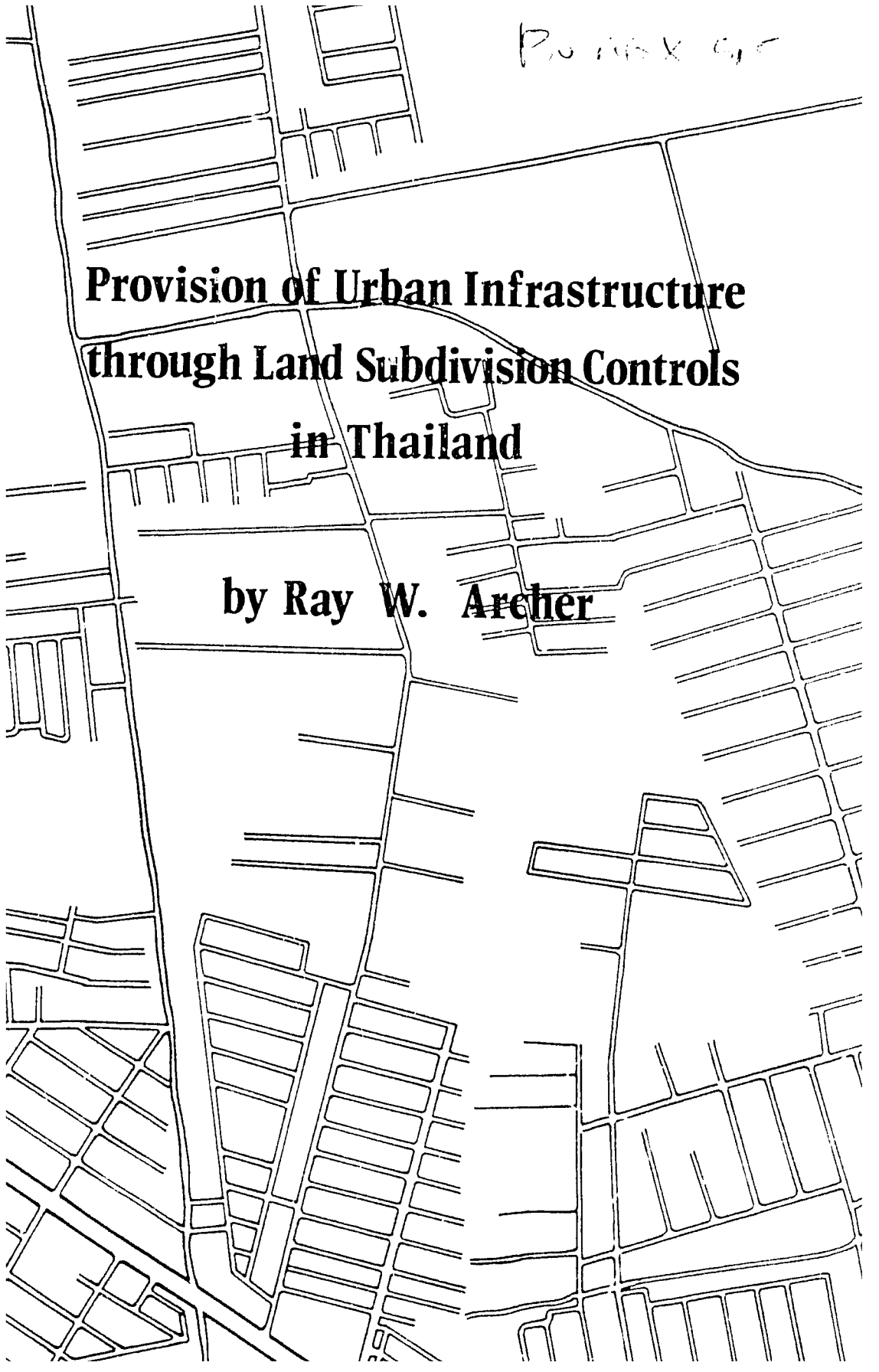


PLANNING 9/5

**Provision of Urban Infrastructure
through Land Subdivision Controls
in Thailand**

by Ray W. Archer





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**PROVISION OF URBAN INFRASTRUCTURE
THROUGH LAND SUBDIVISION CONTROLS
IN THAILAND**

by Ray W. Archer

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Preface

This paper was prepared in early 1991 as a contribution to SOFIE Thailand - the Study of Financing Infrastructure Expansion in Thailand. It examines the land subdivision control law and regulations as a mechanism for ensuring the developers' provision of the network infrastructure works within their land subdivision projects, which include the land and house, shophouse and industrial estate development projects. SOFIE Thailand focussed on the possible beneficiary financing mechanisms that could be used to finance the increased construction of needed urban network infrastructure, particularly the distributor/collector roads (and drains), as these roads enable and guide land development for urban expansion. They also provide the right-of-way land for the public utility service distributor lines. The other six beneficiary financing techniques that were considered in SOFIE Thailand were: efficient property taxation, user charges, special improvement and assessment projects, land pooling/readjustment projects, excess land expropriation/condemnation, and development impact fees.

SOFIE Thailand was undertaken by PADCO and LIF for the Urban Development Coordination Division of the Office of the NESDB, Bangkok. It was sponsored by the U.S. Agency for International Development, Thailand, through RHUDO Asia headed by Earl Kessler.

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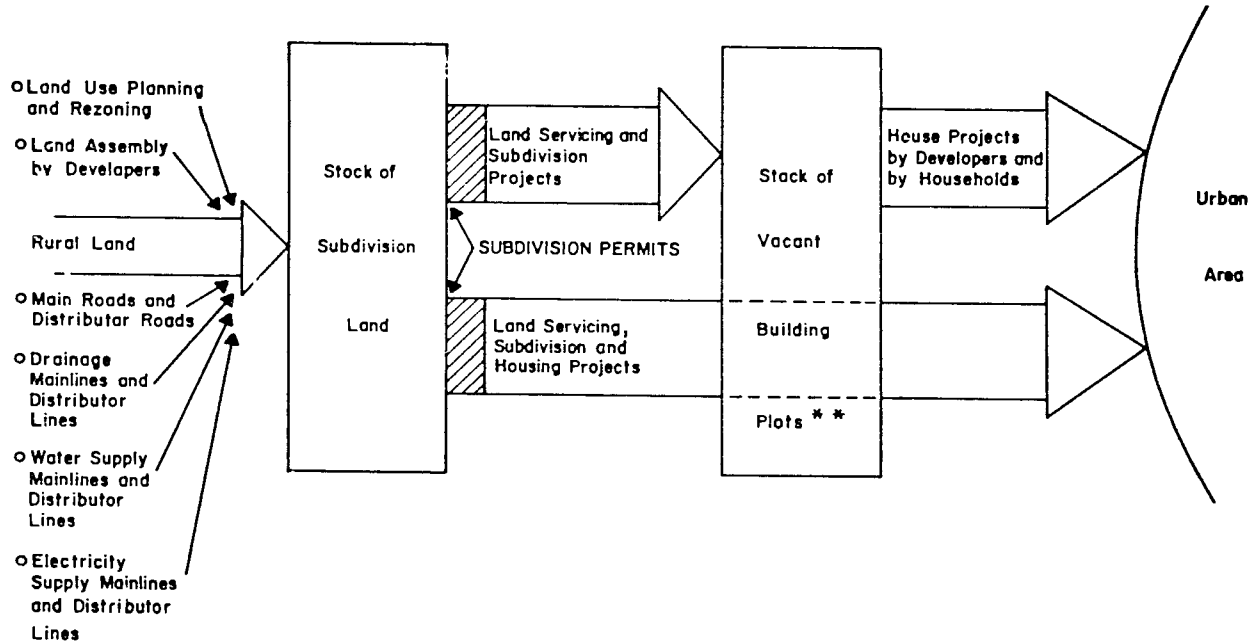
The Thailand experience in the regulatory control of private land subdivision projects for residential, commercial and industrial activities provides valuable experience and lessons for all the developing countries of Asia.

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THE HOUSING LAND SUPPLY PIPELINE *

(in the formal sector)



* In practice, the network infrastructure is often not constructed in advance of private land subdivision due to shortage of funds

** Building plots held by developers and households for future building, by land speculators for future sale, and by land subdividers as trading stock

PROVISION OF URBAN INFRASTRUCTURE THROUGH LAND SUBDIVISION CONTROLS IN THAILAND

by Ray W. Archer

Summary

The land subdivision regulations are the most effective of the urban land use controls operating in Thailand and are the most relevant ones for a study of financing the construction of urban infrastructure in Thailand. This paper outlines the land subdivision law and administration and describes how the land subdivision control system operated during the 1980's and encouraged and regulated the construction of a large quantity of network infrastructure in private land subdivision projects. These projects include the land and house, the shophouse and the industrial estate/park projects. The limitations of the land subdivision control system are noted and recommendations are made to improve the system.

