinery is widely used among Thai farmer. There are many companies research themselves and import farm machinery from overseas such as China, Japan, Korea and Europe. Farmers have tendencies to use agricultural mechanization in their works due to lack of farm labor.

Table3. Specification of agricultural machinery for rice production in Thailand Year 2008

Items	Quantity (Unit)	Price (baht/unit)	Value (Million baht)
Tractor	287,226	302,557	86,902.237
Power Tiller	2,644,982	30,256	80,026.575
Irrigation Pump	1,430,984	4,500	6,439.428
Combine harvester	41,143	1,411,932	58,091.118

Source : Office of Agricultural Economics(2008)

# Supporting Policies

## Government policy on the sector

There is no declared policy on farm mechanization by the government in Thailand. After determining the role which agricultural machinery has played in agricultural development in many other developing countries, and realizing its responsibilities, the government started showing increasing interest. These include formulation of policies; determining priority needs; selection of suitable agricultural machines; research and development; dissemination of information and extension services; provision of credit; coordination of activities; training of farmers, extension agents, and manufactures; assistance for manufacturing and on the farm use of mechanization inputs

The current National Economic Development Plan is the Eleventh Plan (2012 – 2016).

Strengthening of the agricultural sector and security of food and energy are stated in the plan. Development guidelines include:

Increase agricultural productivity. Research and development should be emphasized while agricultural production should be modified according to socio geographical conditions. Controls on imported chemical fertilizers and pesticides should be considered and their use on farms should be inspected to assure that they meet standards.



Agricultural practices that preserve biodiversity and are suitable for the climate and the environment should be encouraged, while basic services for agricultural production should be improved. Development of science and technology for agriculture is essential, including support for technologies for production whose utilizing is friendly to the environment.

## Provision of agriculture credit

As in most developing countries, it used to be difficult and expensive for Thai farmers to access credit. Market failures demanded both public investments and institutional development. From 1975, the Bank of Thailand instructed all banks to allocate a growing share (up to 14% in the 1980s) of all commercial loans to agriculture, at an interest rate lower than the market rate. Penalties on banks that could not meet targets contributed towards funding the Bank for Agriculture and Agricultural Cooperatives (BAAC), whose development was supported also by public and international funding.

BAAC has subsequently expanded provision of agricultural credit, reaching 90% of farm households and all farm cooperatives, , using a group liability guarantee that enables small farmers to access short-term credit without land titles as collateral. The BAAC is now almost entirely self-financed, achieved by attracting savings accounts, thanks to a wide network, competitive rates and a positive image.

The Thailand Board of Investment (BOI) plays a major role in development of the country's machinery industry. By offering tax breaks and other incentives, the BOI helps to attract new projects from domestic and foreign manufacturers, bolstering local capability and enriching Thailand as a production hub. Expanding the machinery arena also improves other manufacturing sectors of the country by giving them better machines for moving up market. Moreover, such growth contributes to the technical skills enhancement of Thai workers in machinery and metalworking.

# Challenges and constraints for a sustainable agricultural machinery sector

- Lack on appropriate technology at farm level.
- Small farm holder, labor shortage and lack of financial support.
- Lack on collaboration of government institution supports
- Rainfall during harvesting.
- Some parts of agricultural machinery were imported. That result is in the high price of some agricultural machinery.
- Using of rice combine harvester required appropriated technology and machines for drying and storage.

- Plot size for crop production is rather small especially for rice production in the North and the Northeast. This decreases field capacity of agricultural machinery and increases energy consumption per unit area especially for big machinery.
- Average family members active in farm for all crop production and regions were rather few about (2.0-2.6 persons/family or only about 45% of total family members). This resulted in labor shortage for farms as some family members were old or women. Therefore, custom service was observed for many or all farm activities.

- Problems pertaining to land holding were size of planted area, land holding status and high rental rate of land.
- Size of planted area for irrigated rice, rainfed rice, cassava and soybean (both wet and dry season soybean) production in the North and the Northeast were smaller compared to that in the Central Thailand. Irrigation availability and socio-economic status of the region influenced farm income, potential to improve crop production efficiency, chance to successfully access loaned money and holding machinery.
- Farm operations of crop production in some regions were still had low competition for custom service of machinery. This resulted in high hiring wage rate and low quality of work done.

-Problems of un-necessary ownership of machinery and finance for machinery acquisition were observed. Some farmers owned un-necessary machines which did not match with their farm works requirement or they did offer for custom service work, therefore low utilization rate of machines resulted in high fixed cost of machine and consequently increased cost of production. These problems were faced especially in rainfed rice production in all regions, and sugarcane production in the Northeast.

- Some parts of agricultural machinery were imported. Imported parts were similar to that of other machinery or vehicles. Therefore, import tax was charged at the same rate which was high for agricultural machinery. This results in high price of some agricultural machinery.



- Production technology for agricultural machinery of Thailand is still under development.
- Machinery for some farm operations and crops are still missing.
- Support from the government side in the past was less and was not focused to the requirements of users and producers.
- Governmental support for the development and the promotion for farm mechanization are still inadequate.
- Under-utilization of some agricultural machinery was noted.
- Irrigated area is limited and not equally spreader throughout the country.

- Irrigation system is still in development phase that restricts growing more crops per season. Inadequate water supply in dry season and lack of drainage system especially for irrigated rice production therefore, some planted areas were flooded.
- Landless farmers and small holding farmers cannot reach low interest rate loan money from financial institutes. They still have to seek loan from other sources with high interest rate.

## **Potentially bigger roles for the associations**

Thailand's exports of machinery are indeed growing. Sales are particularly strong regionally to member states of the Association of Southeast Asian Nations (ASEAN). Thailand's overall machinery exports have soared by 90% since 2004, and this is largely due to the economic, agricultural, industrial, and infrastructure development taking place in neighboring ASEAN countries. Exports to customers in the region are led by tractors and equipment for cleaning, sorting and grading seed and grain. ASEAN currently absorbs almost 30% of Thailand's machinery and parts exports.

Exports to customers in the region are led by tractors and equipment for cleaning, sorting and grading seed and grain. ASEAN currently absorbs almost 30% of Thailand's machinery and parts exports. In coming years, the region will become an even more substantial market for Thai suppliers with trade barriers crumbling under the ASEAN Free Trade Agreement (AFTA) and the planned creation by 2015 of a massive single market called the ASEAN Economic Community (AEC). Contributing to the local industry's expansion, more world-class machinery manufacturers are setting up production facilities in Thailand due to its many advantages for profitable business.

Role of manufacturers of agricultural mechanization equipment is to establish the mechanization supply chains and dealer franchise networks across the region through the coordination of chambers of commerce and business associations



THANK YOU