

Agricultural Development Strategies in the Greater Mekong Sub-region

Dr. Yoshihiko Nishimura

Graduate School of International Development, Nagoya University

1. Introduction

The agriculture in Asian countries is changing dramatically with globalization. While traditional lifestyles and deep-rooted customs and beliefs are scarcely altered by time, the area is now undergoing greater change than ever before. The Mekong countries are gradually shifting from subsistence farming to more diversified, market-based economies. Parallel to this is the growing commercial relations among the six Mekong countries, notably in terms of cross-border trade, investment, and labor mobility. Moreover, natural resources, particularly hydropower, are beginning to be developed and utilized on a sub-regional basis. The rich human and natural resource endowments of the Mekong region potentially make it a possible new frontier of Asian economic growth.

From the postwar period of 1945 to 1990, the strategy utilized for agricultural rural development was called the "Green Revolution." It was a strategy described as a "high yield system obtained from a high input treatment." The Green Revolution addressed production increase with a global viewpoint as to which cereals are considered staple foods. A system of food self-sufficiency was established in many Asian nations, and it even transformed some of them into exporting countries.

The industrialization of Asia greatly influenced the Green Revolution situation. Within this context, infrastructure facilities (such as those for irrigation), seeds of high yielding varieties (HYVs), fertilizer, agricultural chemicals and labor intensification were all brought to selected farm villages as a high input/investment. On the other hand, there were farm villages which did not benefit, and the economic discrepancy widened between the areas where the Green Revolution was introduced, and the areas where it was not carried out. The countries that missed the Green Revolution have only recently followed the trend. Included in this group are countries that are transitioning from socialism to liberalism, those affected by civil war, and the Greater Mekong Sub-region (GMS).

The situation of Asia in the 21st century is very different from past decades. For one, there is the emergence of newly industrialized countries called BRICs (Brazil, Russia, India and China). GMS is situated between China and India (which are BRICs members), and likewise faces "tiger" countries in its southern boundary. Within this new economic regime characterized by conditions very different from before, what kind of approach may be considered for the GMS area to bring about agricultural development? Would the agricultural development system of a different Asia be similar or different from its predecessor? This report considers what kind of agricultural and rural development strategy could be developed for GMS.

2. Characteristics and features of possible GMS agricultural strategy

The GMS area mainly belongs to the tropical zone: Average temperature is over 18 degrees C, and annual rainfall is from 1,000 to 4,000 mm. It is strongly affected by the Asian monsoon, resulting in stable water resources and land suitable for cultivation. Thus, crop cultivation is performed in many of the GMS areas in the rainy season.

Nearly 75 percent of the Mekong's population is engaged in the agricultural sector. The river offers significant potential for expanding productive irrigation and improving efficiency of water use where irrigation exists. Although high development potential exist for agriculture compared with the island areas of South East Asia, careful consideration must be given to the potential of GMS. Negative effects could result from Mekong river's exploitation, like flooding and short periods of drought, making it necessary to sufficiently consider the natural environment when introducing the large-scale /commerce-type production agriculture. Also, inland parts of Indo-china tend to pose cultural difficulty for development efforts.

The rich natural resources of the region – including water, minerals, forests and aquatic habitats – also provide major opportunities for agricultural development, but these resources need to be managed carefully if they are to provide long term benefits to the millions of people who depend on them for their livelihood. The relative diversity among the economies of the Mekong countries is one of the comparative advantages of the GMS. Also, regional knowledge exists from which the poor Mekong countries can learn from as they continue their own path of economic development. This area could potentially acquire a share of the large markets.

1) Importance of rice crop in GMS agriculture

The agriculture influenced by the Mekong is developed in six countries of Indo-China, and its main crop since ancient times is rice, for the lowlands as well as the uplands (performed within slash-and-burn agriculture). Historically, wet rice culture was the key industry of the Khmer kingdom (during the Angkor Watt age). In more recent times, Thailand invested in wet/paddy rice culture, and is now one of the important exporting countries of rice in the world. Thus, rice cultivation is predominant in GMS.

Rice production and consumption of Asia changes a lot based on the situation in China (with its population of more than 1 billion) and India, two countries that are near the GMS. China has annual rice production of approximately 180 million tons, while India produces 130 million tons. Consumption for China is at 150 million tons a year, while for India it is at 110 million tons a year. Although rice supply and demand is more balanced in India, self-sufficiency in rice has been mostly attained in these two nations. In recent years, however, China's self-sufficiency rate has been decreasing. Such a condition, which also applies for Malaysia and the Indonesia, implies the need for more food to be imported in the near future. The necessity of supplying rice to these countries will likely emerge, and the GMS could serve as a production base of rice in the future.

