

Urban Agrarian and Spatial Development Policy: the Survival of an Environmental Agent in Bangkok Metropolitan Region

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Abstract

Thailand has a long history of agricultural land policy since the first establishment of the former Kingdom in the 13th century. Most of the early day policy is to manage the land around the capital area. Bangkok Metropolitan Region has been formed to follow agricultural export policy since the 19th century. To explain what has happened to suburban farmland and urban agrarian families is to understand what influences the policy has on land and people. The paper is to review the former agricultural land policies and agricultural support programs of Thailand, and to investigate what could lead to environmental impact and impact on agricultural households as environmental agent. The review found that the export activities along with agricultural support program shaped today Bangkok agricultural land without proper protecting mechanism for farming environment.

Keywords: Agricultural Land Policy, Bangkok.

1. Introduction

Bangkok Metropolitan Region (BMR) is the agglomerated area of Bangkok and 5 vicinity provinces with the population of 10.9 million by registration in 2016 and approximately 14 million by 2010 census survey, but only 0.6 percent of the population held the farmland, with or without land ownership. On the other hand, the ratio of agricultural land held by the farmers is approximately 30 percent compared with the total land and up-to 50 percent when it was considered from the land cover, according to the 2015-16 Land Development Department survey. Nevertheless, size and number of farmland and agrarian population have been gradually decreased in different degree like those in other metropolitan areas and Mega cities.

The landscape of BMR could be classified into 140 types of land-use classifications related to various agricultural usage; paddy fields, crop fields, orchards, perennial plots, horticulture, farming facilities and aquaculture lands. The pattern of land-use changed, from agricultural to other uses or changing types of crops, leading to even more complex land-use composition and configuration of BMR. (Thanapet & Kung, 2015) The complexity of land-use impacts ecological balance of the region where the agricultural activities have taken place for the century. Nonetheless, the complexity of BMR agricultural land-use was not conducted to pursue the best environmental conditions. Most of the agricultural productivity was to follow export and domestic market, and agricultural land-use was conducted under estate investment programs.

This document research is to investigate the former agricultural land policies and agricultural support programs impacting on land-use pattern and agricultural activities. The review is based on chronic approach to investigate the influence of land policies and development conditions focusing on the influence of export policy. The article is divided into 4 parts; initiated from historical background and bureaucratic reformation, followed by the agricultural land policy under the democratization and industrialization, and emphasized on the fallacy of export activities on agricultural production. The discussion is based on the impacts of policy and program on urbanized agricultural land in BMR and focuses on Bangkok land-use. The investigation found that all agricultural land policies and mechanism did not appear successful. There is no proper coordination among the policy, program, and mechanism of different bureaucratic bodies to help or to protect the agricultural environments in terms of sustainable land-use and agrarian household survival.

2. History of agricultural land policy

Since the first Kingdom of Thailand, the Kingdom of Sukhothai (1219 – 1438), the land and agricultural policy was used in order to encourage new settlement under the absolute monarchy regime. People were encouraged to establish their business, trade, and agricultural lands. They could open up lands, cultivate, and gain the direct benefit from the land they reclaimed; however, people could be occasionally recruited to serve for public services such as military service. The monarchy also recruited people for public works such as building the irrigation system for the city and farms. The second Kingdom, Ayutthaya, had strong conscription system and feudalism. The policies related to agricultural land, military service, public service, and even welfare were tied to feudal hierarchy. The nobility and courtier had a role to manage land and human resource, or even allowed trade to generate the profit and pass it to the monarchy. All the regulation and law were comprehended in labor and land intensification. The law allowed the nobility to reclaim commoners' abandoned lands and authorized land reassignment to others for more cultivation to gain more profit. (Chomchan, Noppharat, & Thōngpān, 2014a)

Referred to 1830 Monseigneur Pallegoix's opinion, Ayutthaya was a good kingdom to do trade. Ayutthaya was located close to the delta area surrounded with rivers and water channels. It was not only good for trading but it was also good for producing agricultural products. As the present capital city, Bangkok was established only 70 Kilometers southwards of Ayutthaya towards the gulf of Thailand. The location of Bangkok is even closer to the sea, into the delta region, surrounded with three main rivers, which is not only good for rice paddy, but also fruit orchard, salt production, and fishery.

During the Ayutthaya and early Bangkok Era, the kingdom administration was classified into the four-bureaucratic system- City, Palace, Treasury, and Farm. This administration system lasted longer than four hundred years until the modernization era of Thailand during late 19th century. The Department of Farm was reestablished as the Ministry of Agricultural Commerce, and later became the Ministry of Agriculture and Cooperatives up to the present. (Rerkkasem, 2014)

1. The early days of export policy; the formation of BMR landscape

Sopon Chomchan, et al. and many scholars noted that Thailand has been changed from self-sufficient production because of the 19th century colonialism. Under 1855 Bowring Treaty with the United Kingdom, Thailand was forced to minimize the trader tax and export rice to other countries. In 1907, the rice export ratio was increased from 5 percent to 50 percent of the total export value. New canals and water channels were dug to connect the Chaophraya River to other rivers to transport the agricultural products from the hinterlands around Bangkok to export. These made Bangkok became a dominant international trade city of the region. According to royal announcement at that time, there was foreigner zone where the foreigners who lived in Thailand for more than 10 years could acquire land ownership. (Chomchan et al., 2014a)

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During the late 19th century, the demand of the agricultural land around Bangkok region was dramatically increased. The agricultural ground of Bangkok was extended for more than 40 kilometers from the urban center where the first sugar cane factory was established close to the sugar cane field. Some canal networks were even extended to the orchard area as far as 80 kilometers from Bangkok. These have formed the ground landscape and ecology of today BMR.

