Evolution of Land-use in Urban-Rural Fringe Area: The Case of Pathum Thani Province. [1]

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Abstract: *Imperfect competition in the land market and speculative uses of land have often been cited among the main reasons for the economic crash in the middle of 1997 and the head down collision into economic recession from which Thailand has not yet recovered. Critical review of causes and effects highlight several underlying causes which originated from shortcomings or inadequacy of planning and management tools and control of land use which, in turn, determine efficiency and equity aspects of resource utilization. Explanations can also be found in the flaws of the institutional components, financial institutions' lending policies that contributed to availability of money supply to finance speculative and non-productive demands for land and the regressive system of land tax, which allowed for speculators to hold land with minimum, if not negligible opportunity costs. These variables coupled with rules and regulations governing procedures of land transaction all share blame for perpetuation of the imperfection of the land market.*

Using Pathum Thani, one of the five vicinity provinces of Bangkok, located in a very fertile area of the central plains as the Case Study Area, the paper analyses economic losses from unplanned expansion of Bangkok into urban-rural fringe areas. Characteristic of the changing land use patterns of suburban areas, major changes in land use have taken place in this Province. A large area of agricultural land has been converted for residential, commercial, recreational and industrial uses. During the so-called economic boom period, land market in Pathum Thani was particularly active for speculative purposes. Increasing land price, diminishing purchasing power of middle and lower income groups and deteriorating environment are among the major reasons which turned Pathum Thani and other vicinity provinces into dormitory towns for daily commuter work forces which form part of the day time population of Bangkok. In the context of sub-optimum level of land use control and motivated by conditioned by prospective demands and supplies of houses, services and amenities, developers and speculators were able to take a large area of land out of productive use. The rows of unfinished real estate projects and empty residential units are manifestations that

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developers and speculators too suffered from the illusions of the bubble economy they have partly created.

The purpose of this paper has been to illustrate private and social costs and gains to the evolution of land use patterns in Pathum Thani. The economic analysis of impacts from changes in land use patterns focuses around three issues: (i) loss of productivity from land taken out of production for speculative purposes; (ii) forgone investment in development of land for agricultural production namely irrigation infrastructure and land reform measures; (iii) efficiency loss resulting from distortion in the land market where prices become conditioned by speculative demands for land as opposed to price resulting from competing land uses among economic activities.

The paper also discusses the inefficiency of land use from spatial planning criteria from uncontrolled urban expansion, such as concentration of up areas along the road network and mushrooming of sub-centres creating 'ribbon', the 'leap frog' pattern of spatial development and underutilization of hinterland areas. It also addresses issues of environmental externalities resulting from uncontrolled urban expansion. The manifestations of inefficiency in these areas are analysed in terms of divergence of private and social cost.

1 Background and Coverage of the Paper

Imperfect competition in the land market and speculative uses of land have often been cited among the main reasons for the economic crash in the middle of 1997 and the head down collision into economic recession from which Thailand has not yet recovered. Critical review of causes and effects highlight several underlying causes which originated from shortcomings or inadequacy of planning and management tools and control of land use which, in turn, determine efficiency and equity aspects of resource utilization. Explanations can also be found in the flaws of the institutional components, financial institutions' lending policies that contributed to availability of money supply to finance speculative and non-productive demands for land and the regressive system of land tax, which allowed for speculators to hold land with minimum, if not negligible opportunity costs. These variables coupled with rules and regulations governing procedures of land transaction all share blame for perpetuation of the imperfection of the land market.

Using Pathum Thani, one of the five vicinity provinces of Bangkok, located in a very fertile area of the central plains as the Case Study Area, the paper analyses economic losses from unplanned expansion of Bangkok into urban-rural fringe areas.

The paper is divided into 4 Section. Following this introductory section, Section 2 provides an overview of the development of urban land use pattern in Thailand briefly describing planning tools, legal, institutional and fiscal tools employed to control and regulate land use. Issues addressed in this section centre around the causal relationship between the pattern of spatial development and the structural problems of urbanization focusing in particular on adverse economic repercussions of non-rationalized land use. Reference is made to the institutional and legal support structures for urban land-use management, current policy instruments, which are directly or partially related to the assertion of planning and control measures on urban land-use.

The third part of the paper traces the development of land use in one of the five vicinity provinces of Bangkok, Pathum Thani. The interest of this Province is that development of urban spatial forms in this province clearly illustrate the causes and effects of uncontrolled urban expansion, such as concentration of up areas along the road network and mushrooming of sub-centres creating 'ribbon', the 'leap frog' pattern of spatial development and underutilization of hinterland areas. The economic of impacts from changes in land use patterns can be defined in three areas. These include (i) loss of productivity from land taken out of production for speculative purposes; (ii) forgone investment in development of land for agricultural production namely irrigation infrastructure and land reform measures; (iii) efficiency loss resulting from distortion in the land market where prices become conditioned by speculative demands for land as opposed to price resulting from competing land uses among economic activities.

The final Section concludes with general remarks of future directions of land use development and factors, which needs to be taken in consideration in policy formulation.