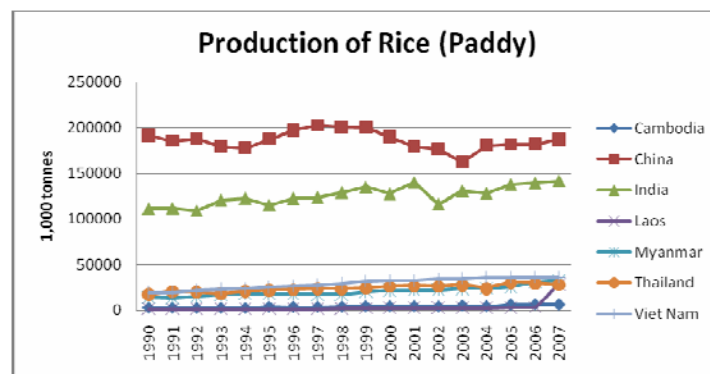


Fig. 1. Production of Rice in the GMS countries, China and India
Source: FAOSTAT

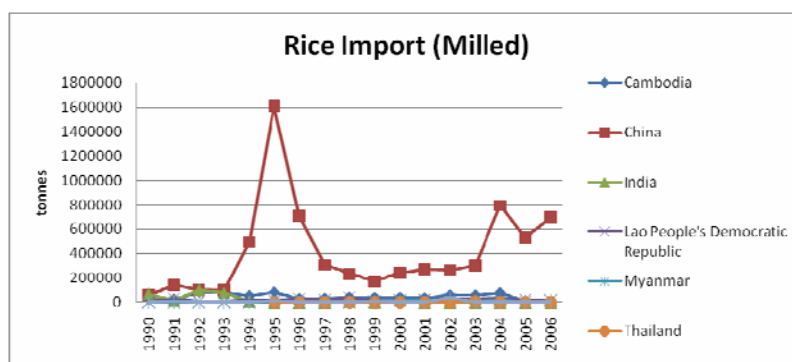


Fig. 2. Rice Import in the GMS countries, China and India
Source: FAOSTAT

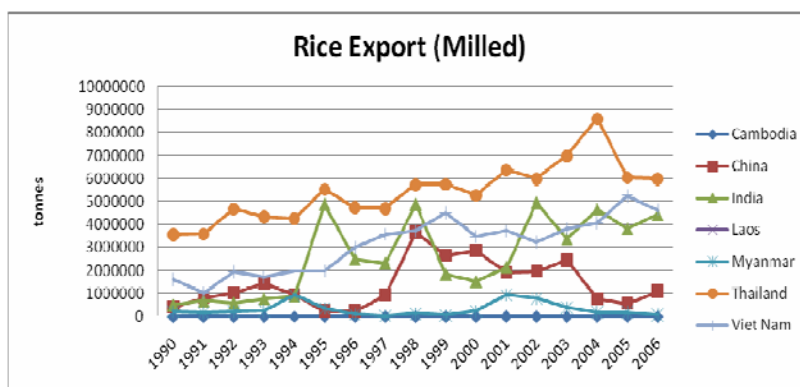


Fig. 3. Rice Export in the GMS countries, China and India
Source: FAOSTAT

➤ Potential for the introduction of modern agriculture

Currently, over 10 million tons of rice is being exported to other countries from Thailand and Vietnam, two nations that are part of the GMS. Given the right technology, Vietnam and Cambodia can double their rice production to 10 million tons. In the Irrawaddy River basin/area of Myanmar, rice production can also be raised to 10 million tons.

➤ Conditions for increased rice cultivation

Several potential improvements could lead to the planting of more rice. Uncultivated “wild” land at present could be made productive with the use of large-scale, mechanized farming. To support double rice cropping, irrigation and drainage facilities may be established (irrigation in the inland areas) or enhanced (improved irrigation facilities in the flooded areas of the Mekong Delta and a stronger recession irrigation system). Appropriate fertilization technologies could be applied, as well as value added technology for the maintenance of rice quality and safety. An improvement of the rice marketing system and rice production incentive scheme could be pursued.

2) Production expansion of food crops

Together with rice, food crops serve as important nutrient sources especially for upland areas where water supply is not good. Parts of Indo-China have a dry weather condition that makes field crop production quite important in the inland basin areas. However, field crops like corn and cassava are also important materials in the starch processing industry, while cassava and maize are produced for industrial use or animal feeds. Thus, there exists two important but competing needs for food crops. Also, continuous cultivation of food crops leads to problems of soil nutrient depletion and deterioration, making it necessary to employ a cropping system (by soybean planting, crop-animal combination, or organic fertilization).

There is a need to develop the agricultural processing and industrial material production of field crops for various purposes, namely a) starch processing industry (corn and cassava); b) bio-fuel production (sugarcane, corn); c) oil production (sugar palm, oil palm, oil seed, tung, sunflower, safflower, peanut, soybean, etc.); d) spice and luxury crops production (pepper, coffee, tea, etc.); and industrial materials (rubber, timber, etc.). Large-scale farming is needed for the high-volume production of potential processing materials like rubber, palm oil, starch and alcohol. (Particularly in the near future, the demand for bio-fuel/alcohol will increase.) In the delta areas of the GMS, there is an opportunity to shift from rice to sugarcane (for bio-fuel). In addition to identifying suitable production areas where the economic corridors are connected, a political response could come in the way of constructing factories for farm products. Establishing an agriculture processing business in the GMS will benefit the current cheap labor of the area by expanding employment opportunities in the rural area.