As mentioned before, Thailand, known as Siam at that time, was modernized to survive from being colonized. At that time, Siam population was only about 5 million (65 million at present) and Bangkok population is under 300,000 (8 million at present). Under the reformation situations, the country had to change economic activities from domestic goods production to mass production for rice and sugar export. The demand of lands on the bank was dramatically increased because of the demand of water for rice paddies and orchards. The monarchy government allowed people to open up the higher and droughty lands; therefore, the better irrigation system was required. The first public-private partnership emerged when the government gave the temporary ownership to the commoners who help the government dig the canal. When the demand of the land on the canal bank was keeping rising, agriculture channelization projects became more privatized rather than being the public projects. The nobility, courtiers, foreign investors, and Chinese immigrants who migrated in the early days of Bangkok establishment and later grew wealthy became the partners in new irrigation projects and formed “Siam Channelizing and Canal Farm Company” (บริษัทขุดคลองและคูนาสยาม, bōrisat khut khlōng læ khūnāsayām) under the royal permission.

The company was permitted to develop the area called “Rangsit”. This area is about 30 kilometers from the old center of Bangkok. The structure of Rangsit area is series of the north-south canal system. Each canal is about 1 to 1.6 kilometer apart from one another. People were allowed to claim two sides of new canal for agricultural purposes. The company had right to claim the land, to resell to common farmers, and to charge the canal toll from the boat using the canals. The late 19th century was the period that Acts, Laws, and Royal announcement related to irrigation system, canalization, and canal use had been announced and implemented such as the Canal Toll Act and Canal Digging Announcement. The monarchy government used policies and projects to maximize the benefit of land-use, labor, and private capital as a part of modernization of monarchy regime. The government reclaimed the droughty land close to Bangkok and gave the development concession to the private investor to allow potential commoners to rent the land and to produce more agricultural product (rice). The population structures of early Bangkok and Ayutthaya era were different. In the early days of Bangkok era, one-third of Thai population was recorded as slavery class and one-fourth of household leaders in Bangkok were Chinese immigrants. The reformation of the agricultural system via irrigation and land rent revolution was not only influenced by the export situation, but it was also a part of laboring reformation prepared for the cancelation of classes and slavery system, which was totally announced at the beginning of the 20th century without any severe conflicts.

It could be said that the development of Rangsit field was early stage of large-scale land development and land ownership reformation before the Thailand democratic era. The concession development project occupied approximately 128,000 acres at the beginning, and expanded to 288,000 acres at the end of the project. After the concession period, the area was reclaimed back to the government and named as “Rice Town” (จังหวัดบุรีรัมย์, thanya burī), and now is a part of Pathumthani province, a vicinity province of BMR and home to 1.13 million people. Today, Pathumthani is not only a ground of the rice fields, but is also a ground of various kinds of estates and farming from traditional rice paddies, organic farms, orchards, gated communities, to industrial estates. The service by canals is transferred to road system. During the early decades of the National Social Economic Development Plan implementation after the World War II and the beginning of the cold war, Rangsit area became a significant location of the foreign direct investment (FDI) for industrial sectors, which the intensive labor was required. The location of Rangsit is in Pathumthani province, the gateway of Bangkok for Northern and Northeastern immigrant labors.

2. Thai Bureaucratic and Policy Reformation

In 1892, the Ministry of Agricultural Commerce was established to replace the Department of Farm and duty on the import-export tax collection was transferred to the Ministry of Treasury. The responsibility of new ministry were to manage and reclaim the abandoned shrubby land, to irrigate the droughty land, to manage the cattle working for the farm, to allocate the land for persons or religious institute, and to manipulate the conflicts related to land-use and land ownership. Under the monarchy regime, the agricultural activities, land, economic activities, and treasury were always reorganized to maximize royal benefit because the King of Siam was regarded as the greatest landlord, one and only owner of the total land of the kingdom.

The big leap of land development policy in Thailand has begun at the beginning of the 20th century, when the Department of Land Registrar under the Ministry of Agriculture certified the title deed for the first time in 1901 at Ayutthaya province. The purpose of new bureau establishment and land administrative reform was to solve the problems of the land ownership conflicts and dramatically increasing land price. The Department of Land Registrar was changed to the Department of Land and transferred to the Ministry of Interior later. In 1902, because of the success of Rangsit canal system, the Department of Canal was also established to construct, manipulate, and do maintenance of all canal systems to provide fresh water for the agriculture activities in the central region of the kingdom. The Department of Canal was also changed to Royal Irrigation Bureau later. This bureaucratic reformation shows that absolute authority on land and irrigation management, ownership distribution, commerce and tax collection, and even conflict management were segregated into the responsibility of different administrative agencies.

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Before the WWI, because the 1910s world depression affected the world economy and export rate, the royal court announced policies based on production security such as establishing an agricultural trade expo and the rice grain exhibition and competition, and encouraging people to grow different annual crops for food security rather than single crop for export. Furthermore, before the democratic revolution in 1932, Sophon Chomchan, et al. (2014a) also pointed that there were 4 significant directions of the policy:

- (1) Expanding the agricultural land and irrigation service and encouraging other economic plantation rather than rice.
- (2) Establishing agricultural education and demonstration in the regional areas.
- (3) Launching the new policies based on tax, title deed documentation, and land conflict mitigation.
- (4) Monitoring the balance between domestic uses and export of agricultural products.

3. Democratized Policies

Since the 1932 democratic revolution, Thailand governance regime was changed from absolute monarchy to unitary parliamentary and constitutional monarchy. At that time, agricultural and land policies under new constitution were based on socialist approaches. The draft and proposal from Mr. Pridi Banomyong, the former prime minister and a revolution leader, mentioned that farmer organization should be assembled as cooperative and empowered to negotiate with traders and brokers. The draft of economic revolution focused on equal distribution of land ownership. The government should buy or expropriate the abandoned land from the owners who had excessive land plots. The government would pay back to the owners with the government bonds and the government would use the land under the concession contract to maximize the benefit of public land. Furthermore, the government attempted strongly on land reformation and distribution. The 1954 Land Act limited the land possession per person. According to the Act, the agricultural land holding per person was limited only 8 hectares, 1.6 hectares for industry, and 0.5 hectare for residential or commercial. Finally, the proposal was rejected and has never been implemented, and the land limitation section was cancelled.