2 Urbanization of Thailand [2]

2.1 The Emerging Land Use Patterns

Land use in Bangkok Metropolitan Region has been classified into two broader zones, comprising of the inner city districts within 10 kms of the Rattanakosin Area which is the main concentration area for government offices, commercial activities, educational establishments and living quarters. The outer bound is defined as the next 10 kms ring functioning as the new central business district accommodating outward increase in the numbers of businesses and commercial activities. Presently, the key government operations and businesses and commercial activities are concentrated in these inner city bounds and it continues to be the major employment areas. Intensification of economic activities and continued demand for centrally located sites is the main reason for rise in land price in these locations.

The outer part of Bangkok is defined as the 20-40 km ring from the centre and linked to it by radial roads northwards and southwards to Nonthaburi and Samut Prakarn and eastwards and westwards to Chachoengsao and Nakhon Prathom. Around 25% of these suburban areas have been classified as residential areas, a ratio is likely to increase given the continued rise in land prices in the inner city area as well as the deterioration in urban pollution which are the main discouraging factors for middle to upper income level groups to live in the inner city area. The remaining 75% of the land are utilized for manufacturing and commercial activities while large parts of the land remain under agricultural production. The outward expansions of economic activities together with the economic and environmental factors are likely to intensify land use in these fringe areas. Though linked with the inner city by expressways and arterial roads, of adequate distributor roads and access roads and

[2] Parts of this Section have been revised from a paper entitled, The Use of Economic Instruments for Urban Land Management prepared by one of author, Orapan (Srisawalak) Nabangchang, for the Chulalongkorn University European Studies Programme (CUESP) supported by the European Commission in Brussels, completed in September 1999.

lagging development of urban amenities are said to be the prevalent problems of these areas.

Between 1960 and 1970, Bangkok has expanded (in spatial terms) by over 100% from an area of 96.4 sq.km to 189.7 sq. km with the incorporation of adjoining Thonburi province.[3] By the late 1990s, the population of Bangkok has escalated to 5.2 million equivalent to 9% of the total population, and its area has extended to 1,568 sq. km The functional area of the city would be greater than the population figures indicated since adjoining provinces such as Nonthaburi and Pathum Thani have become residential towns for commuters who work inside Bangkok. A large percentage of blue and white collar worker in these provinces in these two provinces as well as in Samutprakarn make up a sizeable day time population of the Metropolis. With the inclusion of the five vicinity provinces, the population of the extended Bangkok will be 8.1 million equivalent to 14.0% of the total population. [4]

Between 1994-1995, Thailand's average rate of population increase was 0.6%. With out-movement of people to the vicinity provinces, Bangkok's population actually reduced by an average of -0.2% during the same period. Population increase in the five vicinity provinces on the other hand was significantly higher than the national population growth rate ranging from 1.3% p.a.for Samutprakarn, 1.5% p.a. for Nakhon Pathom, 1.9% p.a. for Nonthaburi and equal rate of 2.5% p.a. for Pathum Thani and Samut Sakhon. [5]

The pattern of urban land use has been mainly influenced by private developers due mainly to weak enforcements of planning and control measures of concerned authorities in the public sector. During the early 1980s, density increased on the eastern side of the city while urbanization on the western part of the city was mainly at the expense of loss of agricultural land. The recent completion of the outer ring road will have the same effect in generating urban sprawl as the arterial road Vipavadee Rangsit road, Phahonyotin Road, the Ransit Nakhon Nayok Road have had in the past.

The declaration of '*Control Area'* places legal restraints on land usage, frontage access area, floor space allocations. A total area of 140,000 *rai* [6]to be preserved as the 'green belt area' on the east as well as on the western part of the metropolis on the eastern and the western part of the Metropolis. Housing developments continued to expand despite these legal restraints however. This was mainly due to rising market prices for land; lower returns from utilization of land for agricultural production as opposed to non-agricultural (i.e., primarily commercial, real estate development). Numerous private housing developments have been emerged to take opportunity of economic boom during the late 1980s, a period which increased business volume of professional developers and created many amateur developers. Vicinity provinces such as Nonthaburi, Pathum Thani, Samut Prakarn are

[3] Thailand Development Research Institute (TDRI), *National Urban Development Policy Framework,* Final Report, Vol. 2, Study Area 5, p. 2, A Study prepared for the Office of National Economic and Social Development Board and UNDP.

[4] Data Update, in *Government Housing Bank Journal,* Year 4, No. 13, April-June 1998, p.70.

[5] Population Census, Department of Local Administration, Ministry of Interior

[6] Local area measurement where 6.25 rai = 1 hectare

packed with recent private housing projects of varying price ranges. The expansion of road infrastructure and bridges across the Chao Phraya River has been accompanied by ribbon development, leap frog phenomenon with limited spread effects on the hinterlands. The slow down of the fever following the event of the Gulf war pushed many developers, professional and amateurs alike into bankruptcy. Nevertheless, land continues to be one of the less risky areas of investment. Since land tax is minimal, the opportunity cost for holding land as an asset was negligible and with financial institutions eager to lend large amount of capital using over-valued land as collateral, the Thai economy was heading for a predictable crash which eventually happened in the mid 1997.