3) Potential for Field crops

● Corn

In corn production, although there is high Chinese production, there is also high consumption. Similarly, although India also has high production, it has not resulted in export. Future production is going to be expected from GMS, and it could become the supply district in the world for corn used as industrial material.

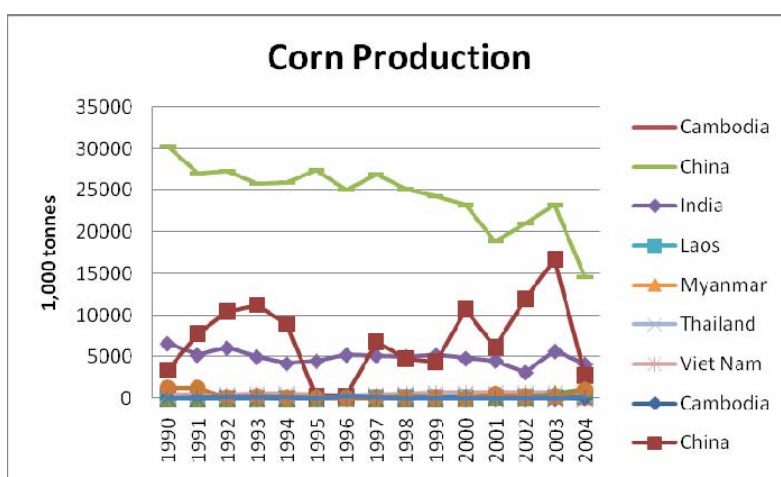


Fig. 4. Corn Production in the GMS countries, China and India
Source: FAOSTAT

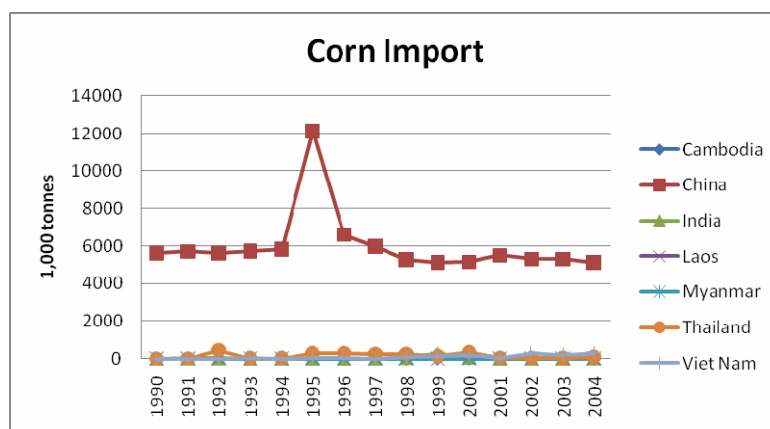


Fig. 5. Corn Import in the GMS countries, China and India
Source: FAOSTAT

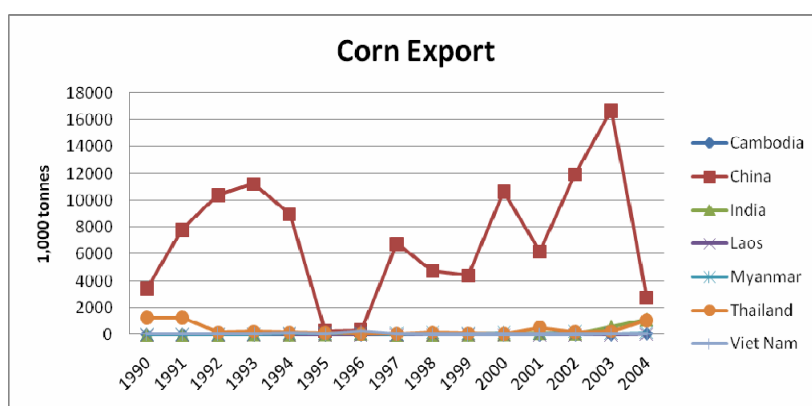


Fig. 6. Corn Export in the GMS countries, China and India
Source: FAOSTAT

● Cassava

Cassava is produced in remarkable quantity in Thailand, and is exported in high volume for use in the food-processing industry as a starch material for processing. The volume of cassava imports is increasing in China.