Before the coming of baby booming after the World War II, the population of Thailand was only approximately 15 million. The major GDP was still based on agricultural production, therefore, the land reformation policy was not easy to be introduced and well implemented. There were some factors such as the regression between WWI and WWII, which put the government cash flow in a difficult situation. The government bond for land reformation was considered as new development strategy at the time because land was not considered as infrastructure, the land compared with number of population was abundant, and most of the landlords were the former courtiers and nobility. Furthermore, the land policy after the revolution focused on the reformation of public services and the reclaim, which converted lands from royal possession to state properties.

Before the end of the WWII, the democratization on land ownership, agricultural resources, and export economy were significant driving forces to the direction of spatial policies. The spatial economic activities were juggled among four ministries- Agriculture, Interior, and Treasury and Commerce. The economy was gradually changed at the end of the WWII after the establishment of the United Nation. The rice and rubber export was increased because of the after-war demands and emerging new markets. Mining, industrial, and science took more roles on economic development, and the loan from World Bank became a significant resource of development. Separated from the Ministry of Economics, the Ministry of Industry was therefore established to conduct the direction of national industry and scientific research. The government changed the policy direction from controlling activities to giving more supports and quality control and seeking for international markets. To support new economic direction, the government encouraged the establishment of new agricultural cooperatives, commercial cooperation, and public enterprises. (Chomchan et al., 2014a) The focus on the overall picture of the policies was changed from Bangkok and vicinity provinces to nation wide and rural development to balance various kinds of land-uses and economic activities.

1. The early period of the NESDP

Following the World Bank recommendation, in 1961, Thailand started to lead country development under the First National Economic Development Plan. The first plan was simply called the National Economic Development Plan and was a 6-year plan. The name was changed to the National Economic and Social Development Plan (NESDP) since the second plan in 1967 and the period of the plan was five year. All NESDP have been prepared and proposed by the Office of the National Economics and Social Development Board (NESDB), established in 1950.

Following the previous period of development, the approach of agricultural development mentioned in the first plan focused on the general ideas of increasing and improving the productivity, preserving the forest area, and allocating the land for farmers and rural settlers. At that time, the agricultural land in Thailand shared only 18.75 percent of total land-use and 58.44 percent for the forestry. Even there was the policy on forest conservation and land classification but part of the forest lands had to be reallocated to 13 percent of the farmers or 1 million farmers who were entitled to land possession. In 1960, the government began the census program to collect the development and household data in every 10 years, and the agricultural census also began in a year later. In 1964, a report showed that in middle part of central region, 56 percent of the farmers farmed without land ownership, and tenant contract was not fair. Therefore, to solve the poverty problem, land distribution and allocation was the major policy at that time. The government planned to use 20 percent of the forestland for agricultural area expansion. The forest preservation area should be 80 percent of the total forest area or 46.88 percent of the country area, and could be decreased to 39.06 percent after the population growth; however, the plan had no vision regarding the uncontrollable growth of urbanized area and agricultural land. (Chomchan et al., 2014a)

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In the second phase of the first plan, agricultural production for both domestic use and export was the major concern of the government. The government aimed to increase national income by increasing export volume of the agricultural product and even trying to promote the agrarian as a popular career. The government realized that the income from agricultural product export could be used as the foundation for industrial development to generate more incomes for national security. Furthermore, equal distribution of income and agrarian welfare were the government concerns. Even though the rice was the major export product, products as cassava, corn, rubber, and sugar cane were taking more shares in export value. Therefore, in 1966, the government announced the 1966 Agriculture and Agricultural Cooperative Bank ACT to embody financial institute to support the farmers and agricultural activities such as loans, insurances, crisis mitigation, and price intervention.

During the early period of the National Economic and Social Development Plan (NESDP) implementation, the development focused on building infrastructure- transportation, energy, and irrigation. Preparing for the industrial investment, seeking for new sources of energy and preparing for better logistics and transportation were the first priority. The higher demand of electricity changed the ways of resource use from charcoal to coal and to electricity, and shaped the direction of mining and irrigation system. The electric power dam, lignite mining, and power generator were built in the northern region where watershed forest is located. Lignite coal was used not only for generating the electricity but also producing the chemical fertilizer. The better electric power encouraged the growth of industrial development in Northern Bangkok and expansion of agricultural land in central region. The highway was built in various routes and replaced other modes of transportation- rails and rivers. The country was driven by international loans from different sources.

Thai government learnt to trade or to barter rice and other agricultural products with other products from other countries through government-to-government contracts. To help the agrarians and to support industrial crops such as sugar cane, the government had to invest in agricultural industrial facilities such as central silo or processing factories at the beginning. On the other hand, if the agricultural product was scarce because of the exceeded export or disasters, leading to increasing domestic price of goods and products, the government had to intervene in the market and sell necessary products with economic price. Therefore, to produce more, the third NESDP focused largely on building irrigation systems national wide, producing chemical fertilization, and introducing financial support and land reformation programs.

2. Industrialized Farming

During the forth NESDP, the agricultural land kept expanding because of increased export activities. On the other hand, this was the cause of natural resource degradation and land-use conflict between agricultural land and forest. Therefore, the policy was changed from expanding

the agricultural land to improving the productivity in the fifth NESDP. To improve the productivity, the government encouraged farming in irrigated and productive areas, using fertilizer, and intensifying the use of productive land for the active farmers. Continuing from the fourth plan, the master plan of water shade management and irrigation administration was introduced. This master plan included studying and planning for quality improvement, expansion and preservation, and using controls of all water resources. During 1970s, Thailand discovered natural gas in the Gulf of Thailand and its amount was large enough to develop and be utilized for commercial purposes. The fertilizer production factories and industry were established in great numbers. Self-production of chemical fertilizer encouraged more fertilizer use on industrial crops. The manner in using industrial products and methods to increase the productivity and massive production was extended to other kinds of agricultural industries such as livestock and poultry. Animal feed production became another agricultural industry, which required production material from agricultural production. Both animal feed production and crops for the production have been another significant agricultural industry influenced by import and export activities.