2.2 Land-use related problems of urbanization

The damages in terms spatial forms from the above urban development process are evident in the present land use of BMA, i.e., insufficient road ratio, unsystematic road networks, numerous blind land parcels and an overall low efficiency in pattern of land use. The intensive competition demands that developers build in comprehensive services such as water supply, electricity, garbage collection services, security guards, etc., as part of their marketing strategies. While there are comprehensive services within private housing projects, there have been inadequate efforts in linking up these private housing projects with the broader road networks or to link up with local existing urban systems to which 'new communities' are superimposed. a large scale influx of new residents often create an overnight demand for public facilities creating bottlenecks in supply of amenities, waste water and solid-waste facilities. Excessive construction not only causes pilfering of top soil is observed to be causing damaging results from inundation[7] but construction of these real estate projects often involved filling up natural waterways and canals and altering the former drainage systems causing flooding problems.

In short, urbanization as a result of rapid economic development has many externalities that are reflected in the poor quality of life, congestion of living space, air and noise pollution, problems of transportation and inadequacies of urban services. With the lack of tradition for cost sharing of public utilities and amenities, the burden for provision of these services relied solely on public sector spending.

One major area of concern over un-controlled expansion of urban areas is the loss of agricultural land. Between 1974 and 1984, it has been estimated that urbanization of the metropolitan area resulted in an average loss of 32 sq. kms per year [8] and between 1984-1989, it has been estimated that an average of 18,000 *rai* per year of agricultural land has been converted to golf courses and residential housing projects. [9] Large scale transfer of prime agricultural land in Nonthaburi province has been converted to real estate areas during

[7] TDRI, *op cit*., p. 7

[8] Dowall D.E., *The Land Market Assessment: A New Tool for Research and Policy Analysis*, paper presented in the International Conference on Property Taxation and Its Interaction with Land Policy, Lincoln Institute of Land Policy, September 22-26, 1991, Cambridge Mass., U.S.A., p. 452

[9] Estimated figure of the Office of Agricultural Economics, Ministry of Agriculture and Co-operatives.

the economic boom period and the province has become, in effect, the dormitory town for middle to upper income groups, the majority of whom represent the day-time residents of Bangkok Samut Prakarn, agricultural land has been converted into industrial and residential areas. Similarly, in Samut Sakhon: small-scale factories, mini-factories and industrial estates. Not much change in land use has been observed in the case of Nakhon Pathom during the economic boom period since a large area of land has already been converted to industrial areas, commercial and residential areas.

Inefficiency of urban land use is manifested in conflicting patterns of land-use. With weak enforcement of land use plans, it is not uncommon to find mixture of varying types of land use. Along the Pathum Thani's provincial highways for example, industrial factories are located amidst residential areas typically along side the arterial roads. Built up areas follow the transport corridors and areas of emerging economic activities such as the corridor to the designated industrial nucleus in the Eastern Region, the upper Central Region.

Urban sprawls and mushrooming of dormitory towns generally result in increases in average travelling distance, daily travelling hours and travelling expenses. Urbanites have become auto-dependent and energy-intensive society. Such changes not only incur private costs which are absorbed by the households, but they affect the real economic sectors pushing up unit cost of production from various forms of incremental costs mentioned.

2.3 Land Management Tools

2.3.1 Planning Tools

While solution from the public sector is slowed down by legal and bureaucratic procedures, the immediate answers provided by private sector initiatives which to alleviate problems in the short run may prove to be highly problematic for future management and control. One positive indicator for the future is that the externalities of urban living environment have been recognized as a development priority in the formulation of the Eighth Social Economic Plan is the acknowledgement of the inadequacy of provision of basic urban infrastructures in the Bangkok Metropolitan Area (BMA) and suburban areas.[10] The State recognizes that failure to efficiently manage and control land use, as reflected by the haphazard and unsystematic nature of urban land use, is due to the absence of a strategic plan and lack of appropriate town planning control measures. Reference is made to the lack of financial resources, to the inability of the State to bear all the costs, to the inability of local authorities to take independent initiatives as well as to the sub-optimum level of private sector participation.

Comprehensive plan which are prepared by Provincial City Planning Offices of the Department of Town and Country Planning (DTCP). In principle such plans are revised every five years, in situations where replacement plans are not approved of in time, there is a planning lag where no land-use regulations are in effect. The key implementing agencies are the Public Works Department and the Office of Accelerated Rural Development. The main thrusts of these plans are mainly infrastructural oriented. Due to weak enforcements,

[10]Concept and Strategy for National Development During the Eighth Plan, Seminar Document circulated in Meeting at Ambassador City, Phattaya, March 3-4, 1995 (Bangkok: NESDB), 1995

Comprehensive plans become no more than land-use zoning maps with no mechanisms for enforcement. The existence of the Town and Country Planning Office at the Provincial level cannot be taken as an indication of decentralization of land use planning given that 'planners' apply standard benchmark indicators and based on linear trend projections for the next 20 year period rather than being visionary or attempting to guide spatial form of development. Standard formulas are applied, i.e., service areas per population, amenities, etc. [11]

The more detailed 'Specific Plans' or municipality plans and municipality by-laws incorporate aspects of density control, environmental and conservation projects It is not, however, mandatory that all localities prepare 'Specific Plans'. Very few 'Specific Plans' are prepared because municipalities rarely have the manpower and expertise to prepare such plans. Moreover, for such plans to be effective, approval of the Central government is required which entails long bureaucratic procedures as opposed to the more consultative processes, which have now become the mainstream.