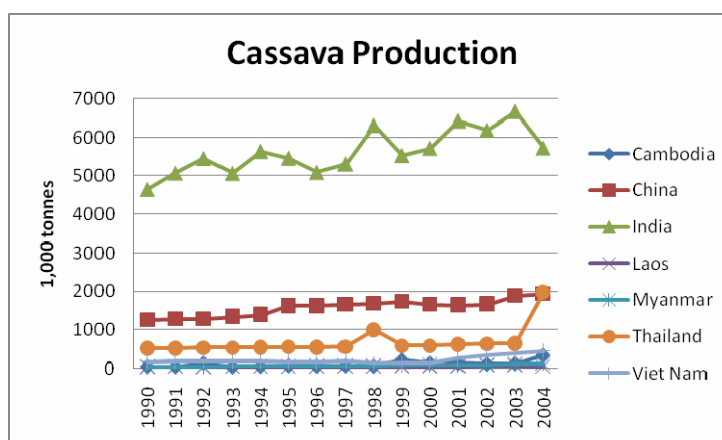


Fig. 7. Cassava Production in the GMS countries, China and India
Source: FAOSTAT

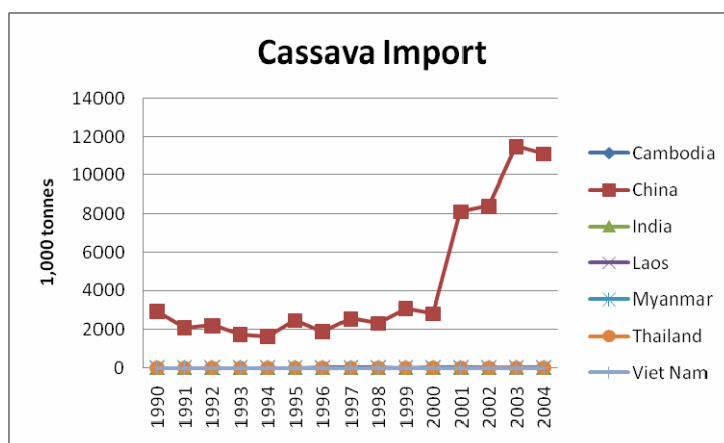


Fig. 8. Cassava Import in the GMS countries, China and India
Source: FAOSTAT

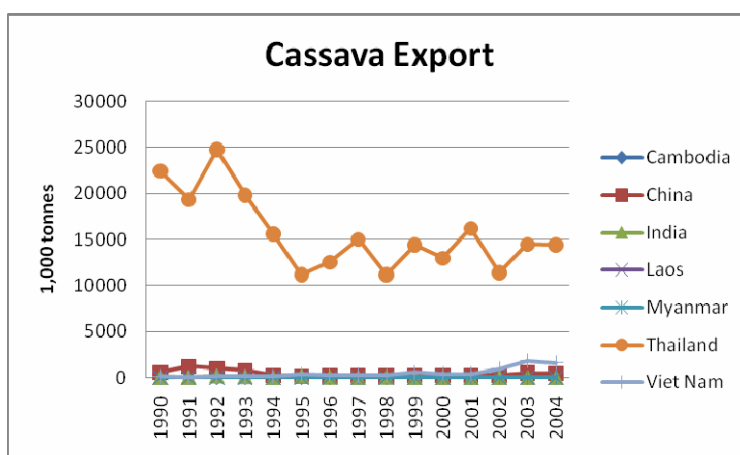


Fig. 9. Cassava Export in the GMS countries, China and India
Source: FAOSTAT

● Oil palm

The demand for palm oil is expected to increase globally. Countries like Malaysia and Indonesia have become main producers, together with Asian and African countries. The GMS is being counted upon for future production expansion.

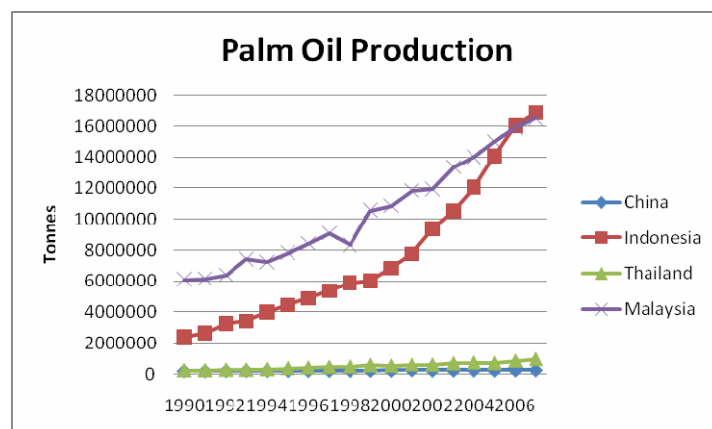


Fig. 10. Palm production in the GMS countries, China and India
Source: FAOSTAT

- Coffee

As for coffee, production of Vietnam (a country in the GMS) went up remarkably in recent years, and export volume has also increased with a part of production being exported even in India.