From the first to the seventh NESDP, the government encouraged foreign investment under various purposes from infrastructure investment to industry development. Under the private support, the first industrial estate was established in 1971 in Rangsit, a peri-urban area of Bangkok in Pathumthani province, where the first irrigation system was established. The year after, Industrial Estate Authority was established to support the establishment and control of industrial estate in Thailand. Most of the industrial estates were established in the distance of two or three-hour drive or about 200 kilometers from Bangkok to the eastern seaboard. The industrial estates drew the foreign investment attention to suburb and peri-urban area of Bangkok and changed the landscape in the establishment areas. Not only industrial uses were introduced, but a number of residential estates, logistic facilities, and recreation amenities such as department stores and golf courses also became a part of industrial landscape and replaced the existing agricultural landscape. Unlike in the agricultural area, the land price in the industrial estate area was increased because of the location development based on provided infrastructures and distances to the market. The land became commodity rather than the products produced on the land. (Ratanawaraha, 2015)

After finding that the country always overproduced business crops, a policy of the sixth NESDP is to encourage the agricultural production to follow the market rather than to sell whatever the farmers could produce. To avoid scarcity in domestic market, production of necessary crops should be more distributed to all regions. Furthermore, to confront with fluctuated market, the policy focused increasingly on marketing study and productivity improvement. The plan focused even more specifically on food and agricultural product processing rather than selling them as the raw material. These encouraged the policies to focus largely on industrial development.

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To serve more export economy and agricultural industries, changing types of business crops to follow changing markets and new markets were required. Farmers changed their production from what could be produced to what could sell according to the government recommendation or the market demand. Production technologies and researches were introduced to the farmers to increase the number of products and product variety. Off-seasonal or off-locational production was also introduced to maximize price from seasonal scarcity. These approaches were continued to the seventh NESDP (1992 – 1996). During the period of the plan, Thai economy was boosted because of high rate of foreign investment. The dream of the nation was to become a NIC or Newly Industrial Country or the eleventh tiger of Asian industrial countries. Controversially, because the trend for sustainable development was introduced globally during 1980s, it was also the first time that the policy on environmental conservation was also introduced as a significant variable for country development. (Chomchan, Noppharat, & Thōngpān, 2014b)

3. After “Tom Yum Kung” economic crisis

In 1997, the dream to become an NIC did not come true because Thailand experienced economic crisis called “Tom Yum Kung”, a famous Thai dish. The crisis took place in financial and real estate sectors as the high-debt foreign loan was offered and impacted the whole investment sectors and industries. The eighth NESDP was announced at the same time with the country was experiencing the financial crisis. Due to the crisis impact, the government had to revise the plan. The direction of the new plan focused principally on human resource development, which was disregarded for several decades of development. The direction of agriculture and land-use administrative in the plan was discussed more on sustainable development and new agricultural markets. Thailand would like to become world food supplier, called world kitchen because the world has been experiencing food crisis from climate change. To balance agricultural products with various environmental systems, the government proposed to apply the ideas of mixed plantation, energy crops and non-food products, organic food producer, and low-environmental impact production to farming and agricultural processing. Therefore, the GIS, remote sensing, and spatial resource management technology were introduced to the planning system. Remote sensing and GIS has had more roles in land allocation and distribution, water resource management, and agricultural zoning. The government started using digital platform in decision-making process based on spatial data derived from remote sensing.

The main direction of the eighth NESDP was continued to the ninth NESDP. On the other hand, the plan put more emphasis on sustainable agriculture, self-sufficient economy, local indigenous, farmers’ entrepreneurship, and genetic technology. At the same time, the government still kept encouraging the farmers to establish various kinds of agricultural cooperatives and solve land degradation and unequal land allocation problems. The uncontrollable agricultural land expansion and ownerships became the significant problem of land allotment. Land degradation has

been related to uncontrollable land-use expansion and improper plantation and agricultural methods such as overused chemical fertilizer and pesticide. (Chomchan et al., 2014b) Because of both land ownership distribution and land degradation, land-use problems were not limited in agricultural use and became chronic problem of land development in Thailand.

Before the tenth NESDP, the government found that the domestic economy was smaller than import-export economy, and agricultural production, including agricultural industries, shared less than 15 percent of economic value. These ratios represented unbalance and unsustainable economic development. Furthermore, the forest area occupied less than one-third of the total country area and the country kept losing productive irrigation area. In 2012, the beginning of the eleventh NESDP, the agricultural economy still shared less than 16 percent of GDP and even less than 10 percent at present. The government policies have been to secure the agricultural sector and to increase economic value because about 30 – 40 percent of population has been in this sector. Since the Tom Yum Kung crisis, the policy has focused on food processing and production for both exporting and domestic uses. This includes product safety and security, organic production, energy crops, and self-sufficiency of the farming families.