Government regulation of urban land subdivision in Thailand was introduced by the land subdivision law of 1972 which authorised the regulation of all private land subdivision projects for ten or more plots for residential, commercial and industrial activities, and the formation of the Land Subdivision Control Committee to prepare and administer the regulations through the Department of Lands. A control system was established but did not become effective until after 1981 when the Lands Department refused to issue title certificates for the plots produced in subdivision projects without a subdivision permit. This step, together with the formation of a national administrative structure and the moderation of the regulatory minimum standards, brought most urban land subdivision under regulatory control. This government intervention coincided with and assisted the growth and expansion of the land and house development industry producing ready-made houses for sale. As the readymade house buyers also wanted (and could pay for) paved

roads, drainage, piped water and electricity supply, this network infrastructure was constructed in these projects.

A large and increasing number of urban houses were built during the eighties and most of them were in properly laid out estates and serviced by privately constructed network infrastructure that in many projects included "headworks" such as a waste-water treatment plant. It can be said that, in general, the four objectives of the 1972 Land Subdivision Law were being achieved, these being ...

- o protecting plot buyers from unsound and under-capitalised land subdivision projects;
- o achieving a reasonable minimum standard of layout, land allocation and infrastructure works for each project;
- o ensuring that the land subdivider paid the cost of the infrastructure works constructed in each project; and
- o ensuring that the land subdivider (or an assignee) maintained the infrastructure works constructed in each project.

The fourth objective indicates that much of the network infrastructure remains privately-owned instead of being transferred free-of-cost ("dedicated") to the relevant government agency. This is often because of the relevant government agency is not operating in that locality, or is unwilling or unable to take it over. With or without the dedication to government, the private developers have constructed the infrastructure where and when it was needed, and at no cost to government. The principle of private payment of the cost of on-site network infrastructure has become accepted and established.

In the case of land subdivision for industrial activities the Industrial Estate Authority of Thailand Act of 1979 empowers the Authority to authorise private industrial estates. The Authority requires the private developers to install additional infrastructure and to dedicate the completed infrastructure to it, together with a

17% cash payment to provide a "sinking fund" to maintain and repair the infrastructure. There are 11 large private industrial estates in development under the land subdivision regulations and the Authority.

The paper raises a number of issues and offers recommendations towards improving and extending the land subdivision control system. These include ...

- o The need to create a planned framework of main road and distributor road right-of-way reservations in urban-fringe areas so to guide the location and development of future land subdivision projects;
 - o The need to assist private land assembly so as achieve better located and better shaped land subdivision projects;
 - o The need to amend the law and regulations to ensure that land subdivision projects that include a number of apartment buildings are regulated to provide facilities for the planned number of dwelling units in the project instead of the number of building plots; and
 - o The desirability of strengthening the Land Subdivision Regulations, 1987 by adding sections for the dedication of infrastructure, for contribution to the cost of necessary off-site infrastructure, and for the regulation of "agricultural" subdivisions.
-

In most mixed-economy countries, government is responsible for the construction, operation and maintenance of the major items of urban infrastructure, particularly the network infrastructure such as roads, drains, water supply, sewerage, electricity supply and telephone service. This infrastructure is costly to construct and is desirably provided "up front" in newly urbanising areas so as to support urban living and working activities in these areas. During periods of rapid urban growth and development government frequently does not have sufficient funds to finance the construction of needed infrastructure and therefore seeks new sources of finance for these works. One obvious potential source of additional finance for urban infrastructure works is a tax or charge to collect part of the large increases in urban land values that these works generate and support. Another approach is to shift these costs from the government to the private sector by the partial or full privatisation of public utilities and public facilities, when this is possible. There have been notable examples of this in Thailand in recent years for expressway, transit and telephone projects.

Both the land value revenue and privatisation approaches have been tapped for many years by most governments through their land subdivision regulations. These regulations require the landowners or business firms subdividing land into streets and building plots for urban development to allocate the land required for roads and public open spaces and to construct the roads, drains, water supply lines, electricity supply lines, etc. on their land, and to do so at no cost to government. The subdividers have to recover the cost of the land allocated and the infrastructure works from their building plot sales revenue.

Such a land subdivision control system has operated fairly effectively in Thailand over the past decade and a large amount of urban network infrastructure has been constructed and financed by this means. This paper outlines and reviews this system and recommends on measures to improve it. Related land use controls are also considered.

Introduction

Although most urban land in mixed-economy countries is usually privately owned, privately developed and privately used, government has two essential and key roles in the development and use of urban land. Government is normally responsible for the provision of physical infrastructure, particularly the network infrastructure such as roads, drainage, electricity supply, water supply and sewerage, and for the regulatory control of private development and land use, usually through zoning, subdivision and building regulations. However, the governments of many countries are short of funds to finance the desirable provision of infrastructure in the newly developing urban areas, and have difficulty in fully implementing the regulatory controls over private land and building development. In developing countries, the finance problem is increased by their lower per capita incomes and low tax collections alongside their rapid urbanisation and wide range of national development needs, and the regulatory problem is increased by their shortage of professional and technical personnel and their large informal sector that operates outside the regulatory system. There can also be weak government resolve to regulate the development and use of land, partly due to strong links between politicians and large landowners.

The most promising approach for dealing with these problems is a combination of increased funding from urban land value sources and better coordination of the government provision of network infrastructure and the application of land use controls.

The provision of the network and social infrastructure needed in the rapidly urbanising fringe areas of cities and towns can be largely funded from the increasing urban land values that the construction of these works helps to create and to sustain. At the present time, most of these increased land values are received by the landowners and developers as windfall profits. This landowner retention of the land value increases generated by urban growth and community effort not only deprives the government of potential funds for urban public works, it also generates excessive land speculation and withholding. This land withholding increases the scatter of land and building

development in the suburban and urban-fringe areas, which increases the problems and costs for government provision of infrastructure in these areas.

The government provision of network infrastructure in new urban areas can be coordinated so as to provide a strong framework and guide for private land and building development. The households and the business firms buying, building or renting premises in new urban areas normally require all-weather vehicular access to their plots and buildings, together with flood protection, piped water supply and electricity supply. This means that if the government agencies responsible for constructing public roads, drainage, water and electricity supply lines coordinated the location and timing of their works in the areas designated (zoned) for urban development and publicised this coordination, then this would attract the private land and building developers to these areas and away from the areas designated as non-urban. If government raised additional funding from urban land value sources to finance an expanded programme of government construction of network infrastructure, as proposed, then the coordinated and forward provision of this infrastructure in the designated areas in advance of private development could guide the location and timing of this private land and building development. This positive guidance could be strengthened by the coordinated application of the regulatory controls on urban development and land use.

A few city governments in Asian countries, such as in Nagoya, Kaohsiung, Hong Kong, Singapore and Delhi, have adopted these two concepts of urban land value funding of urban infrastructure works, and the coordination of government infrastructure works and land use controls, but most governments have not yet done so (1). However, many governments have taken a first step in this direction by imposing government regulatory control over the subdivision of land for urban development.

This regulatory control is carried out by a government agency administering the land subdivision regulations. These regulations can be in the form of a separate code, as is the case in Thailand, or combined with the land use zoning regulations, as is

the case in many of the Indian states. The regulations are usually designed to guide the subdivision of an area of former rural land into a layout of roads, paths, building plots and public open spaces (for playgrounds, markets, etc.), and to require and guide the construction of the basic network infrastructure such as all-weather roads and the drainage, water supply and electricity supply lines, so as to make the land ready for building development and urban use. The regulations specify minimum standards of provision covering plot dimensions, street and pathway widths, open space areas, road and drain design and construction, water supply design and construction, etc. As the subdivision regulations usually cover the construction of the on-site network infrastructure they would be more correctly called land subdivision and servicing regulations.

The land subdivision regulations obviously apply to land subdivision projects for the subdivision of land into a layout of streets and serviced plots to be sold as sites for building development. The regulations also apply to land and building projects such as row-house and shophouse development projects in which the project land is also subdivided into separate plots for each row-house and shophouse. These row-house and shophouse projects have to be approved under, and comply with, both the land subdivision regulations and the building construction regulations.

The land subdivision regulations guide the design of land subdivision and set minimum standards for both the land dimensions and the road, drain and public utility construction works. They also shift the costs of providing land for roads and public open spaces, and the costs of constructing the network infrastructure, from the government to the private sector. The cost of these public land allocations and infrastructure works are paid by the land subdividers as project costs but they are eventually shared between the plot-buyers (through higher plot prices), the subdividers (through lower profits), and the landowners (through lower land prices), with the sharing depending on the relative strengths of the demand for and the supply of land for building at the time of each project. It is usually intended that the ownership of these privately funded public lands and infrastructure works be

transferred free of charge (i.e., "dedicated") to the appropriate local government and public utility agencies, but if the land subdivision regulations don't stipulate this dedication of land and infrastructure then they may remain in private ownership and management.