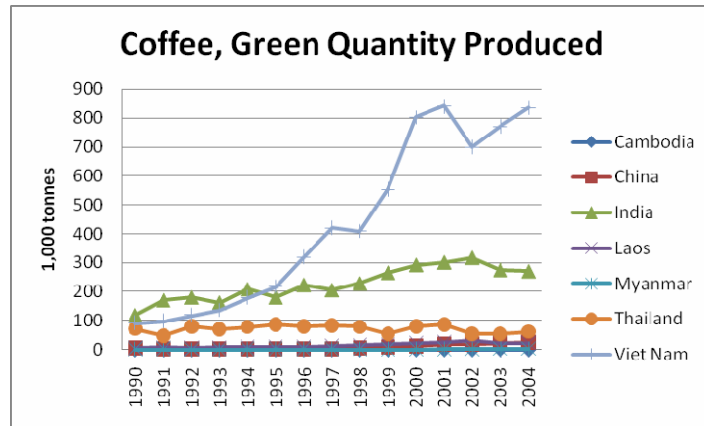


Fig. 11. Coffee Production in the GMS countries, China and India
Source: FAOSTAT

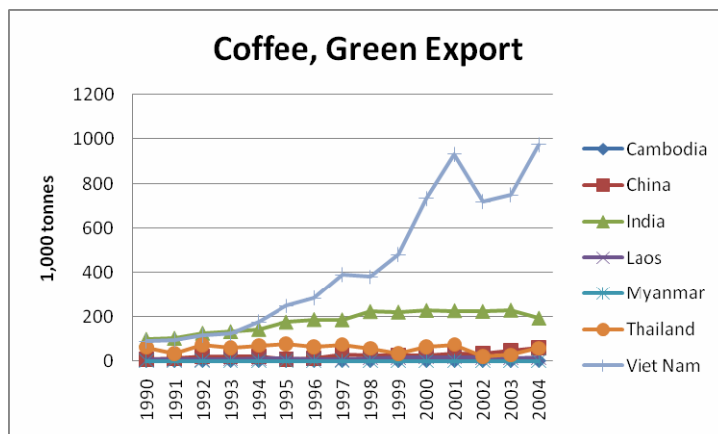


Fig. 12. Coffee Export in the GMS countries, China and India
Source: FAOSTAT

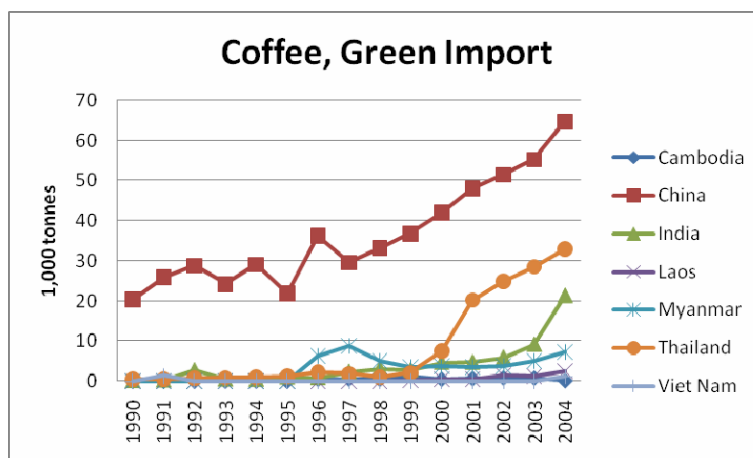


Fig. 13. Coffee Import in the GMS countries, China and India
Source: FAOSTAT

- Pepper

While India is an important place of production historically and its exports have been constantly high, the pepper production in and exportation from Vietnam has also been increasing in recent years.