4. Export economy: forces on national landscape.

The opportunity and threat of Thai agricultural product is now related to the world food security situation and depended on climate change. The government has considered that agricultural product of Thailand could serve the world in every household or kitchen especially when the world population is keeping rising. Not only served on the dinning table, the agricultural products could also turn into other energy forms to replace today fossil energy demand. Therefore, governments keeps encouraging and suggested the farmer produces various kinds of products to feed both domestic and international market. Before the idea of sustainable development was announced, the domestic production focused mainly on domestic uses and export activities rather than being concerned on environmental and ecological condition. Nonetheless, the demands of international market and export products dominate the domestic production in terms of both quantity and quality. To guarantee the continuity of production line and to serve various marketing demands, more policies based on marketing, logistics, and production technology have been introduced. The development discussion even focuses more specifically on spatial-based productivities, organic farming, contract farming, plantation zoning, large agricultural land plot program, and self-sufficiency of local producers. (Rerkkasem, 2014)

The export activities have been significant driving force on spatial and environmental changes. Since the early day of export policy during late 19th century, the agricultural land-use has been always driven by single crop- especially trunk crop, cash crop, or economic crop- supported under the policies of the government. According to the data of the Department of Agriculture Extension

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and office of Agricultural Economics, there are only 94 types of agricultural products that are under the government monitor during 2012 – 2016. These 94 types of products are produced from only 29 types of plantation such as field crops- rice, corn, cassava, pineapple, sugar cane, soil bean; some orchard fruits- durian, orange, banana; and utility plant- para-rubber tree and oil palm. These do not include other types of products such as cereal and grain, poultry, dairy, cattle, fish and aquatic products that are always in the list of processed products. (The Office of Agricultural Economics, 2017) These export agricultural products are always only in the government observation list for market stability program, price-guarantee program, or other financial support policies.

Agro zoning program or agro-economic zone is another government policy related to national agricultural reformation. The policy emerged since 2012 to balance production area and number of products to production resources and market demands. The simple idea of zoning is to intergrade and control the plantation and cultivation area to match with types of commodities and products, distances to processing facilities and logistics, future market demand and stocks, and skill labor and production supply. The program starts from the pilot project and uses GIS technology to administrate the program. The types of the recommended products are based on the notorious list of export commodities because it is the simple way to guarantee the market demand; therefore, the export economy always dominates the landscape of the country since the beginning of the export activities. (Ministry of Agriculture and Cooperatives, 2014)

1. Chronic problems of land allocation

In Thailand, the policies on increasing number of population were applied during 1940s to 1950s. This also led to the baby boomer era. Thai population increased more than one million per year during 1960s to 1970s. Because of the population growth in the previous decades, during 1980s and early 1990s, the industrial development became a notable government policy. Industrial development was considered as the solution to solve three main problems that the country experienced- trade deficit, unemployment, and income distribution. The growth of industrial estates has taken place in the metropolis area and big city around Bangkok and eastern seaboard. Agricultural industries become significant industries because they serve both exporting business and employment requirement.

Unlike the 19th century, land and agricultural policies focused on land reclamation for new social class and opening up upcountry land, the agricultural land policies after post WWII have been influenced by export expansion, industrial investment, baby booming, and territorial administration. Referred to land foundation institute research in 2003, the land resource problem of Thailand are categorized into 7 significant issues: (Chomchan et al., 2014b)

- (1) Unity of bureaus and administrative system
- (2) Misuse and mismatch between land-use and land capability

- (3) Concentration of land ownership, land speculation, and the lack of proper land regulation to control possession size
- (4) Unequal land distribution and the lack of effective land tax
- (5) Large number of population without land possession
- (6) Diversification of land development right applied to people
- (7) Conflicts between land-uses

Since 1932 democratic revolution, policies on distribution of land and establishment of settlement cooperative have been implemented unpleasantly. Without proper spatial planning, land-use control, and land and local tax, the problems of land speculation, possession concentration, and equal land allocation are chronic. Duangmanee Laovakul (2013) pointed that there was prosperity concentration in Thailand regarding land possession ratio. She showed that 40.88 percent of the total land had title deed registered by the Department of Land, 10.87 percent were under agricultural land reform program, 45.19 percent were declared as conserved forests, and 3.06 percent belonged to royal possession. Duangmanee Laovakul noted that, in 2012, only 15.9 million of privates, corporates, or juristic persons possessed the land with proper title deed. In regard to this number of ownership, she emphasized that only 20 percent of total owners possessed 80 percent of the land. The average size of land in possession in this group was about 0.38 hectares, whereas maximum possession was up to 10,100 hectares. Furthermore, the average land size possessed by politicians was 1.14 hectares, three times larger than others in the same quintile. Duangmanee Laovakul also pointed that possession concentration was highest in non-residential estate sector such as agricultural and industrial lands, with the coefficient of inequality of 0.884 in 2009, even higher than the possession in stock market. On the other hand, the land possession concentration was highest in the central region where most of irrigation projects are concentrated. (Laovakul, 2013)

In 2017, the forestry land-use occupied approximately 16.35 million hectares or 73 percent of the size declared by the Department of Forestry as conserved forest. Therefore, other 17 percent of the land had to be reclaimed and preserved as the conservation forest according to the Forest Act, B.E. 2484 (1941) and National Reserved Forest Act, B.E. 2507 (1954). On the other hand in regard to land reformation guideline, the policy on land reclamation from the deteriorated forest is another mechanism to allocate the land for non-possession agrarians and new settlers. The agricultural land reform program is to allocate land for living and dwelling to the farmers and the poor who have no land-ownership. Farmers who acquire the reformed land will receive Land Acquisition Document (ALRO 4-28) and Land-use Certificate (ALRO 4-01). People are not allowed to sell and use the reformed land for other purposes except agricultural uses. Uncontrollably, the results of the policies encouraged people to occupy the forestry areas and reclaimed the land as depleted forest or to declare non-conform use as agricultural uses, for example, declaring resort building as small scale farming residents. It brings up the land-use conflict among investors, true farmers, local officers, and policy drivers.