The preservation of agricultural green-belt zone with low population density has been one of the main areas of weak enforcement, given that these fringe areas has very high market potential if converted into other forms of non-agricultural usages particularly residential or housing projects. Prior to the economic crisis, land price in such areas have soared have resulted in large-scale transfer of land from agricultural uses. Similar to the Japan, many investors were seeking to capture capital gains in taxes and not interested in the potential of land to generate revenue from its use value per se. During such period, land is thus taken out of production and mainly held for speculative purposes.

Not only are there problems of inter-agency co-ordination within the Central government agencies located in Bangkok, there are also problems of co-ordination across jurisdiction of different provinces. Municipalities' jurisdiction covers only the legal boundary of the municipality. A number of preceding studies have observed that the 'urban areas' spread beyond the administrative boundary that it makes more sense to estimate the 'size' of the urban area by the population rather than by the land area. What has happened in most urban centres is the over-spill of the population, the urban sprawl into areas lying outside municipal boundary, then it 's no man-land and accompanying problems of supply of urban services, etc.

2.3.2 Legal Tools

In the context of Thailand, the legal provisions function more to provide the control functions and are not tools to shape or guide land development. There are various pieces of legislation that are related to different aspects of urban development that are pertinent to land use and urban land management. Key pieces of legislation include the Land Code Act, 1954, Condominium Act, 1979, Immovable Properties Acquisition Act, 1987 in addition to pieces of

[11] Kruger Consult, *Urban Environmental Management in Thailand: A Strategic Planning Process,* Final Report, A study prepared for the Office of the National Economic and Social Development Board and the Danish Cooperation for Environment and Development (DANCED), December 1996

legislation that deals with taxation of immovable properties such as the Housing and Land Taxation Act, 1932. [12]

Pieces of legislation that deal with city planning, land use and building control include the City Planning Act 1975, the Revolutionary Announcement no. 286 on land subdivision, the Building Control Act, 1979 and the Housing and Land Rent Control Act of 1961,[13] Real Property Services Act, 1975.

The power of eminent domain is stipulated in the Immovable Properties Acquisition Act, 1987. If fully capitalized, the power of eminent domain can be used to shape urban landscape through acquisition of land for use as public areas, green areas, or for installation of adequate amenities and urban services. To date, the exercise of the power of eminent domain has been limited. Public consultation for development projects, which has made mandatory by the Constitution of 1997, desirable as it may be, if not kept within bounds, can cause delays in reaching settlements for just compensation and open loopholes for interested parties to capitalize from negotiation outcomes.

These pieces of legislation creates a range of public stakeholders with ad hoc responsibilities with mandates to address isolated issues, solving immediate problems or issues with no in-built system for effective inter-Ministerial or inter-departmental co-ordination. General criticisms have been on the ambiguities, obsoleteness in view of the changing social-economic context and ineffectiveness due to weak enforcement or low penalties.

2.3.3 Fiscal tools

To date, taxes have not been used as tools to manipulate land use in Thailand. Two types of taxes levied on land Local Development tax and Housing and Land Tax. Local development tax is only levied on residential property and on land parcels that are not located adjacent to properties already subject to payment of Housing and Land Tax. It is a regressive tax, which is based, is the average agricultural land prices. That is the rate being 0.5% of land price for parcels of land with are lower than 30,000 Baht/*rai* while for parcels with assessed market value higher than 30,000 Baht pay a lower rate of 0.25% of assessed value of land. Exceptions are made for land leased for agricultural production will pay half the rates quoted. For owner cultivator, tax paid will not exceed 5 Baht/*rai*. Allowances can also be granted for residential area, for grazing land and for owner-occupier agricultural land for an area between 50 sq, *wah* to 5 *rai*. It is also stipulated that for the owner of property that is located adjacent to properties already subject to payment of Housing and Land Tax will be exempted from payment of Local Development Tax.

Housing and Land Tax is levied on leased property, commercial property, industrial property and warehouses at the rate of 12.5% of the annual rent value (or potential gross income of the property). The tax base is observed to be very narrow as it excludes residential property and unutilized property. For properties that are not leased out and therefore do not have a computed market value, it is up to the discretion of the official to estimate the 'likely' rental

[12] amended in 1942

[13] amended in 1966 and 1968

value. In line with the objective of promoting industrial production activities, exemptions are granted for properties, which house industrial machineries, which are installed and utilized for production/manufacturing purposes. In such cases, the property is only subject to one third of calculated tax is actually levied, an albeit rather peculiar allowance given that machineries generally cost more than the property itself.