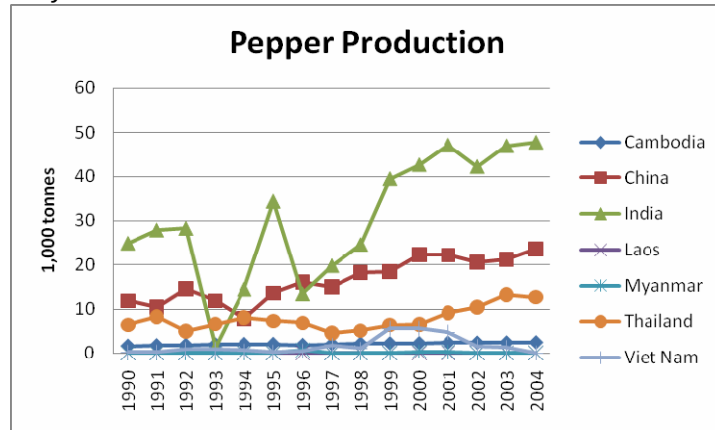


Fig. 14. Pepper production in the GMS countries, China and India
Source: FAOSTAT

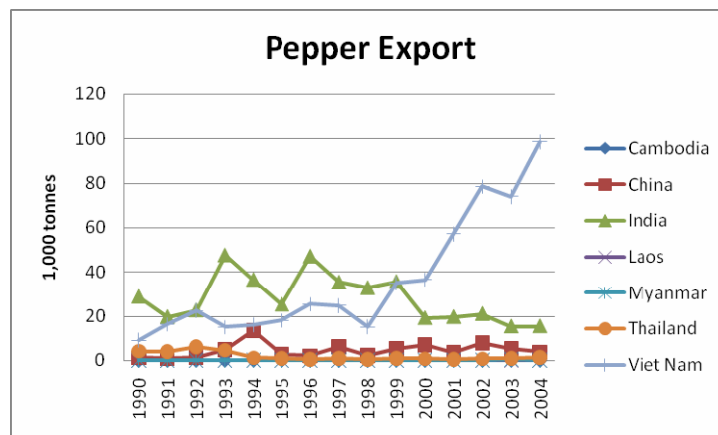


Fig. 15. Pepper Export in the GMS countries, China and India
Source: FAOSTAT

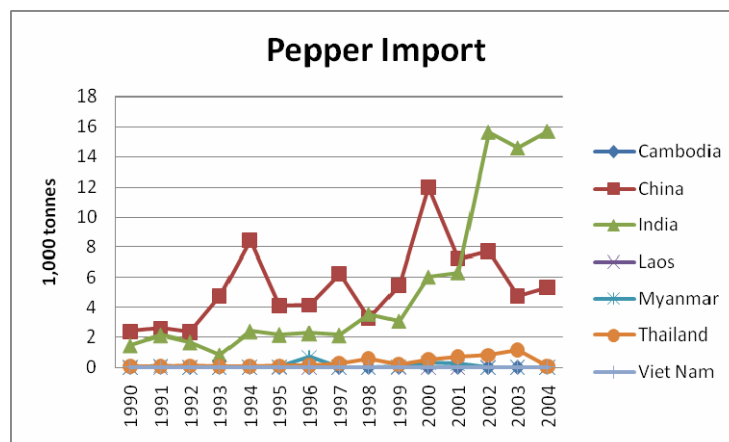


Fig. 16. Pepper Import in the GMS countries, China and India
Source: FAOSTAT

4) Potential for horticultural crops

The promotion of high-value horticultural crops provides a great opportunity for small farmers. If temperate fruits or vegetables are promoted and grown in the mountainous areas, high incomes would be realized. Currently, there's a technological gap among GMS countries: high technology temperate fruits and vegetable production is available in Thailand and Vietnam, but not in Laos and Cambodia where most of the small farmers exist. In promoting the exportation of horticultural crops (fruits and vegetables) through the establishment of production areas, there is a need of support for infrastructure and technology extension from high to low-technology areas.

- Vegetables.

Vegetables are produced in huge quantity in China (with India as its major consumer), and there is little export volume from other countries. The tendency of demand for vegetable exports is to increase in recent years, in countries like India, Thailand, and Vietnam. Moreover, Thailand's vegetable imports are increasing and consumption is expanding as a result of urbanization, and demand will continue to expand.

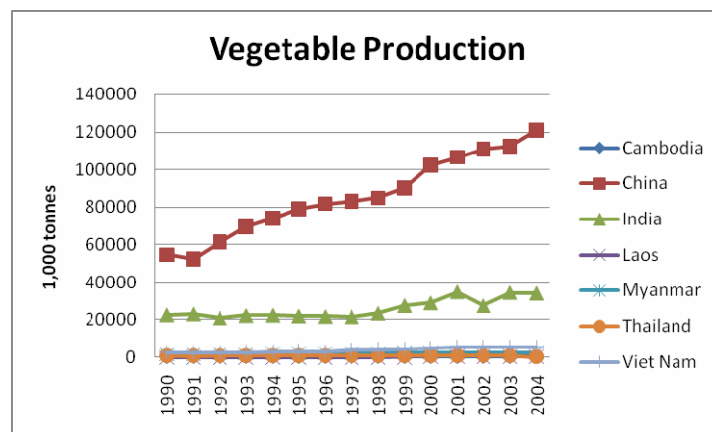


Fig. 17. Vegetable Production in the GMS countries, China and India
Source: FAOSTAT