2. Price Guarantee Programs

Benjavan Rerkkasem (2014) pointed that low debt program for agriculture loan is another general policy that the government provides to support the agrarian. The purpose of the loan is to support all expenses related to agricultural activities- fertilizer, seeds, housing, basic construction, small-scale irrigation, pesticide, local-production development, technology, plantation upgrade, and even the disaster insurance. The farmers could use the different types of lands and land ownership to declare their loan credit from the financial institute. The Bank of Agriculture and Agricultural Cooperative (BAAC) is the major institute assigned and supported by the government to deliver different financial-support schemes to the farmers. (Rerkkasem, 2014)

Thai government always chooses two schematics of financial-support policies to interfere agricultural product market price. The first is product price guarantee program and the second is product pledging schematic program. The result of these two programs was to encourage the farmer to grow only the crop supported by the programs. Most of the supported product lists are referred to the list of export products. In many cases, the program causes over-production or over-stocking for some products supported by the government such as rice over-stocking from 2012 to 2014, which caused long-term debt to the government and sabotaged the natural market system.

5. Discussion: Impact of Land and Agricultural Policies on Farming and Farmers

Apiwat Ratanawaraha (2015) mentioned that when the country turned the economic development direction to industry and services, the meaning of land and value of agricultural land-use has been changed from the ground of life to the location of investment. The land policies have been changed from time to time based on economic activities. (Ratanawaraha, 2015) Regarding the influence of export activity on policies mentioned before, the question is how the farmers respond to the policy. Sapon Chomchan and Noppharat (2018b) noted that to sustain agricultural land, policies should be based on 5 disciplines:

- (1) Maintain the land for better production.
- (2) Secure the production with minimized risk.
- (3) Protect land, water, and environment from deterioration.
- (4) Be worth for investment.
- (5) Respond to social justice.

In regard to these disciplines, Chomchan and Noppharat did a research to investigate the decision making variable of Thai farmers, based on interview of 420 farmers, which took place in 14 non-metropolis provinces throughout the country to understand farmer perception on these 5 disciplines. The result showed that the farmer had their intention to adopt the sustainable agricultural land discipline but there were some points, which needed to be improved.

The research showed that 81 percent of farmers experienced land selling in their village, and 84.1 percent of the farmers had no intention to sell the land because they were aging and had no other professional skill. On the other hand, there were 4 reasons if the farmers wanted to sell the land: 1) their offspring was not the farmer, 2) debt from bank deposit was higher than farming benefit, 3) they wanted to pay back the loan, and 4) product price was not high enough to continue farming. It showed that 72.9 percent of them continued farming after selling their lands and prefers to sell the lands to people in the same village. On the other hand after selling the land, there was an opportunity to change land-use to non-agriculture. There were 44 percent of the farmers who needed to rent the land to increase or maintain their income and 79.8 percent preferred single crop and never changed their plantation methods such as using fertilizer heavily. The significant reason why the farmers still kept planting the same crops was because they could maintain their productivity and the products demanded by the market. On the other hand, other reasons to change crops were higher income and soil degradation. The farmers decided to join the government program because the government supported production factors and guaranteed product price after they joined the program. (Chomchan & Noppharat, 2018b)

Age, family, plantation method, product price, and production incentive influence the farmers' decision making on farm manipulation and on joining government support program. Chantararat, et. al. pointed that high aging population in agricultural sector was the most significant threat because adaptability to technology of aging population is low from both basic knowledge and intention to change their cultivation methods. The cultivation technique in Thailand is still in the 1960s green revolution focusing on single crop to control the investment cost with heavy use of chemical substances to increase productivity. The machinery generally used in Thai farms is considered out of date because it still depends on labor intensification. This is because 32 percent of the population in this agricultural sector is sharing less than 10 percent of national GDP. These lead to considerably low agricultural productivity and declining labor force. As a result of these factors, the development activities in this sector were simply meant to financially support farmers and farming product rather than truly strengthen productivity of the sector. The situation is even worse when the national birth rate has been declined and people tend to move to other sectors such as tourism services. Without self-dependence or self-sufficiency, the farming households need to depend on non-agricultural income.

For farmers who have land possession and ability to secure their productivities, they could survive from extinction situation because the land rent is a primary cost of farming investment. Farming in the large plot of land helps the farmers negotiate their expected price with the market. In capitalism, the possession of the land is ability to access financial sources. Without equal land procession, the financial support programs will be applied mainly to landlord farmers or farming enterprises. Furthermore, without proper farming knowledge, the farmers in general could not

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improve or even maintain product quality to respond to market demands because they could not control the investment cost properly. In export and free market economy, the production is controlled with supply chain and knowhow rather than the producers. The possession support programs fail because there are only lands without liberated farmers.

Thai classic agricultural policies are obsessed with support programs on production factors-land, finance, production materials, and knowledge. The support policy becomes a tool to induce farmers to maintain farming and producing materials to serve other economic sectors at the lowest cost. On the other hand, because it is trapped in middle income and could not be industrialized within limited country size, Thailand needs to secure the development cost with self-reliance economy until service and industrial sectors could contain right proportion of employment sustainably. It could be said that Thailand has to use about 50 percent of land as agricultural land and 32 percent of employment for internal colonialism.

Chomchan and Napharat (2018a) pointed that there were 21 government agencies from 6 ministries, 24 laws and regulations, and 22 committees dealing with land management and administration. Too many agencies, regulations, policies, and plans lead to conflicts of implementation among the agencies and private sectors. Chomchan, et al mentioned that too many subsidy programs without subsidizing plan weakened the farmers and environment. The government needs national land-use plan and establishes national land policy committee to enforce the direction on land development in the same way. (Chomchan & Noppharat, 2018a)

1. Impacts of Spatial Administration and Urban Land-use Control

The third NESDP focused attention on Bangkok which became “primate city”, and that led to many urbanization problems. The plan proposed the idea of new town development, growth poles, regional centers, green belt, garden city, and spatial development equity to regional areas. To reduce regional disparity, the fourth NESDP focused more attention on multiple nucleuses in regional areas; however, the development of BMR did not follow the Litchfield’s Greater Bangkok Plan. Urban development pattern of Bangkok has followed new economic development activities, manufacturing and industrialization. The urban sprawl area was expanded from the center of Bangkok city to the gulf of Thailand and Eastern seaboard. The degree of primacy was increased. The labors migrated from regional areas to the suburban and peri-urban area of Bangkok. This phenomenon has continued through the fifth NESDP until today.