From the above, two major shortcomings can be observed of the Thai land tax system. The first is that taxes have not been used tools to manipulate or control land use. The opposite can be said where low level of taxes levied on land have induced speculative land holding resulting in ineffective use of land resources. Second, the limited revenue from land resources also mean, in effect, limited funds which can be allocated to investments in improvement of urban environment, i.e., landscaping, or investment in urban infrastructures and amenities.

Given the sensitivity of land issues, the above shortcomings have been the subject of debate for many decades without any positive changes. Nevertheless, with pressures mounting for effective management of land in both rural and urban areas, efforts are underway to modernize these rather outdated systems of land taxation.

3 Pathum Thani Case Study

3.1 History of Settlement

During the Ayudhaya period, Pathum Thani has been the location where Mons from Motama were resettled. The first settlement was Ban Sam Kok, which later became Muang Samkok. Muang Samkok was given the name, Prathum Thani during the reign of King Rama II and in B.E. 2459, Prathum Thani was then officially modified to be the present name, Pathum Thani.

Presently Pathum Thani comprises of 7 districts, 60 Tambons and the 529 villages. There are 2 Muang Municipalities, 11 Tambon Municipality and 52 Tambon. Settlements originated from small communities on the bank of the Chao Phraya river and along the canal routes. Settlements, which grew rapidly, were Khlong Luang, Tanyaburi and Lam Lukka.

District	Date of official establishment
Thanyaburi	1902
Lam Lukka	1904
Khlong Luang	1904
Nong Sua	1913
	1917
Lad Lum Kaew	1916
Muang	1917
Sam Kok	1922

3.2 Changes in Land Use

Land on the west bank of the Chao Phraya river remained utilized until 1888 when a private company was granted concession to dig the "Rangsit Prayurasak canal as well as the secondary and the tertiary canals. Altogether 43 canals were dug. The main canal, the Rangsit canal was 8 *wah* [14]width, and 1,370 while the width of the secondary and the tertiary canals were respectively 6 *wah* and 3-5 *wah*s respectively.

The Khlong Rangsit Prayurasak canal is the so-called *Thung Luang* or the *Thung Rangsit*, or literally translated as the fields of Rangsit located on the east of the Chao Phraya river, with Khlong Prem Prachakorn to the west and the Nakhon Nayok river on the east. To the south are Khlong Saen Saeb, Khlong Bang Khanak. The area boundary to the north is Ayudhaya and Saraburi.

The original concession was for a period of 25 years. The agreement was that the concessionaire would cover all the expenses. In return, the State will grant ownership rights for land 1,600 meters on either side of the canal banks of the main canal and 1,000 meters of the secondary canal, subject to whether or not the land has already been claimed and already being utilized. The other condition were that the concessionaire was also required to leave 6 *wah* on either side as public land, apart from this restriction, the concessionaire had the legal rights to utilize, or dispose of the land in any manner they wish. The concessionaire was also responsible for maintenance work and collection of fees for any boats and transfer 20% of this revenue to the State. The construction works started in 1890 but three years later the contract was to be revised to allow for expansion of completion date. Th canal was completed in 1900.

The canal was a major influence on land use pattern in Pathum Thani particularly in the expansion of paddy land and attracted many new settlers in the *Khlong Thung Luang* area. The fertility of the land brought in many potential buyers. Names in the application list for purchase of land from the concessionaire increased rapidly and land price appreciated 37 times within a period of 14 years. It was estimated that around 2,000,000 *rai* were brought under paddy production.

The increasing competition for land and rise in market value was the origin of the roots of land conflicts in the Central Region of Thailand, which centred on tenancy farming. With the information that the concessionaire can take over possession of land on either side of the canals subject to there being no prior claims, a large number of aristocrats who knew the plan of the canal construction would use slaves and those under their command to occupy and lay claim over the land on their behalf primarily for the purpose of leasing land to farmers. In some cases, there were overlapping of claims since the concessionaire had already sold land to farmers who are already utilizing the land. The roots for land conflicts from tenancy farming and the phenomena of absentee landlords can therefore be said to have taken shape from then onwards.

[14] local measurement of length. One *wah* equals 2 meters.

What shaped land use in Pathum Thani in the earlier settlement period were the policy directions for the agricultural sector which had been very much influenced by the 'growth-oriented' concept. The opening up of the Thai economy saw a strong emphasis on the production of cash crops very much hinged upon the classical approach to economic development that the agricultural sector was to function as the centre for accumulation of capital hence, the fundamental drive towards economic development. The whole emphasis during the 1st and 2nd plan period has been focused on large investments to install the basic physical infrastructures, such as large-scale multi-purpose irrigation projects and road networks. Since emphasis was on growth, investment decisions have been somewhat locational bias focusing on areas with high development potential, primarily the fertile river basins of the Central Region of Thailand. To a certain extent, there was quantifiable reward in terms of output expansion, export expansion and inflow of foreign exchange earnings. With technological breakthrough of the Green Revolution, Thailand has been able to capture some of the benefits of technology breakthrough. Production continued to expand through a combination of area expansion, subsidized inputs and limited technological advances. At the turn of the 1970s, the distribution or lack of distribution of the fruits of growth surfaced. The economic ills turned into political instability that reached a tacit compromise with the launching of the land reform which, in principle, promised the distribution of the most important factor of production in a low technology context, land.