In Thailand, the government regulation of land subdivision dates back to 1972 when it was introduced on the recommendation of the Department of Lands in response to the problems that had arisen during the 1960s when the new industry of land subdivision as a business enterprise had emerged and boomed. Sidhijai Tanphiphat described the situation as follows (2) ...

"During the late Sixties and early Seventies, land developers introduced subdivided residential land plots in response to the demand for housing by the middle and high income market. The projects were usually in peripheral locations with minimal infrastructure provided, but would usually include road access, a separate but often inadequate water supply system (as the Metropolitan Water Works Authority network of pipelines usually did not reach these locations), and drainage was often not available. Moreover, developers often mortgaged their lands in order to obtain construction financing while allowing buyers to pay on an installment basis, and where an unsound project failed those buyers were usually left with nothing. Even outright cheating was quite wide-spread in which the seller never even owned the piece of land that was being subdivided and fraudulently sold"

The government therefore prepared its land subdivision control law to the four objectives of ...

- o protecting plot buyers from unsound and under-capitalised land subdivision projects;
- o achieving a reasonable minimum standard of layout, land allocation and infrastructure works for each project;

- o ensuring that the land subdivider paid the cost of the infrastructure works constructed in each project; and
- o ensuring that the land subdivider (or an assignee) maintained the infrastructure works constructed in each project.

The government regulation of private land subdivision projects for urban development was introduced and authorised by the Revolutionary Party Decree No. 286 of 1972. The new law did this by authorising the formation of a Committee for the Control of Land Subdivision to prepare the land subdivision regulations and to issue permits for private subdivision projects, and by requiring the private subdividers undertaking projects for ten or more building plots to obtain a subdivision permit beforehand. The Decree outlines in Section 9 the land and infrastructure items for which standards could be specified in these subdivision regulations.

It is useful to outline the main provisions of this law and to then outline the requirements and standards set by the current land subdivision regulations. This is followed with a discussion of the operation of the law and regulations.

The Land Subdivision Law of 1972 (3)

The introduction to the Revolutionary Party Decree No. 286 states that the purpose of the law is ...

... "to regulate the control of private land subdivision in order to enable the business of private land subdivision to be carried out properly for the benefit of the purchasers of the subdivided land, and for economic, social and town planning benefit".

Land subdivision is defined in Section 1 as ...

... "the arrangement for sale of ten or more small adjoining plots with the promise or intention of providing public utilities or services or otherwise to improve the land for the purpose of residential, commercial or industrial activities".

Government organisations with "the power and the duty to carry out land subdivision", such as the National Housing Authority, are exempted from the Decree by Section 2.

The Decree authorises the formation of the Committee for the Control of Land Subdivision with "the power and duty to control land subdivision in compliance with the Decree". The membership of the Committee is specified by Section 3 as ten persons, these being...

- the Under-Secretary of State for Interior as Chairman,
- the Director-General of the Department of Lands as Vice-Chairman,
- a representative of the Department of Local Administration as a member,
- a representative of the Town and Country Planning Department as a member,
- a representative of the Department of Lands as a member and secretary, and
- five other persons appointed by the Minister of Interior as members on two year terms that can be renewed.

The Committee's "power and duty to control land subdivision" specifically includes (by Section 7) ...

- (1) the preparation of regulations for land subdivision,
- (2) considering the applications for subdivision permits and issuing (or transferring) permits,
- (3) inspecting land subdivision projects to ensure that they are in accordance with their permit, and

- (4) requiring the land subdivider to provide the committee with relevant information and documents.

The Committee can appoint sub-committees and delegate its powers to them (Section 8).

No one can undertake land subdivision unless permission has been granted by the Committee (Section 10) and the application for and the issue of the permit has to be in accordance with the principles, conditions and procedures set out in the regulations. The penalty for carrying out land subdivision without a permit is imprisonment for up to one year and a fine of up to Baht 10,000 (Section 35). The penalty for advertising a land subdivision plan and project different from what the Committee has approved is imprisonment for up to six months and/or a fine of up to Baht 5,000 (Section 39). There is also a penalty for advertising a subdivision plan and project in advance of receiving the permit (Section 40).

The land subdivision regulations prepared by the Committee should set out (Section 9) ...

... "the principles to be used in preparing land subdivision so as to benefit health, communications, safety and town planning, and shall specify all or any of the following conditions:

- 1) the minimum width and length or minimum area of the subdivided plots,
- 2) the system and standard for various types of roads, pathways and footpaths within the subdivision land, including the connection with roads outside of the subdivision land,
- 3) the drainage system, and
- 4) the system and standard of public utilities and services, as necessary".

Persons applying for a permit for land subdivision have to submit plans and information on the proposed project, including evidence of land ownership or possession; a plan of the plot layout

showing their sizes; details and designs of the improvements and public utilities to be constructed and their estimated cost and construction time; the method of selling the plots; details of any obligations to other interested persons relating to the subdivision land; and any other material the Committee considers necessary (Section 11). The application also has to show the address of the applicant's office and, if a company or legal body, provide evidence of its legal status.

The applicant has to have possession of the subdivision land without obligation before the permit for subdivision can be issued (Section 12), and is also required to provide the Committee with a bank guarantee for the estimated cost of constructing the improvements and public utilities, so that the Committee can implement or complete these works in accordance with the approved plans if the land subdivider fails to do so (Section 13).

When the Committee refuses to issue a permit for land subdivision, the applicant can appeal to the Minister of the Interior, whose decision shall be final (Section 14).

When the Committee issues a permit for land subdivision it has to send a copy of the permit and the approved subdivision plans to the land registration officer for the district of the subdivision project to note the subdivision details on the title deeds for the subdivision land and the plots (Section 15). The land subdivider also has to display at the project office the permit and approved plans for the land subdivision (Section 16).

The Decree also contains provisions for the transfer, amendment and cancellation of subdivision permits; for project purchase and sale agreements, and the registration of the rights of the plot purchasers; the land subdivider's maintenance responsibilities; the Committee's right of inspection; and the penalties for non-compliance with the requirements of the Decree.

Section 30 provides that the public utilities shown in the approved subdivision plans, including the "roads, public gardens

and children's playground", are necessary responsibilities of the subdivision project and should be maintained in good condition by the land subdivider, viz:

"It shall be the responsibility of the land subdivider or his transferee to maintain such utilities in the condition under which they were set up. No action shall be carried out that will lessen or depreciate the benefit of those necessary responsibilities.

These maintenance responsibilities shall not apply where the land subdivider or his transferee has given that real property away to become public utilities. They shall also not apply where the management of the locality where the subdivision is located has been transferred to the municipality, sanitation district or provincial administration".

The Land Subdivision Regulations (4)

The principal function of the Land Subdivision Control Committee is the formulation and administration of regulations for the control of private land subdivision projects producing ten or more building plots for residential, commercial or industrial activities. Section 9 of the Decree stipulates that the regulations should ... "specify the principles to be used in preparing land subdivision so as to benefit health, communications and town planning", and specify plot dimensions, the road and pathway system and standards, the drainage system and the public utility layouts and standards. Sections 10 to 13 of the Decree specify the legal requirement that each land subdivision project be authorised by the Committee, and set out the application procedure and the project information required for the issue of a permit.

The Committee issued the first and second land subdivision regulations in December 1973 and November 1974, respectively, but received complaints that their minimum standards were too high and these regulations were replaced in December 1976 by the Land Subdivision Regulations No. 3, 1976 which set lower-cost

standards. For example, in the case of secondary roads the minimum right-of-way (R of W) for such roads in residential areas was reduced from 16 to 14 m. and in commercial areas from 20 to 18 m., but remained unchanged in industrial areas at 19 m. The land subdivision industry continued their objections and the Committee formulated the Land Subdivision Regulations No. 4, 1981 to further moderate the minimum standards. In November 1981 it issued a statement of Guidelines for the Relaxation of the Land Subdivision Regulations No. 3, 1976 to authorise its Bangkok and provincial subcommittees to apply reduced standards when issuing permits, but only to a minority of the projects on a case by case basis. The possible reductions were worthwhile as the minimum R of W of secondary roads in residential areas could be reduced from 14 to 12 m. and in commercial areas from 18 to 15 m., while the minimum size of plots for detached houses could be reduced from 400 to 200 sq.m. and for row-houses from 100 to 64 sq.m.

There was further pressure during the eighties for reduced regulatory requirements and they were amended again in 1987. This pressure came mainly from the Housing Policy Subcommittee of the National Economic and Social Development Board which wished to encourage increased private developer production of low-cost housing. The new Land Subdivision Regulations, 1987 repealed the Regulations No. 3 of 1976 and No. 4 of 1981, and replaced them with simpler regulations that specified new minimum regulatory standards. These standards were similar to those permitted by the Guidelines but there were some significant further reductions, which included ...