When the country turned basic economy from agriculture into industry and services and land became commodity, land price reflected how location and scarcity of location became more important than the value underneath the ground. Kongcheep S. (2017), associate director of Colliers International, showed that base price of industrial land in Bangkok was higher than the average maximum industrial land price in the country. It is even notably high compared with the same land-use type in Bangkok vicinity provinces and eastern seaboard. Kongcheep pointed that

because Bangkok was now the centers of finance, logistics, and tourism, and it was limited by the size of the land and development regulation, land price of Bangkok was incomparably higher than other areas. In 2017, the highest price of industrial land in Bangkok was 3 million US dollars per hectare. Bangkok land price also affects the vicinity provinces. The highest industrial land price in Samutprakarn is 2.5 million US dollars per hectare because Samutprakarn is the first province connecting Bangkok to eastern seaboard. (Kongcheep, 2017)

In spatial planning system of Thailand, agricultural land-use is classified to follow different laws and regulations. Chomchan and Noppharat mentioned that there were 24 Acts related to land policies. Several of them are related to urban planning and agricultural land-use such as Urban Planning Act B.E. 2518 (1975), Land Reform for Land Development Act B.E. 2547 (2004) and Land Development Act B.E. 2543 (2000). (Chomchan & Noppharat, 2018c) Without Agricultural Land protection ACT or National Land-use Policy, to enforced agricultural land-use guideline and control, detailed regulations are mentioned in different ministerial regulation and different levels of spatial planning system. The ministerial regulations following the Urban Planning Act are significant instrument used for land-use and development control regulated by the Department of Public Works and Town & Country Planning (DPT). According to ministerial regulation, the regional plans such as Metropolitan Region Plan and Provincial Plan refer to agricultural land-use and rural area as the same category. Therefore, agricultural land use is always addressed as “the Rural and Agriculture Land-use” or “Rural and Agriculture Conservation Land-use”, depending on the degree of control. This kind of land-use control is applied to all land-use planning system conducted under DPT authorities and Town and Country Planning Board.

According to 2013 Bangkok Comprehensive Plan, Bangkok still maintains 28.8% agricultural land-uses in the plan. Based-on form-based code, the agricultural land-uses of Bangkok is categorized into 2 types: A1 - A3 (Rural and Agriculture Conservation) and A4 - A5 (Rural and Agriculture). These two sets of agricultural zoning are different on the degree of use controls. A1 – A3 are the land conserved as the rural characteristics with very low density, small bulk, permeable landscape, and wider open space. On the other hand, A4 – A5 are slightly allowed to have percentage of non-conformed used in the areas. Furthermore, the plan also provides another 5 categories of open-space land-uses along with the agricultural lands. They are

- (1) O1: Recreation and Environmental Conservation
- (2) O2 – O3: Environmental Conservation on Roadsides and Canals
- (3) O4: Natural Drainage Preservation (Floodway Reservation)
- (4) O5: Flood Detention
- (5) O6: Coastal Conservation and Rehabilitation

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Because Bangkok land price is the highest, agricultural development is not the main focus in Bangkok, even though 28.8 percent of the land-use is agricultural uses. The idea of rural and agricultural land protection is the same idea of green belt. It is to prevent urban sprawl expansion loosely. Furthermore, the true purpose of agricultural land is to mitigate the casualty from the flood. To avoid the effect on the land price, Bangkok has never clearly declared floodway zone, but has declared only flood detention in some areas, and would rather use a wide strip of agricultural land for flood control. On the other hand, without good infrastructure development, Bangkok neglects sprawl development penetrating into the agricultural land. The misuse of land leads to conflicts between the true purpose and intention of land speculation.

The BMR administrative system is fragmented. BMR is the compilation of several local administrative bodies; 1 special administrative area (BMA), 5 provincial administrative organizations, and 310 local administrative organizations. They are all different in size and systems of land-use control. Ratanawaraha (2010) pointed that BMR had faced urban development problems such as the loss of high quality agricultural lands, degradation of the natural environment and biodiversity, decreasing social cohesion in old communities, and environmental and infrastructure justice. The regulatory and governance inadequacies and government downsizing are notorious reasons. (Ratanawaraha, 2010)

Agricultural land in metropolitan area became the base line of urban development. It has been preserved for other development sake such as flood protection, urban growth control, and maintaining ratio of open space. As the primacy region, BMR consumes high percentage of national GDP. The BMR consumption does not depend on what it could produce within the region, therefore unlike other areas, Bangkok farm is encouraged to produce more organic product, using less chemical substances in the production because organic products could make higher profit in the small area compared with the land rent in Bangkok. Bangkok Agricultural Extension Office (BAEO) also encourages the organic food production, farm tourism, and self-sufficient farming (mixed crops) as the significant policies. According to 2017 BAEO data, the number of cultivated land in Bangkok is 21,058.4 hectares or only 13 percent of total Bangkok land-use. (Bangkok Agricultural Extension Office, 2014) On the other hand, referred to 2016 Department of Land Development data, Bangkok has 24 percent of land-cover or 38,036.48 hectares declared as farmland. The area difference of agricultural land between two data collecting methods turned out to be 17,000 hectares. This deference shows that there are abandon agricultural lands where the registered farmers did not claimed as their cultivation area. In Bangkok, only 55.36 percent of agricultural land cover was used for cultivation.

There are 8,882 households registered as agrarian families in Bangkok. They are approximately only 0.32 percent of Bangkok households. At the same time, Bangkok agricultural production shares only 0.0005 percent of Bangkok GPP. Compared with BMR and nation wide, agricultural GPP of BMR shares only 1 percent of BMR GPP and 8 percent of national GPP. The growth of agricultural GPP could not keep up with non-agricultural sectors; therefore in order to survive in metropolitan area, the Bangkok farm households could not depend merely on agricultural activities. (National Statistical Office, 2018a) According to BAEO, 353 community enterprises were promoted in Bangkok in 2011. They could be classified into 22 types based on their production activities. (Bangkok Agricultural Extension Office, 2011) The average land holding of Bangkok farmer family is 2.37 hectares per one family. (National Statistical Office, 2018b) Compared with the number of farming households, the size of agricultural land is considerably too large for a family. Agricultural activities are not always the main source of Bangkok families' income.