Immediately after the enactment of the Agricultural Land Reform Act in 1975, landowners in 101 District of 34 provinces were required to report the land under their possession. Altogether 812,256 reports were registered up to 1981, of which just under 70% were landholdings smaller than 20 *rai* per household. Only 6.82% of reportings from 27 districts of 12 provinces in the Central region were holdings larger than 50 *rai*. Thanyaburi, Nong Sua and Khlong Luang Districts of Pathum Thani Province were among districts of the Central Region with the highest concentration of holdings larger than 50 *rai*. Average size of land holdings larger than 50 *rai* in these three provinces were 202 *rai*, 170 *rai* and 169. 59 *rai* respectively. Pathum Thani was also the province with the highest concentration of tenancy farming. Around 58% of the reported land in Thanuyaburi district was under tenant farming, followed by Nong Sua District (56.78%). Pathum Thani has been among the few provinces where land reform measures in the traditional sense of redistributing private land from large landowners to the tenants and to small farmers.

A combination of factors, however made land reform in areas such as Pathum Thani, a losing battle from the start. It may have been due to the weak 'degree' of political back up that land landholdings were not expropriated but were purchased from the landowner through negotiation processes. Land was bought by the Agricultural Land Reform Office for the price of 2,000 Baht and sold to the beneficiaries for the same price on a hire-purchasing basis. Given the discrepancy with the market prices, farmers generally mortgaged the land for the value of 1,000,000 Baht/rai with the Bank of Agriculture and Agricultural Cooperatives who will issue a loan of 500,000 Baht/rai. The net return of 480,000 Baht/rai is the explanation why the majority of such loans becomes non-performing loans for the BAAC, but a highly profitable move on the part of the land reform beneficiaries. Outcomes such as this is partly explanatory for why land reform measures diverted the focus from redistribution of private land to issuing of occupancy rights for beneficiaries in public land which are mostly degraded forest areas.

But had land concentration changed? The low percentage share of larger parcels in 1998 suggests that land concentration is not as acute a problem as it may have been in the past. This could be partly attributed to the indirect effect of land reform, which stimulated subdivision of holdings. The major determinants, however, had been the operation of market mechanisms and the dynamics of land market in Pathum Thani conditioned primarily by its prime and strategic location and suitability for a range of alternative uses. With limited control of land use, allocation of land has been to the highest bidder. This was the underlying cause for the continued decline of agricultural land in Pathum Thani, particularly the districts, which adjoin Bangkok. Over the years, land use for residential, commercial and industrial activities expanded in a province where much investment had been made in agricultural infrastructure and in measures to ensure equitable distribution of land resources among tenant and small farmers.

Based on information from the Land Development Department, area classified as residential, commercial and industrial areas increased from 37,374 *rai* in 1971 to 212,661 *rai* in 1993**,** an increase of 20% p.a. The increase of 175,287 *rai* was mainly at the expense of agricultural land in this province. Housing projects, originally concentrated in Khlong Luang District and along the Phahon Yothin Rd. gradually moved to the Rangsit Nakhon Nayok Rd. and the Rangsit Bangpun Rd. in Muang District. In 1988, it was reported that there are 46 housing projects in Muang District. Based on a survey conducted between February and April of 1994, in Thanyaburi, Khlong Luang and Lam Lukka alone, there were already 114 housing projects.

One other major type of land use, which has become quite common from the beginning of the 1980s onwards, is orchard parcel lots. These refer to agricultural land being modified into orchard farms and sold and developed lots, with the sales price including labour charges for maintenance and harvesting of fruits. In some projects, there are usually on site facilities such as swimming pools and sport facilities while in others, land parcels are sold together with the house. Value of marketed produce is shared between the developer company and owner of the parcels. Conversion of land use to this activity was quite widespread in Khlong Luang, Thanyaburi, Lad Lum Kaew and Muang District. Based on surveys conducted in 1988, there were altogether 35 of these developments, around 85% of which were concentrated in Khlong Luang and Thanyaburi. During the so-called ‘economic boom’ period, orchard lots were considered to be a good form of investment and survey of landownership revealed that most of the buyers are higher income groups who was not interested in making any substantial income from the sales. It is believed that once the area becomes more developed, land price will appreciate and orchard plots will be converted to residential units since return per land unit is likely to be much higher. By this process, the first stage of transition is where land is transferred from direct users to a new form of absentee landlords, then eventually from agriculture to non-agriculture.

Apart from direct conversion of agricultural land to non-agricultural uses, land can be taken out of production indirectly. This is generally the case of land parcels located between lots that have been sold and are waiting to be developed, or parcels locked between housing projects, or between factories. Poor location, combined with problems of diseconomies of scale is among the reasons why these land parcels have been left unutilized. A larger number of parcels have been bought by external buyers either for resale, or to be used at

later stages when amenities have been developed. It is estimated that loss of productive value of land in this manner can be as high as 18,942 *rai*.