- o Secondary roads in residential areas R of W reduced from 12.0 m to 8.0 m;
- o Secondary roads in commercial areas R of W reduced from 18.0 m to 12.0 m;
- o Pre-school/kindergarten sites reduced from 800 sq.m. (200 sq.wah) for every 200 plots to 1600 sq.m. (400 sq.wah) for every 500 plots; and

- o Primary school sites reduced from 22,400 sq.m. (14 rai) every 1000 plots down to 8,000 sq.m. (5 rai) for 2000 plots.

The regulations in use at the present time are the Land Subdivision Regulations, 1987 and they cover five main aspects of land subdivision, these being ...

- 1) Rules for preparing the subdivision layout plans and the application for a permit;
- 2) The minimum permissible dimensions of the individual plots in residential areas and commercial areas;
- 3) The hierarchy and minimum standard measurements of roads, footpaths and pathways;
- 4) The provision and the standards for public utilities, covering drainage and sewerage, electricity supply, water supply, and telephone; and
- 5) Land allocations for community facilities, varying according to the size of the project by the number of building plots.

The last three items specify the on-site infrastructure that has to be provided within each land subdivision project involving the subdivision of land into ten or more plots, including any land and building project. This private provision of "public" infrastructure has two parts; first, the allocation of the land areas required, and second, the construction of the network infrastructure.

The requirements and minimum standards set by the regulations for the allocation of land and the construction of infrastructure can be outlined as follows, viz:

Roads:

- o Main through road: 15 m R of W for a 12.0 m road and 2 at 1.5 m footpaths.

- o Secondary through road in a residential area: 8.0 m R of W for a 6.0 m road and 2 at 1.00 m footpaths.
- o Secondary through road in a commercial area: 12.0 m R of W for a 9.0 m road and 2 at 1.5 m footpaths for roads with buildings on both sides; and 8.0 m R of W for a 6.0 m road and 2 at 1.0 m footpaths for a road with buildings on one side only.
- o Secondary through road in an industrial area: to be decided by the Land Subdivision Control Committee. (Previously 19.0 m R of W for a 12.0 m road and 2 at 3.5 m road shoulders).
- o Access road: 8.0 m R of W for a 6.0 m road and 2 at 1.0 m footpaths. A dead-end access road with less than 10.0 m R of W and longer than 50 m. shall have a turning circle as specified by the Committee.

The design and strength of the road construction has to "conform to the local official regulations".

Public Utilities:

- o Drainage and Sewerage: A 30 cm pipe (of clay, concrete, etc.) for stormwater and wastewater. Inspection manholes to be provided at the connection point for every detached house and every pair of row-houses or shophouses, and at every intersection, change of direction and 12 m. distance. For projects of 50 plots and over, a wastewater treatment system to be constructed when the project drainage line is not connected to a public wastewater drainage system, and the system has to be approved by the Committee.
- o Electricity supply: To be as approved by the government electricity supply organisation.
- o Water supply: When the project is located within the distribution area of a government water supply organisation this supply has to be used. In other locations

the water supply system and the water quality to be provided has to be approved by the Committee.

- o Telephone system: To be provided as approved by the Telephone Organisation of Thailand.

Land Allocation for Facilities:

- o Waste-water treatment plant: For projects of 50 plots and over an area of not less than 1.0% of the total building plot area.
- o Children's playground: An area of 800 sq.m. (200 sq.wah) for 100-300 building plots and for each additional 200 building plots or part thereof.
- o Pre-school/kindergarten site: An area of 1600 sq.m. (400 sq.wah) for every 500 building plots.
- o Co-educational primary school site: An area of 8,000 sq.m. (5 rai) for 2000 building plots.
- o Public park/sportsground: An area of 16,000 sq.m.(10 rai) for 2000 building plots.
- o Co-educational secondary school site: An area of 32,000 sq.m. (20 rai) for 4001 building plots.

Section 15 of the Regulations authorises the Committee to issue a subdivision permit for a project that does not meet these minimum standards when the Committee "considers it necessary for economic and social benefit" and after considering the features of the project land and town planning issues. This Section is an innovative feature of the 1987 Regulations that can be used to permit private developers or charitable organisations to produce smaller "substandard" plots for lower-income households or to permit other variations on an experimental/demonstration basis.

Operation of the Land Subdivision Control System

The Revolutionary Party Decree came into effect in January, 1973. The Land Subdivision Control Committee was formed and the first land subdivision regulations were issued in December, 1973. The Lands Department was to administer the regulations under the Committee.

This arrangement should have ensured the effective implementation of the new regulations because the Lands Department carries out the land surveying work for all private subdivision projects throughout Thailand as well as issuing the new plot title documents and recording land transfers. The landowner provides a sketch of the subdivision layout he desires. The Department then prepares the subdivision layout plan, surveys and pegs the land to this layout, records the subdivision, issues the title certificates for each of the new plots, and registers the transfers (sales) and new ownerships of the plots. It charges the landowner fees for these services. However, upto 1980 the new land subdivision controls had little impact. A survey made by the National Housing Authority in 1979 of 290 land subdivision projects (including land and house projects) in-progress or newly-completed, found that only five had subdivision permits (5).

This by-passing of the controls was mainly in response to their burdensome procedures such as the provision of a bank guarantee, and the costly minimum standards specified by the regulations for the provision of land and infrastructure, even though the Land Subdivision Regulations No. 3, 1976 incorporated some moderating changes. The by-passing was possible for a number of reasons. Some of the projects had been divided into stages of nine plots each so that each stage would be exempt from control. The Land Subdivision Control Office set up in Bangkok by the Lands Department to handle the applications was staffed by only one officer, two secretaries and a few inspectors so that it could do little more than process and file the applications. Most importantly, the Land Department's survey and pegging of the land, recording the subdivision, issuing of title certificates for the plots and registering the transfer and ownership of the plots, all

done by the district land offices, were not coordinated with the centralised subdivision approval process.

This situation of subdivision non-control came to an end in 1981 when the Lands Department refused to issue title certificates for newly subdivided plots if those subdivision projects with ten or more plots had not been officially approved and implemented in accordance with the regulations. The administration of the regulations was also strengthened. The Committee set up provincial land subdivision control sub-committees (including a Bangkok sub-committee) in 1982 with delegated powers to administer the regulations in the provinces. The Lands Department set up a new division at Head Office, the Land Business Control Division, to administer the regulations.

The Committee also moderated the minimum permissible standards of subdivision and servicing that were specified by the regulations. This was in response to complaints from the land and housing development industry and the National Housing Authority that the standards were excessive as the plots conforming to these minimum standards were too costly in relation to what many households could afford to pay. The Land Subdivision Regulations No. 4, 1981 were issued by the Committee so as to allow the 1976 regulation standards to be relaxed selectively, on a case by case basis. In November 1981, the Committee issued a statement of Guidelines for the Relaxation of the Land Subdivision Regulations No. 3, 1976 that set out the reduced minimum plot dimensions and road widths that could be accepted in some of the future land subdivision projects on a case by case basis. Some of the reductions were substantial. For example, the minimum permissible area of a plot for a detached house was reduced from 400 to 200 sq.m., while the minimum permissible plot area for a row house was reduced from 100 to 64 sq.m.

The enforcement of the subdivision regulations and the adoption of smaller minimum permissible plot sizes and road widths from 1981 onwards coincided with an industry movement away from land subdivision projects into land and house development projects. This means that at the present time most

urban land subdivision is through land and house development projects (and shophouse development projects), particularly in the Greater Bangkok Area.

The enforcement of the regulations from 1981 encouraged this shift towards housing development projects, and it particularly favoured row-house (town-house) projects. The regulatory minimum requirements for the construction of roads, drains, water supply and electricity supply in each project set a high minimum cost (and price) on building plots. Such higher-cost plots could be more easily marketed (and financed) when combined with a house, so that the enforcement of the regulations encouraged land and house development projects. However, there was a cost and affordability problem with detached houses due to the high market price of subdivision land, the regulatory 200 and 400 sq.m. minimum plot size and the higher costs of servicing these plots and constructing detached houses, and these higher costs were magnified by the high interest rate payable at that time on housing development loans and house purchase loans. Many developers responded to this cost and affordability problem by constructing row-houses which reduced the land, infrastructure and construction cost of each house. (The regulations allow row-houses on plots one third the minimum size of plots for detached houses). Most of the new housing developed in the Bangkok urban area in recent years has been as row-housing.

Although most of the land subdivision activity around Bangkok at the present time is by way of land and house development projects (and shophouse development projects), there is still a substantial amount of subdivision by way of land subdivision projects, particularly in the outer areas of the urban-fringe. Many of these land subdivision projects are apparently undertaken outside the subdivision controls without a subdivision permit, by being divided into stages each containing less than ten building plots.