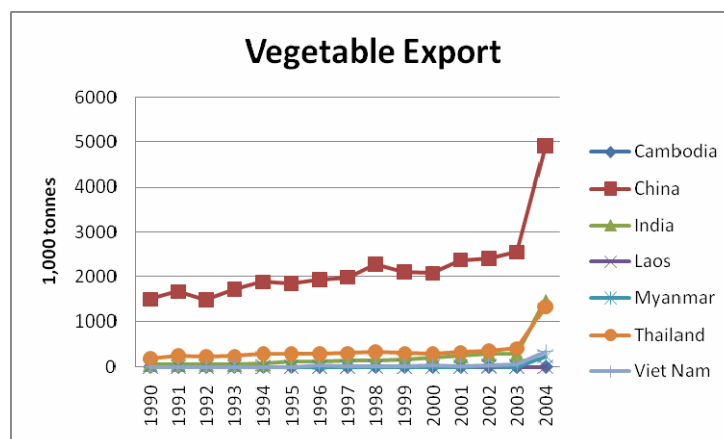


Fig. 18. Vegetable Export in the GMS countries, China and India
Source: FAOSTAT

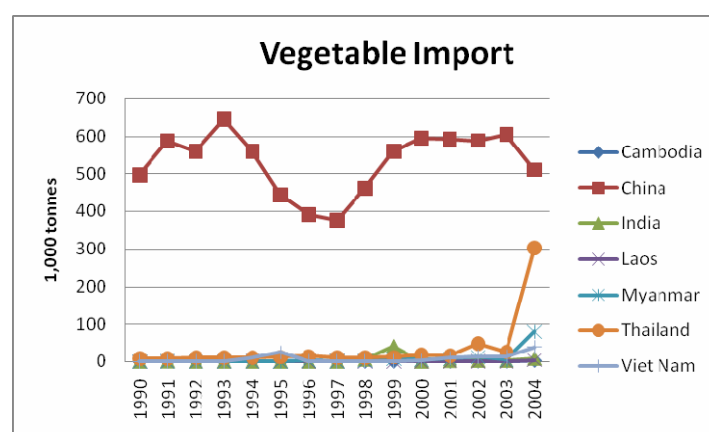


Fig. 19. Vegetable Import in the GMS countries, China and India
Source: FAOSTAT

Although there is a high quantity of fruit production in India and China, both countries have high domestic consumption and exports cannot necessarily be called as big. The tendency then is for fruit exports from Thailand and Vietnam to become important in the coming years.

➤ *Export promotion of fruits*

In the GMS, temperate fruit production is possible in the hilly areas. While there is market potential for temperate fruits both from the GMS and other Asian countries, fruit production requires a long gestation period and the achievement of economies of scale requires large export volumes. Thus, there is a need to identify additional areas in addition to mountainous areas (e.g. Yunnan, China). Also, there is potential for the processing of some fruits that can be grown in dry areas (e.g. wine processing in China), and the selection of good varieties and the appropriate brewing technology is therefore necessary.

In addition to value-adding measures for tropical fruits (mangosteen, apple mango, pineapple, etc.), and phyto-sanitary and other food safety measures for temperate and tropical fruits exportation are likewise necessary to ensure product competitiveness and acceptability according to world market standards. Quarantine measures are also required to prevent transmission of insects (e.g. fruit fly).