Between 1989 and 1999, the number of industrial establishments increased by nearly 300%. Even after the economic crisis of 1997, the numbers of industrial establishments continued to increase in Pathum Thani. [15] Other competitive bidders for land have been for golf courses. The mushrooming of housing projects creates prospects for department stores and supermarkets. Presently, there are 9 department stores, 5 of, which are concentrated in one, district alone, namely Thanyaburi.

The economic crisis that surfaced during the middle of 1997 had quite a significant impact in slowing down the dynamics of the land market in Pathum Thani. Signs of the approaching recession was noted even in 1996. The value of land transactions in 1996, as reported by the Department of Lands for land sales and mortgages dropped by 15% and 23% respectively. Only the value hire-purchasing transactions continued to increase in 1996 from the 1995 base by 27%. In 1997, however, values of all types of land transactions, i.e., sales, hire-purchases and mortgages fell by around 50%. [16] The numbers of land transactions also fell by similar ratios. [17]

To summarize, expansion of the non-agricultural uses have been at the expenses of the loss of agricultural land. The evolving land use pattern has been mainly due to the operations of market mechanisms. In principle, allocation of land to the highest bidder should create efficiency since land is utilized by operators who can generate highest return from the land. Nevertheless, in the case of Pathum Thani, even if economic efficiency can be achieved, the outcomes must be considered against public investments concentrated in this province primarily to support agricultural production and to establish an equitable distribution of land resources.

Pathum Thani is also an illustration of contradictions of public policies. One case referred to above is the irony of the BAAC issuing mortgaged loans for land held by land reform beneficiaries thereby being directly responsible for the undesirable transfer of land from the immediate agricultural producers. The outcome of all these contradictions of public sector policies, sub-optimum delivery of services, combined with the operations of market mechanisms have resulted in inefficiency of land use, in physical and environmental aspects as well as by equity and economic considerations. Public investments in expanding road infrastructures, for example, generally render greater benefits for vehicle owners or those who has the choice of the mode of travelling and do not rely on public transport. More money is pumped into to expanding road networks while proportionally smaller sum is invested in public transport. Situations appear to be that of a race between the public sector perpetually

[15] Based on statistics of the Provincial Industrial Office, 141 new establishments were registered in 1997 and in the three successive years, i.e., 1998, 1999 and year 2000, the numbers of newly registered industrial establishments were 77, 100 and 16 respectively.

[16] Value of sales, hire-purchases and mortgages fell by 45%, 50% and 54% respectively.

[17] The number of transactions in the form of sales, hire-purchases and mortgages fell by 45%, 21% and 54% respectively.

trying to expand road network but could never quite keep up with continued increase in demand for roads due to rise in number of private vehicles. On the other hand, the losers are lower income people who are not a participant of this race but who nevertheless suffer longer travelling hours because road expansion can never keep up with expansion of private cars and greater period of exposure to air and noise pollution. Location of housing projects resulted in the increase in numerous blind land parcels and in many cases have impact on pattern of drainage and water flows. The other side of urbanization is the waste it generates from production processes and for consumption.

4 What are the future directions

Dramatic changes in rationalization of land use are unlikely given that all major determinants of changes in the past are still prevalent. Among the important determinants of land use include expansion of road networks, changing land prices and various aspects of government policies such as land taxation, investment promotion measures and the move towards liberalization of the financial markets.

4.1 Expansion of road networks

Road expansion reflects to a certain degree the misguided transport policies, which place greater emphasis on movement of vehicles rather than movement of people through investment in public transport services. Not only was there a significantly greater proportion of investments in road construction compared to expansion of public transport facilities but the low interest rate on loans have created incentives for potential car buyers who would otherwise be unable to afford the purchases. The increase in the number of vehicles outpaced the expansion of road surface. In part, the steady increase in the number of private vehicles has been due the inadequacy of supply of public transport services as depicted by the overloaded buses with passengers squeezed inside and the 'excess' passengers dangling from the door ways. The increase in the numbers of privately owned and operated minibuses are also indicators of supply constraints of the public sector transport services. This meant that as soon as households can afford private cars, they will compensate the higher expenses per trip for the higher utility value of being safely seated in private cars. But apart from the actual need for private cars, the cultural factor has much to explain for the daily increase in the number of cars. Private car ownership has become somewhat of a status indicator, i.e., whether or not one has a car and what type of vehicles have become assumed indicators of one's ranking in s

In summary, the expansion of road networks has been and will continue to be a major factor in pushing out the urban boundary, particularly for areas within two hour radius traveling distance from Bangkok.

4.2 Increase in land price in inner city area of Bangkok

The increase in land price in inner city area of Bangkok beyond affordability of lower and middle-income class has been one of the major determinant factors for the rapid increase in the built up areas of Pathum Thani. Continued rises in land prices in the CBDs and urban areas is likely to reinforce existing pattern of resettlement of lower and middle income

classes towards the suburban areas. Competition for land in Pathum Thani, similar to other vicinity provinces is therefore likely to intensify pushing up land prices further. Thus without intervention measures, less competitive land uses for agricultural production will continue to be outbid by competing land uses resulting in further reduction of agricultural land.