The Bangkok Land Management Study team estimated that there were about 100 land subdivision projects in-progress and newly-completed during 1986/87 in the Bangkok area and then surveyed 27 of these projects (6). Those surveyed were apparently

a mixture of projects with and without subdivision permits. The survey findings included...

- o 14 of the projects were landowner subdivisions and the other 13 were by business firms operating as land subdividers;
- o more than two thirds of the projects were over 30 km from the centre of Bangkok;
- o the size of the projects ranged from 0.5 ha. to over 15 ha. (3 rai to over 100 rai), and were fairly evenly distributed across this range of sizes;
- o two thirds of the plots were in the 200-239 sq.m. (50-60 sq.wah) size group and only 20.5% of the plots were less than 200 sq.m.;
- o ten projects had paved roads and the other 17 had earth-fill roads with laterite topping;
- o all the projects had electricity supply lines; and
- o 23 of the projects had piped water supply, including eight with a Metropolitan Water Works Authority supply.

The land subdividers by-passing the subdivision controls by using the nine plot exemption mechanism apparently do so partly in order to achieve economies in the provision of infrastructure so as to moderate the cost and prices of their building plots, and partly to avoid the documentation and financial guarantee requirements necessary to obtain a subdivision permit. They don't normally subdivide the land into small building plots (i.e., plots less than 200 sq.m.) as a means of reducing their cost and price per plot, probably because most of these projects are at distant locations where the buyers prefer larger size plots. The land and house developers don't attempt to use the nine plot device to by-pass the subdivision controls because their project standards (as per their customers' preferences) and their project documentation and financing, are such that they can meet the regulatory

requirements without difficulty. Their financial backers such as banks also normally require them to obtain a subdivision permit for the project.

The issue of the new Land Subdivision Regulations in 1987 with their reduced minimum standards had little effect in stimulating the production of low-cost housing because the potential cost reductions were more than offset by other cost increases. The upsurge in urban economic activity from 1987 onwards caused a boom in real estate development and construction throughout Thailand with considerable land speculation and material shortages. The resulting upsurge in land prices and material costs and contractors' prices plus, rising interest rates, has made the cheapest readymade houses unaffordable to households with less than the median level of income (7). These lower-income households have to turn to low-cost condominium apartments to achieve home-ownership.

After the issuing of the 1987 Land Subdivision Regulations the Lands Department drafted a new Land Subdivision Act to replace the Revolutionary Council Decree No. 286. This draft law is with the Office of the Permanent Secretary of the Ministry for the Interior, for review.

Provision of Infrastructure in Land Subdivision Projects

The land subdivision control system has operated fairly effectively since 1981 and a large amount of network infrastructure has been constructed at no cost to government within the private land subdivision projects and the land and house, the shophouse and the industrial estate/park projects carried out during this period.

The effectiveness of the land subdivision regulations is based on their linkage to the issue of the title certificates for the new building plots. The Lands Department made this linkage in 1981 and also set up the organisational structure required to administer the regulations. The Committee for Land Subdivision Control also authorised reduced plot sizes and street widths to

allow lower cost and more affordable building plots. These administrative and regulatory changes coincided with, assisted and reinforced the transformation of the urban housing development system from a predominantly land subdivision project and self-build housing system into a land and house development project system, mainly by way of land and row-house development projects.

The transformation and growth of the urban housing development system during the eighties, particularly in the Greater Bangkok Area, was due to a combination of factors. On the demand side, there was increasing market demand for ready-made houses due to rising real income per household together with the availability of credit finance for house purchase and the increasing affordability of housing loans due to lower interest rates and longer loan periods. On the supply side of the market, the developers (both existing developers and many new developers) responded to this market demand by increasing the production of ready-made houses which they were able to do through the good supply of materials and labour available for a post-and-beam concrete construction technology, through the availability of subdivision land (but at scattered locations), and through the availability of equity and credit finance for land and house development projects. The developers also considerably increased the market demand for ready-made houses by expanding the range of houses available by producing smaller and more affordable row-houses on plots down to 64 sq.m., as permitted under the Guidelines.

The regulatory requirements for the construction of roads, drains, waste-water treatment, water supply, and electricity supply were appropriate for these projects because the house buyers wanted all-weather vehicular access, flood protection, water supply, sanitation, and electricity supply for their houses. In fact, this network infrastructure would have been provided in most of these land and house projects even in the absence of the subdivision regulations because the great majority of house buyers wanted them and were able to pay for them. This was also the case with the private industrial estates and parks that were developed during the eighties (8). However, the enforcement of

the subdivision regulations did ensure minimum standards of design and construction (9). The enforcement of the regulations also firmly established the principle that the land required for public uses and the construction of the network infrastructure within each project site is to be provided and paid for by the developer rather than by the government. Although the ownership of much or most of this network infrastructure has not been transferred to the appropriate government agency, it has been constructed and is being used and maintained, at no cost to government.

The impressive scale and standard of this private provision of "public" infrastructure can be seen in some of the large projects in the northern development corridor of Bangkok such as Nava Nakorn new town and industrial estate on a 800 ha. plus (5,000 rai) site 50 km north of the city, and the Muang Ake housing estate (including Rangsit University) on a 600 ha. plus (4,000 rai) site 30 km north of the city. Most of the private provision of "public" infrastructure in these projects was due to their marketing strategy rather than the subdivision regulations although the regulations did contribute (9). As large-scale land development projects at distant locations, they had to provide good infrastructure so as to attract multi-national companies and higher-income households to buy sites, plots and houses in their projects (10).

The impact of the subdivision regulations on the private provision of "public" infrastructure is more apparent in projects directed to middle income households such as the Stiti Project (11). This is a 35.7 ha (223 rai) residential land subdivision project on Buddhamonthon 4 Road in the Taling Chan District of Bangkok. The project was implemented in two stages during 1988/1990 to produce 954 building plots of 200 to 1,000 sq.m. (50 to 250 sq.wah) size to be sold at Baht 375 per sq.m. (Baht 1,500 per sq.wah). The developer installed the following network infrastructure at an estimated cost of Baht 26.6 million (excluding the cost/value of the land it occupied), viz:

- o 2,788 m of secondary roads with a 12.0 m R of W and 8.0 m concrete paving;

- o 5,940 m of local access roads with a 8.0 m R of W and 6.0 m concrete paving plus two concrete footpaths;
- o Piped drainage to a treatment pond on a 3,800 sq.m. (950 sq.wah) site;
- o Electricity supply to every plot and street lighting installed by the Metropolitan Electricity Authority at the developer's expense;
- o Piped water supply to every plot with the construction of deep wells, pumps and storage towers;
- o Playground areas of 4,352 sq.m. (1,088 sq.wah), and a kindergarten/preschool site of 4,800 sq.m. (1,200 sq.wah); and
- o Road R of W areas totalling 8.1 ha (50.6 rai), which is 22.7% of the project site.

Most of the building plots were 200 sq.m. (50 sq.wah) in size with a number of double plots and some larger ones up to 1,000 sq.m. (250 sq.wah). With the total number of plots less than 1,000 the developer did not have to allocate 22,400 sq.m. (14 rai) for a school site and 6,400 sq.m. (4 rai) for sportsgrounds, as were required under the 1981 Regulations and Guidelines. Allocation of this area for a school site and sportsgrounds would have taken 8.1% of the project site, which is equivalent to Baht 10.8 mill. of the salable plot area.

Although most land subdivision for urban development is approved under the subdivision regulations, there is still a substantial amount of subdivision taking place outside the regulatory system. This is occurring in five types of land subdivision activity, these being ...

- o commercial subdivision projects divided into stages each involving less than ten plots, so as to by-pass the regulations;

- o landowners' incremental subdivision of their land over a period of years;
- o commercial subdivision projects in urban-fringe areas to produce "agricultural" plots;
- o shophouse development projects on leasehold land; and
- o new "slum" housing settlements formed by landowners renting plots to low-income households for self-build dwelling construction.

There are also the vertical subdivisions of multi-storey apartment buildings (and some office buildings) into separately-owned condominium apartment units.

In the case of the staged land subdivision projects being implemented without the full provision of infrastructure, the plot-buyers that take-up residence on their plot usually request the relevant government agency to upgrade or construct the infrastructure. The Land Subdivision Control Committee has therefore instructed that proposed subdivisions for under ten plots that are stages/segments of a larger project should not be implemented by the district land offices. But there is a market demand for these lower cost/price plots without the full provision of infrastructure, particularly in the outer urban-fringe areas, so that there is need to consider devising a system for the incremental construction of infrastructure to be paid for by the owners of the plots benefitting from the infrastructure, i.e., for a type of mini special assessment within the land subdivision project area. This system would also protect the government from the need to finance the later construction of infrastructure in the landowner incremental subdivisions and in "agricultural" subdivision projects.