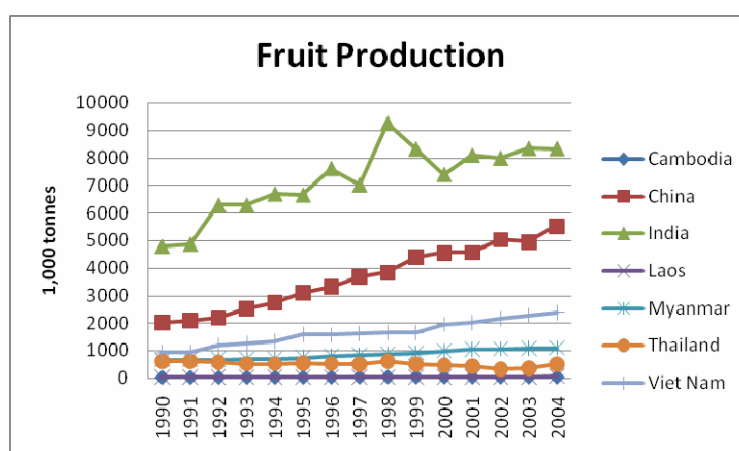


Fig. 20. Fruit Production in the GMS countries, China and India
Source: FAOSTAT

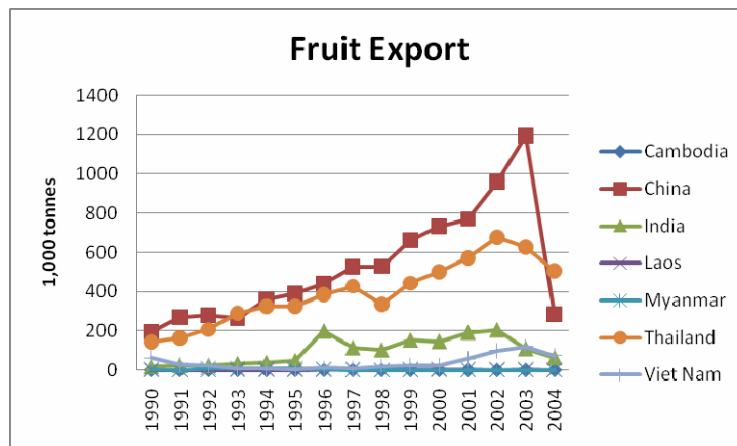


Fig. 21. Fruit Export in the GMS countries, China and India
Source: FAOSTAT

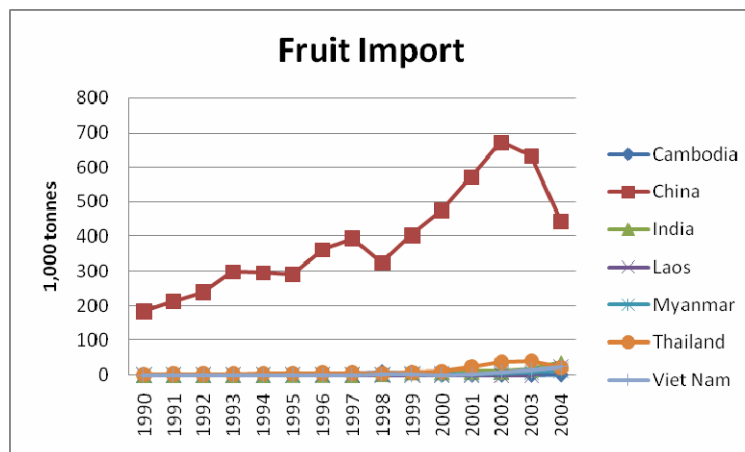


Fig. 22. Fruit Import in the GMS countries, China and India
Source: FAOSTAT

➤ **Potential of ornamental flowers**

Domestic demand for ornamental flowers is influenced by the socio-economic condition of the country (e.g. use in ceremonies). Among the ornamentals, the orchid is the top high-value flower. Thailand already has the technology in ornamental flowers production, and the sharing of technology among GMS countries is possible and necessary. However, there is also the need for quality testing according to the demand and fashion trends in the ornamental market.

3. Agricultural development strategy for GMS

1) GMS will secure its position as one of the main rice production areas in the world, and will become a rice exporting area.

The GMS possesses an international comparative advantage in agricultural production (particularly rice) because its labor wages are cheap, and climate and soil conditions are suitable compared to other countries. What needs to be done is to review the existing value

chain of rice, looking into aspects of adding value in the processes of rice production , collection, rice mill processing and market distribution. Also there is a need to establish a rational rice export system for the GMS area (to increase exports), and to promote the supplying of rice towards China, India, and Malay countries.

2) The building of new economic corridors will change the flow of materials and products

Regarding the physical distribution of the agricultural products of the GMS, mechanisms should be formulated toward the selection of areas within GMS to a) produce raw, intermediate and finished materials, respectively; and b) introduce high-value crop production and large-scale, mechanized farming. On the other hand, production organization change requires the GMS countries to enter an agreement to have a smooth agriculture distribution system, especially for the exportation of products, so that there would be added value to them. The “soft part” of this distribution system would involve the formulation of comprehensive trade and commerce agreements concerning smooth customs clearance (of a “regional state”), prompt border trade (trans-shipment work), and a new shipping system for the agricultural products (regional cooperation shipment). The “hard part” is composed of the construction of necessary physical infrastructure like access roads that will connect farm gates to the main roads of the economic corridor.

3) Management of large- and small-scale farming will be harmonized

The best technology will be provided to small farmers to facilitate the promotion of intensive production and high value addition to their fruit and vegetable products. Likewise, the best technology will be given to large-scale farmers of rice and food crops to bring about mechanization that will solve the impending farm labor shortage and maintain big production areas. These actions will be done within the overall effort to integrate these two systems of small-scale farmers with their large-scale counterparts, in order to achieve management harmony in the GMS. Also, the added value to small-scale farming will contribute to alleviating poverty in rural areas.

4) The possible application of the global value chain (GVC) and industrial cluster production organization will be explored for agricultural production

The GVC, usually applied for industrial production of non-living objects, could be explored for possible use in agricultural production of living things. For example, the production system of an orchid (*phalaenopsis*) in Taiwan allows for the plant to be cultivated in different places at the different stages of its growth: seedling production is in one area, flower budding is in another area, and harvesting of blooming flowers is again in another area. The possible establishment within the GMS of a similar production system with specialization/division-of-work could be looked at, bearing in mind that it should be different from market process-oriented production system in Ghana's pineapple exports and Kenya's ornamental flower industry. Cluster production organization was also attained for Taiwanese orchids grown in a centralized production district (a greenhouse compound of 200 hectares), and this could likewise be explored in GMS. The high potential of GVC and cluster production of orchids could be further studied in the GMS.

5) The possible use of existing resources for agricultural production processing will be explored.

The existing production of palm oil, sugarcane, corn, soybean, rubber and pepper could be expanded to increase volume for the demand of industries of middle-income Asian countries. The production of vegetables and fruits could likewise be intensified. In connection with bio-fuel production, other local resources like sugar palm could be looked at other than the usual resources of sugar cane, potato and corn. The promotion of agricultural production processing in the GMS countries would result in high-value agricultural products that would benefit farmers.

6) Overall, the GMS could become the agricultural supply center in Asia

The possible decline in self-sufficiency, not only in rice but in other agricultural products for human consumption, could occur for China, India Malaysia and Indonesia due to increasing population. The GMS has the potential to become the food supply center exporting to these countries with large consumption. As their agriculture product processing factories adopt a more global view, the GMS countries can also supply to middle-income Asian countries the agriculture-based materials for industries.

4. Conclusion

While it was left behind in the past in agricultural development, the GMS is a high-priority area with the development potential of becoming the base which supplies food to Asian nations in the future. In adopting a new development strategy, the GMS countries not only becomes one of the agricultural centers in the world that assists the needs of developed countries, but also addresses its own needs for economic development.

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