Unlike rural family, urban farmers lack cheap labor resource; therefore, the urban agrarians have to choose their own methods to utilize their potential lands. According to the report of Bangkok Agro Zoning Management Guideline in 2014, there are several mismatch situations among land potential, the number of registered land, and real cultivation areas. In many cases, the urban farmers merely tried to maintain their agricultural activities and lands rather than to maximize their production. (Bangkok Agricultural Extension Office, 2014)

Without intentional use and land possession of the farmers, the non-conform use is allowed in agricultural zone. Non-conform uses in agricultural zone, such as the low-density residential area and gated communities, have an impact on farm production and agricultural environment. Without proper agricultural environment protection regulation, the ecosystem in the agricultural areas such as orchard trenches, small natural gutters, and unregistered ditches in private land could not be protected. The productive agricultural farms have been gradually vanishing.

6. Conclusion

Thailand has long history of policies and regulations on agricultural land-use. At the beginning dating back hundreds of years ago, the policy was based on manipulation and distribution of profit from uses of the lands by the monarchy. The policy encouraged new settlements and new land reclamation. The administrative system was not based on salary but it adopted feudalism based on land, labor, and productivity as the system.

The system and policy were changed before the democratic revolution in 1932. Agricultural land-use in Thailand has been based on large-scale export economy since the early 19th century because of the influences of western colonialism. The impact shaped the foundation of today landscape of Bangkok suburb and agricultural policy. At that time, the policy was more advanced than it was today in terms of public-private investment. The government gave the concession to the

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private companies to build irrigation infrastructure for the vast area and allow the companies to manage the profit of the project after the land occupation and new settlement along the new canal system.

Obviously, the agricultural policy in Thailand must not depend only on one type of crops and export economy, and the country must establish regional agricultural education and better land tax system for equal development distribution since the world depression from the WWI, therefore in the early day of democratic revolution, the policy discussion was based on equal and limited land possession.

After the WWII, the population rose dramatically. The agricultural land-use affairs were distributed to several ministries. At that time, the agricultural land was only about 18 percent of total land-use; therefore, the Thai government initiated several infrastructure development programs and considered the agriculture as a type of industry that should be supported by the government. The early days of NESDP was influenced by green revolution and export economy.

The government kept the same core policies for several decades. The policies circled around production support programs (irrigation, fertilizer, and pesticide), cooperative establishment, export crops, and equal land allocation. At the same time, the agricultural land around Bangkok and eastern seaboard was violated by urban sprawl expansion and establishments of new industrial estates supported by the governments. The government policy focused increasingly on international marketing. This changed the domestic production to marketing base. In regard to marketing based policy, agriculture was more industrialized and the value of the land depended largely on industrial location.

After 1997 economic crisis, the policy focused more attention on national sustainability and self-sufficiency. Land development as agricultural environment increasingly became a matter of concern to be taken into consideration. Service sector became another significant economic sector. On the other hand, distribution of national income was found unequal. A large number of population in agricultural sector shared very small amount of GDP. The agricultural land policy still focused principally on land allocation and agriculture land reformation. Up until now, the policies of agricultural production have focused on organic food and energy crop production.

Undoubtedly, the agricultural production in Thailand depended on export economy. It could be said that export economy shapes the landscape of the country. The agricultural land and agro support policies are also based on export production, even though some policies are based on self-sufficiency economy. Several agricultural support programs are not successful because in the whole picture, the country focuses mainly on raising productivity rather than strengthening the agro community.

Thailand applies the land allocation program under the hypothesis that in order to solve poverty problem, the people should have land possession. In many cases, the program could not allocate potential or authenticate farmers to the right location; therefore, they could not maintain or even initiate the first crop on the adopted lands. This leads to the problems of land abandonment, land reclamation, and forestry violation. Furthermore, in many cases, people who were allocated were not the farmers who have less land possession but they are investor agents. The price guarantee program is also criticized because its application encourages the farmers to produce only the crop under the price guarantee program rather than to produce variety of production based on the location. The farmers join other support program such as compiled plot cultivation program because they want to get price guarantee program or other incentive programs within the policy.

The application of agricultural land policies and support programs was not quite successful in Bangkok. Small number of Bangkok farmers is interested in the program because they are under the different regulation of land-use control. Because of their tiny number and declining population, the Bangkok agrarian families have to depend largely on non-agriculture activities and income. Land-use control and regulation and lack of proper land tax system have made Bangkok land price too high to rent for agriculture under the market price. The farmer families who have land possession tend to keep the land for speculation or sell and continue traditional farming if they have no inheritors from their next generation. The ratio of abandoned productive agricultural lands in Bangkok becomes high. Those lands are left to await the change of use because the land possession does not belong to farmer households. As only a legislated tool to protect agricultural lands in metropolitan area, land-use control could only keep the lands as the open space prepared for other purposes, but it could not encourage agricultural activities or uses.

Agricultural environment in BMR is endangered because of the fallacy of policy implementation and interpretation- keeping the agricultural land and agrarian family in less-capitalized class, compared with industrial and service sectors. The fallacy is the result from the export economy, which has to keep agricultural product as the material at the lowest price. The productive agricultural lands were abandoned because Thailand and BMR have no absolute mechanism to plan and to enforce spatial control comprehensively. Furthermore, the agricultural support programs always rely on export economy. There is no proper connection between land-use control and support program because of bureaucratic complication. Agricultural activities are oftentimes misled and done regardless of environmental conditions.

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