The "agricultural" subdivisions are projects for the subdivision of rural land in the outer urban-fringe areas into larger plots of 1600/3200/4800 sq.m. (one/two/three rai) for use as mini-orchards, hobby farms or "country living". When the plots are 4000 sq.m. (2.5 rai) and larger the projects are officially classified as agricultural rather than residential subdivisions, and

are therefore outside the land subdivision regulations. With the upsurge in urban-fringe land values in recent years most of these subdivisions have been directed to higher-income buyers and usually provide appropriate infrastructure including paved roads, electricity supply and water supply. Although the provision of infrastructure is generally adequate, these projects have problem aspects. First, only a small proportion of the plots in many of these projects are actually occupied and used so that the infrastructure is little used and is often not maintained. Second, as most of the projects are in urban-fringe areas many of them will be eventually resubdivided into suburban housing plots, but to a poorer layout design and with more costly infrastructure, than in a new subdivision project. Many, of these "agricultural" subdivision projects can therefore be described as both inappropriate and premature.

In the case of the shophouse projects on leasehold land, the plots are sold with each shophouse on a 20 to 30 year ground leasehold title. These leasehold plots may not be registered with the Lands Department as they can be registered with the local government, so that the shophouse development project may be unknown to the district land office and not regulated by it. However, these projects are subject to the building construction regulations and as shophouses in urban areas usually sell at high prices the appropriate network infrastructure is usually constructed in these projects.

In the case of the "slum" housing settlements, there are over 1,100 of these settlements in the Bangkok Metropolis (BMA) area and they accommodate about 15% of the population. These squatter-type settlements are being evicted and formed each year; thus 64 existing settlements were closed and 138 new settlements were formed during the four years 1985/1988 (12). The new settlements are formed mainly in the suburban areas on parcels of "blind land" near public roads (i.e., land without vehicular access to a public road). The owners of these land parcels often rent plots on a year to year basis to low-income households to use for low-cost dwelling construction, as a temporary land use until their land parcel gains vehicular access. But in practice the settlement may remain for decades. These settlements are usually not laid

out and grow incrementally, the plots are usually not defined but are only the unfilled land under the dwelling, and nil or little infrastructure is constructed by the landowner. Although this slum housing settlement formation process can hardly be called land subdivision, the process needs to be improved because it is continuing and because these settlements provide many low-income households with an affordable plot at a reasonably convenient location for their self-build housing. This informal housing development takes place partly because the plots in regular land subdivision projects are not affordable to these households. The upgraded settlements would remain outside the land subdivision controls.

Industrial Estates and Industrial Parks (13)

The Revolutionary Party Decree No. 286 authorizes government control of the private subdivision of land for residential, commercial and industrial purposes. In the case of private industrial estates they can also be regulated by the Industrial Estate Authority of Thailand. Some private industrial estates are so regulated by the Authority and they install additional infrastructure to that required under the land subdivision regulations, and then transfer the infrastructure to the Authority free of cost.

The Authority operates under the Industrial Estate Authority of Thailand Act, BE 2522 (1979), which replaced the Revolutionary Party Decree No. 339 of 1972 under which the Authority was established. Section 6 of the Act authorizes the Authority to develop and operate industrial estates in Thailand and to cooperate with "other persons" to develop industrial estates. Section 40 restricts the usage of the terms "industrial estate", "general industrial zone" and "export processing zone" to those industrial estates under the Act. But under Section 39 the private projects that are developed in accordance with the industrial estate regulations can be established by the Authority as an "industrial estate under this Act".

Some 17 industrial estates are supervised by the Authority of which eleven are privately developed under the land subdivision regulations and six are Authority projects, including one joint project with the National Housing Authority. In the case of the private projects these are designed, developed and marketed by the private developer on his land under an agreement with the Authority. The Authority assists in the design and development of the project, particularly in liaising with other governmental agencies. It then assists the marketing of the plots by providing assistance and concessions to the industrialists buying the plots when they are building and equipping their factories. When the project is developed and the plots sold, the developer transfers the infrastructure (mainly the roads, water supply and waste-water treatment systems), to the Authority which operates and maintains it and charges the industrialists monthly service charges to recover its operating costs. The developer transfers the infrastructure without charge and also has to pay the Authority an amount of 17% of the cost of the infrastructure so as to provide a fund to pay for repairs and maintenance. The developers can retain and operate any non-industrial areas in the estate such as commercial centres, residential areas or recreation facilities, if they choose to do so.

The developers of land subdivisions for industrial purposes do not have to designate and develop their project as an industrial estate under agreement with the Authority, and many do not. Those that do not, usually use a term such as industrial park for their project. The developers of industrial park projects that negotiate an agreement with the Board of Investment relating to its incentives and privileges to industrialists locating in the industrial park can use the term investment promotion zone. For example, the Nava Nakorn Project uses the title "Nava Nakorn New Town and Investment Promotion Zone". The main reason why some private developers choose to develop their projects as an official industrial estate is to gain the benefit of this status. The Authority's support assists the development of the project, particularly in dealings with government agencies. The industrial estate designation and its semi-official status assists in marketing the factory plots, particularly to foreign industrialists. The Authority's provision of assistance and some incentive concessions

to industrialists setting up factories in the estates is a valuable marketing feature. The handover of the infrastructure to the Authority is an advantage to those developers that prefer to depart from the project when the plots are sold.

The eleven privately developed industrial estates are developing some 3,225 ha. (20,160 rai) of industrial land of which 2,394 ha (14,965 rai) are designated as general industrial zone and 831 ha. (5,193 rai) are designated as export processing zone (14). The six Authority industrial estates cover 1,458 ha. (9,110 rai). The privately developed industrial estates are constructed to high standards with the provision of costly infrastructure, including flood protection works, electricity substations, telephone exchanges and solid waste incinerators, all of which is transferred to the Authority or relevant government agency. They are providing infrastructure at no cost to government, and make a substantial contribution to Thailand's industrial development.

Urban Planning and Building Construction Controls (15)

The land subdivision controls are administered by the Lands Department alongside the urban planning controls administered by the Department of Town and Country Planning and local governments, and alongside the building construction controls administered by the Department of Public Works and local governments. The planning and the building construction controls do not directly stipulate the private construction and/or funding of infrastructure, but they do influence it and they should be coordinated with the land subdivision controls.

Planning control of urban development and land use is authorised by the Town and Country Planning Act, 1975. The Act provides for a national Town Planning Board to oversight the preparation of comprehensive/general plans and specific plans (with companion regulations) by the Department of Town and Country Planning and/or local governments. The general plans are prepared as outline urban land use and circulation plans for a complete urban area or administrative area, and are enforced through a ministerial regulation for a five year term. General

plans have been prepared (by the Department of Town and Country Planning) and adopted for the majority of provincial municipalities, but not for urban-fringe areas outside the municipal boundaries and not for Bangkok Metropolis and its neighbouring provinces, so that many urban and urbanising areas of Thailand are not yet subject to land use planning control. The specific plans are envisioned as more detailed plans for local areas that are prepared within the framework provided by the general plan so as to regulate urban development and land use in a more specific way. However, each of these plans has to be authorised by Parliament for a term of only five years and, apart from two plans for government development projects, no specific plan has yet been authorised for implementation.

The general plans are prepared so as to regulate land use and the transportation network while "additional elements such as utilities, services, environmental health, etc. can be specified only in policy" (16). The use of land is regulated into the zoning categories, including medium density residential (multi-unit housing), low density residential (detached housing), commercial, light industry and warehouse, and general industry. These land use zonings should specify and limit the use of the land in each area to allow the design of the appropriate network infrastructure (by type and capacity) for each area so as to avoid future traffic congestion and utility service overload (17). There is provision for flexibility in enforcing the land use zonings as 10-20-30 per cent of each zoned area can be developed for other urban land uses as "minor uses" that are not incompatible with the main zoned use for the area.

The transportation network component of the general plan is desirably the proposed network of both main roads and distributor/ collector roads (i.e., both the primary and secondary roads). But in practice desirable future distributor/collector roads are often deleted during the preparation of general plans at the request of the local government as it does not have the funding available to finance the purchase of the R of W land and the construction of the roads. The removal or omission of the desirable network of distributor/collector roads from the general plan considerably reduces the effectiveness of the plan in guiding

urban expansion as these secondary roads both "open up" the fringe areas for urban development and provide a framework on the ground to guide this development. (They also usually provide the R of W for the public utility distributor lines). The planned routes of the secondary roads would guide developers in their land assembly for their subdivision and building projects.

The potential benefits from including the distributor/collector road layout in the general plan in order to reserve the R of W for government acquisition would more than justify the creation of a special fund, a secondary road land acquisition fund, by the central government to finance the early acquisition of the R of W land. This fund would be used to provide local governments with grants and/or concessional loans for the acquisition of the reserved secondary road R of W within the five year term of the general plan. It would be entirely appropriate to finance this secondary roads land acquisition fund from part of the land transfer tax collections as the new distributor/collector roads generate large increases in land values in urban-fringe areas and stimulate the transfer, development and transfer of land on which the tax is collected (18).