4.3 Government policies

Government policies can have both direct and indirect impact on emerging land use patterns.

4.3.1 Land Tax

Land tax policies are also among the reasons for inefficiency of land use and have indirectly encourage land purchase for speculative purposes. With a regressive land tax system, the opportunity cost for holding land for speculative purposes is almost nil. Thus, there is no urgency to develop or dispose of the land. Moreover, from land ownership has been the more stable storage of wealth and one form of investment in which Thai investors do not have to face competition from foreigners. For several decades, there has been discussion of introducing the concept of progressive land tax and property tax. Given the political sensitivity of the issue, however, decision-makers of each successive government have remained indecisive on these matters. Undeniably, before any comprehensive land tax system can be introduced, much groundwork needs to be accomplished in terms of developing a comprehensive and reliable land information system. Human resources development is also a critical area of need although this should be more focussed on capacity in land valuation skills and as opposed to the past and present emphasis on physical planning skills.

4.3.2 Liberalization of the Financial Markets

Among the major underlying causes of Thailand's economic crisis is the global capital flows which have the tendency to distort national economic in such manners that weak economies are unlikely to cope. Similar to many of the developing economies, Thailand plunged into economic transition without first developing a social safety net. These are painful lessons, which changed the story of the economic miracle into one of economic calamity. Since the mid 1997, industrial growth plummeted to -0.1% in 1997 while value added from service sector to GDP reduced by 1.1%. All macro-economic indicators reflect a rather glum picture, GDP growth in 1997 was -0.4%, GDP investment reduced by -19% and GNP per capita reduced by -2.1%.

The consequences of the liberalization of the financial markets have been in misallocation of financial resources, over spending and upsurge of short-term borrowing which had not been realistic link to the absorptive capacity and the potential of the domestic economy. The outcomes are the high number non-performing loans, partially in the real sector, but mostly in the property sector. A combination of factors generated and intensified problems in the financial institutions such as mismanagement of both public and private sector, inefficient supervision of authorities and lack of accurate information. This generated lack of public confidence further aggravated by the expansion of external debts, indecisive and slow process in problem solving and political instability. Ultimately, these problems had adverse repercussions on the real economic sectors and caused lack of liquidity in the system.

Developments in the financial markets have slowed down the conversion rate of land use, although the loss of productive uses of land already taken out of production are likely to remain until there are clearer signs of economic recovery.

4.3.3 Preparatory Measures for Anticipated Changes.

The way ahead must be mapped out by taking careful considerations of the situational constraints discussed above. If market mechanisms are allowed to operate in the absence of intervention, Pathum Thani will continue to be the destination of urban sprawls and associated economic and environmental externalities. If intervention measures are to be imposed, there must also be recognition of the social, economic and physical changes that have already occurred so that plan formulation and identification of mechanisms are not inconsistent with the situational realities. Otherwise, intervention measures themselves create their own externalities. Development controls, for example, by granting or denying planning decisions related to land use, will alter the value of land and spatial patterns [18] Likewise, the imposition of zoning immediately limits the supply of land for any specific usage and hence the possibility of increases in land price. Imposition of zoning also entails introducing two additional cost items, namely the cost incurred by the public sector to implement and the cost borne by the private sector to comply. Distortions of price, in turn, are observed to have discriminatory effects against lower income group in two important respects, accessibility and affordability. Thus rationalization of land use requires a combination of regulatory measures and economic incentives to ensure a balance between the usage of land for economic activities and environmental concerns, the latter being the precondition for maintaining the quality of life of the people in the urban areas.

What must be said of the institutional framework of land use management is that there are no shortages of plans. While plans are indications of what is desirable, the absence of effective enforcement measures renders plans ineffective and not cost-effective in view of time and planning expertise invested for their preparation. Hence, while the planning blueprints do matter, equally important are the means to execute details of such blueprints. Valuable lessons are that public agencies and local authorities by themselves, cannot introduce measures to rationalize land. Working partnerships are indispensable not only for responsibility and cost sharing purposes, but also because of the limitations of control functions and the need for resources users to identify and internalize those measures.

Finally, land use planning cannot be undertaken in isolation of planning processes of other sectors. Hitherto, land use planning has not been utilized as a tool for directing the spatial forms of urban development or to rationalize the location of economic activities to allow for capitalization on economies of scale and cost effectiveness of production and marketing operations. Not only do planners need to comprehend the interconnectedness between the economic sectors, but also in terms of the relationship between the rural and urban sectors, particularly in urban-rural borderline cases such as Pathum Thani. Planning efforts that are carried out in autonomous and unrelated manners generally intensify competition not only for sources of funding but also for raw material, for labour and for land. If and when this happens, the public intervention becomes themselves externalities and the prime obstacles to achieving optimum land use pattern.

[18] Rydin, Y. *Urban and Environmental Planning in the UK*, (London: Macmillan), 1998. P. 6