The building construction controls need to be considered alongside the planning controls as they include measures for regulating the density of development building and the type of land use.

The control of building construction is authorised by the Building Control Act, 1979 which provides for a national Building Control Committee to assist the Minister of the Interior in issuing national building construction control regulations, and to oversight and assist the Department of Public Works and local governments to administer the regulations. Building is given a wide meaning by the Act (Section 4) and includes any ... "dam, bridge, tunnel, way or drainage, dock, cradle, embankment ..., or things constructed for public utility", as well as car parking structures and spaces. Section 8 of the Act authorizes the issue of ministerial regulations to control building construction ... "for the purpose of stability, safety, prevention of fire, maintenance of the quality of the environment, town planning, architecture and the rendering of

facilities to traffic". The regulations not only cover the size, strength and durability of the building and building materials but may also cover the provision of public utilities and sanitation as well as the maximum building ratio, setbacks and car parking, and prohibited areas for construction or any change of use.

The Act also authorizes local governments to issue regulations in the form of by-laws for the control of building construction within their jurisdiction. These by-laws must be approved by the Committee and should be consistent with the national regulations, but any necessary local divergence can be approved by the Committee and the Minister. The Bangkok Metropolitan Administration (BMA) has issued the By-laws of the Bangkok Metropolis for Control of the Construction of Building. These include some 26 by-laws for land use control purposes in specific areas such as limiting the development of traffic-generating buildings along new main roads, the conservation of historic areas and the conservation of agricultural areas (19). Other BMA by-laws regulate the layout of and setback of shophouse and row-house projects as well as other buildings. Thus, shophouses and row-houses not on a public way must have at least 6.0 m. of open space in front of buildings up to three storeys and at least 12.0 m. in front of buildings over three storeys.

The many high rise office, hotel, commercial and apartment buildings erected over the past 20 years in Bangkok and the larger provincial cities and resorts incorporate a large amount of network infrastructure or its equivalent. This includes the electricity lines and transformers, water supply lines and tanks, telephone lines, drainage and waste-water lines and treatment plants, plus their elevators, air-conditioning and fire-protection systems. But only a few of these items are stipulated and specified in the building control regulations. They are apparently provided to a generally satisfactory level and standard in high-rise buildings by developers and contractors competing to meet the market demand from affluent and sophisticated owners, investors and users. These high rise buildings are also normally designed by architects and engineers who also supervise their construction. There has also been an element of luck that partly explains why no major problem has yet emerged with this system.

A Ministry of Interior committee has prepared ministerial regulations for high rise buildings but their adoption has been delayed for some years due to opposition from bodies such as the Association of Siamese Architects to the proposed restrictions on development density, particularly those to limit the size of buildings on sites facing narrow streets, and to impose a maximum floor area ratio throughout the country at a moderate level (20). This pressure for a high maximum plot ratio of more than 10 to 1 would, if successful, generally allow excessive building development relative to the capacity of the network infrastructure serving the building sites. A high maximum plot ratio would also reduce the scope for using a plot ratio bonus as an incentive for developers to provide public amenities and facilities within their project.

The Condominium Law of 1979 authorizes and regulates the vertical subdivision of multi-storey buildings into separately-owned apartment, office, shop, etc., units. However, as a only fully-completed building can be converted into condominium units, this law does not regulate the design and construction of the buildings, and it is not comparable to the land subdivision control law and regulations.

Issues in the Control of Land Subdivision

The land subdivision control system operated fairly effectively during the eighties and generally achieved the objectives of the 1972 law by protecting plot-buyers from unsound subdivision projects and ensuring a reasonable standard of layout with the construction of the necessary infrastructure works in each project and its subsequent maintenance.

The land subdivision law of 1972 came into operation in 1973 but was not implemented effectively until 1981 when the Lands Department stipulated that title certificates would thereafter be issued only for plots in approved subdivision projects, and set up the Land Business Control Division to administer the regulations. The Land Subdivision Control Committee also relaxed the regulatory minimum standards so as to allow smaller plot sizes

and road widths. These government measures coincided with and assisted the transformation of the urban housing development system from a predominantly land subdivision project and household self-build system into a predominantly land and house development project system that produced ready-made houses for sale. This transformation of the urban housing development system, particularly in the Greater Bangkok Area, provided several benefits, these being ...

- o the more efficient and economical development of land and houses;
- o a general requirement by house-buyers for paved roads, drainage, water supply and electricity supply for their houses, and their ability and willingness to pay for this infrastructure; and
- o the reduced scatter of land and housing development, with fewer empty building plots and less unused (and deteriorating) infrastructure.

The land subdivision control system therefore encouraged and assisted the upgrading of the urban development process, and the principle that the developer pays for the construction of the on-site roads, drains, water supply and electricity lines became accepted and established. The many land subdivision, housing estate, shophouse and industrial estate projects carried out during the eighties provided a large amount of network infrastructure where and when it was required, and at no cost to government. In the Bangkok Metropolitan Region most of the projects included infrastructure "headworks" for water supply and for waste-water treatment. Although much of this infrastructure has been retained in private ownership, operation and maintenance, this private construction has saved government from the need for large expenditures. Often this infrastructure has not been transferred to government because the relevant government agency has been unable or unwilling to take it over.

Although the land subdivision control system is generally effective in regulating urban land subdivision and provided real benefits, it has limitations and weaknesses. The main limitation is that the subdivision controls apply only within the project sites that the developers have been able to assemble, so that urban expansion in Thailand takes place mainly by the regulated development of a scatter of oddly-shaped islands of streets, plots and buildings in a sea of rural land (21). There is need for a planning framework to guide the developers and for measures to assist them in assembling land for development.

One frequent criticism of the subdivision controls has been that they set excessive minimum regulatory standards because the resultant minimum standard plot is not affordable to many households. This not only disadvantages these people but is also one of the causes of the problem of substandard subdivision projects that circumvent the controls and fail to construct the required infrastructure. The plot-buyers later demand that government provides (and pays for) these facilities. A third criticism is that the subdivision controls do not include desirable measures such as provisions for the dedication of infrastructure to government agencies, for developer contribution to the cost of necessary off-site infrastructure, and for project connection to a public road. There is also need to extend the land subdivision regulations to cover land subdivision and apartment building projects by stipulating that the allocation of land for public facility sites (such as playgrounds and schools) in these projects should be according to the number of dwelling units in the project instead of the number of building plots. These issues are discussed separately as follows.

Need for a planning framework:

The land subdivision controls are currently the most effective government control of urban land use in Thailand. They regulate the allocation, layout and servicing of land within each project, and they are generally effective because they are backed by the government control over the issue of the title certificates for the new building plots produced by the subdivision projects (including

the land and house, shophouse and industrial estate/park projects). But the subdivision controls are limited to within the site of each project and as there is no planning guidance for the location of the projects they are scattered to wherever the developers can assemble suitable land. If there was a planning framework for urban expansion in place then the subdivision controls could be used towards achieving a planned pattern of urban development.

A minimal planning framework for urban expansion would involve ...

- o Designating (zoning) suitable urban-fringe areas as the future urban areas, and the other areas as non-urban;
- o Planning the appropriate network of main roads and distributor roads for the future urban areas and reserving and acquiring the R of W land for these roads;
- o Coordinating the construction by the responsible government agencies of the main and distributor roads and drains and the water and electricity main and distributor lines into these areas; and
- o Using the subdivision controls to regulate the subdivision projects for residential, commercial and industrial activities in these future urban areas; and
- o Using the subdivision controls to restrict the subdivision projects in the future non-urban areas to subdivision for rural activities only.

This framework would reduce the scatter of the subdivision projects and guide them to locations where they could connect to the distributor roads, drains, water and electricity lines. But there would also be the desirability of measures to assist land assembly for the private subdivision projects.

Need to assist land assembly for development:

The subdivision controls can be used only to regulate the subdivision and servicing of the site that the developer has been able to assemble for his project. The scattered locations of these projects and the extremely irregular shapes of many of the project sites indicate that developers find it difficult to buy well-located land parcels to assemble (consolidate) into project sites. Government could undertake land assembly in preferred development areas so as to reduce these problems and to attract developers to these areas.

The land expropriation laws of Thailand do not authorise government agencies to use the compulsory purchase power to acquire land to be allocated to private developers for their projects. However, a number of measures could be adopted to assist this land assembly. These include ...

- o Designation of preferred development areas with campaigns directed to the landowners, to promote development and land sale for development in these areas;
- o Government land banking with land assembly over a period of years by negotiated purchase and land exchanges;
- o Use of financial mechanisms such as special assessments and development charges on landowners to finance government infrastructure works for their land, with the probability that the charges would also encourage them to develop or sell their land (22);
- o Undertaking land pooling/readjustment projects (23);
- o Joint development projects by the National Housing Authority and private developers with the Authority using its expropriation power when necessary; and
- o Government encouragement and advisory assistance to holdout landowners to join cooperative development projects.

It is also worth noting that the subdivision controls can be used to assist land assembly for development by blocking the premature subdivision of land, i.e., by preventing the subdivision of lands in future urban areas into agricultural plots.

Need for affordable building plots:

One of the main criticisms of the subdivision controls has been that the minimum regulatory standard building plot is too large and too well-serviced to be affordable to many households. Thus, a slum dweller who is currently renting a 30-40 sq.m. plot in a slum housing settlement cannot afford to purchase a 200 sq.m. plot in an officially approved land subdivision project on which to build his house by self-build gradually as his funds permit. This need for smaller plots is recognised by the National Housing Authority which includes 60 sq.m. building plots in its sites and services projects. Although the upsurge in land values up to 1990 has made 60 sq.m. plots unaffordable in the Bangkok urban area, they would still be feasible in many other urban areas around Thailand. However, is it correct that the subdivision controls prevent the production of small plots?

The Land Subdivision Regulations, 1987 (Section 15) authorise the Land Subdivision Control Committee to permit private subdivision projects with small plots on a special exception basis after examining the merits of the project. The Committee could (and should) use this Section 15 power to experiment by inviting developers to propose a few projects with 10-20-30 per cent of the plots down to 60 sq.m. as experimental projects in which the development and use of the small plots would be mentioned and assessed. (The developers may be willing to cross-subsidize these small plots). This experience would provide a factual basis for formulating policy and guidelines on small plots.

The subdivision controls also allow other possible approaches for private developers or charitable organisations to subdivide land into small plots. First, the regulations permit row-houses on plots down to 64 sq.m. so that if the sites and services project was developed as a row of adjoining shell/core

houses (each being one room and a toilet) then the plots could be down to 64 sq.m. These shell/core units would be enlarged and improved by self-build as the household was able to do so. This type of plot and unit would have advantages over a bare plot because the household could move-in immediately and save on rent payments and the household could also obtain a long-term housing loan to finance the purchase.

The second approach for providing 60 sq.m. plots for lower-income households would be to by-pass the subdivision controls. A charitable organisation could implement such a project through the National Housing Authority, while a private developer wishing to include a small-plot area in his project could do so through a joint project with the Authority. Any charitable organisation operating on a small scale could also buy two or three adjoining 200 sq.m. standard plots in a land subdivision project and then resubdivide them into six or nine small plots. It would also be possible for two or three households to buy a 200 sq.m. standard plot on a co-ownership basis and to then partition it into two or three small plots.

The high cost and unaffordability of the minimum regulatory standard plot has been given as the explanation and justification for the land subdividers who divide their projects into nine plot stages so as to avoid the subdivision controls. Although the 1987 survey of some of these subdivision projects around Bangkok showed that they produced few small plots for low-income households, there is never-the-less a market demand for cheaper plots with only partial construction of the infrastructure. However, there is the problem that these plot-buyers usually later demand that government construct (and pay for) this infrastructure.

This problem can be met by extending the now widely accepted principle that the developer and plot-buyers pay the cost of on-site infrastructure, into a universal principle. It should be explicitly stated as a principle of land subdivision in the subdivision regulations. A section should also be added to the regulations to authorise the Land Subdivision Control Committee to allow the deferred and incremental construction of specified

items of infrastructure with the cost to be paid by the subdivider and/or the plot-owners and not the government. If the relevant government agency did such construction within the subdivision project area then it could recover the cost by way of a special assessment levy on the benefitting plots within that area.

Adding this provision to the regulations would strengthen the subdivision controls by removing a main reason for circumventing them. Other possible measures for improving the controls can also be proposed.

Land subdivision projects with apartment buildings:

As the affordability of the cheapest plots and houses has declined in recent years due to higher costs, prices and interest rates, some housing developers have undertaken land subdivision and apartment building projects so as to produce housing that is affordable to lower-middle and middle income households. These projects make more intensive use of the higher price land to reduce the land cost per dwelling unit, and the walk-up apartment buildings are typically four or five storeys with 50 to 100 rooms of 25-30 sq.m. that can be sold as a bedsitter unit or combined into one and two bedroom condominium apartment units. Some of these projects are large and contain thousands of apartment units. But there can be inadequate provision of the public facilities that the residents of these projects will need, due to a "loophole" in the subdivision regulations.

The land subdivision regulations require that in residential subdivision projects land be allocated for playgrounds, pre-school sites, parkland, etc. according to the size of the project as measured by the number of building plots. For example, a 200 plot project has to allocate 800 sq.m. (200 sq. wah) of land for playgrounds while a 2,000 plot project has to allocate land for four pre-school sites (at 1,600 sq.m. per site) plus one primary school site (8,000 sq.m.) and a sportgrounds/parkland area of 16,000 sq.m. as well as the ten playground sites (at 800 sq.m. per site). The regulations assume that each building plot will accommodate one dwelling unit and the public facility land requirements are assessed and

stipulated on this basis. However, in a land subdivision and apartment building project the land is usually subdivided into a small number of large building plots, each one of which could be the site for a 50-100 unit apartment building. But the developers' legal obligation to allocate land for public facilities is determined by the number of building plots in the project rather than by the number of dwelling units. For example, a project on a 22.4 ha. (140 rai) site to produce 5,880 apartment units in 140 buildings of 56 units each on 140 building plots would be assessed as a 140 plot project and required to allocate only 800 sq.m. (200 sq.wah) of land for playgrounds. This project will accommodate a population of about 18,000 persons, so it should be assessed as a 5,880 plot project and required to allocate land for the pre-schools, sportsground/parkland, primary schools, etc. that this population will need.

There is urgent need to amend the land subdivision control law and regulations so as to require that the land to be allocated for public facility sites in residential land subdivision projects be determined on the basis of the number of dwelling units to be produced or accommodated in the project. Projects with apartment buildings should also be required to allocate additional land for resident and visitor car parking for these buildings. It would also be appropriate to review and revise the land allocation requirements for residential land subdivision projects so that the land allocation for public facilities is related to the proposed building and population density as well as to the size of projects.

Strengthening the land subdivision controls:

As well as stating the principle of the developers/plot-buyers responsibility for the cost of constructing on-site infrastructure it would be desirable to state other principles of subdivision in the regulations. These should include ...

- o The basic principle that the objective of land subdivision is the efficient conversion of land so as to achieve the sound development and early use of the land;

- o The principle that new subdivisions should conform to the provisions of any official land use plan for the locality of the project;
- o The principle that the infrastructure networks in new subdivisions should connect with the established public networks; and
- o The principle that every subdivision project should provide vehicular access to a public road.

It is also desirable to add a number of regulatory provisions to the regulations. These include ...

- o A section authorising the dedication of specified items of infrastructure to the relevant government agency, when the agency is able to take it over;
- o A section authorising subdivision project contributions towards the cost of specified off-site infrastructure works that will directly serve or benefit the project; and
- o A section authorising (but not requiring) the formation of a plot-owners' association within a subdivision to operate and maintain the infrastructure and other facilities for the benefit of all plot-owners and residents. This association would be along similar lines to the apartment-owners association in a condominium apartment building.

It would also be desirable to extend the regulations to cover the "agricultural subdivisions" in urban-fringe areas that produce mini-orchards and hobby-farms for sale to buyers from the urban areas. However, it will be necessary to first research and assess these projects so as formulate the appropriate policy as only a small proportion of the plots are actually occupied or used.

Issues for research:

Other aspects of land subdivision activity that should be further researched so as to determine what additional measures to adopt (if any) to improve the subdivision controls include ...

- o the extent to which the regulations are still being circumvented and the problems arising from this;
- o the management, operation and maintenance of the infrastructure and facilities in the established subdivision projects, particularly the housing estates; and
- o the type and extent of the abuses of ownership power by the owners of the private roads in subdivision project estates.

There is also need for regular statistics on land subdivision activity. The Department of Lands and/or the National Statistical Office should compile and publish statistics on the land subdivision project applications lodged and applications approved each month in each province. The statistics should at the least show the number of each type of project (residential land subdivision, land and house, shophouse, agricultural, etc.), and their size by area and number of plots.

Notes and References

- (1) In Nagoya and Kaohsiung, the city governments have undertaken programmes of land pooling/readjustment projects to manage and finance most of the land conversion for urban expansion. In Hong Kong, the land is developed by the government under a public land and leasehold system to provide plots/sites for both private and government building development. In Singapore, the government acquires and develops most of the land required for urban development and constructs nearly all of the housing, but it allocates plots/sites for private commercial, shopping and industrial building development.

In Delhi, the Delhi Development Authority uses the large-scale land acquisition and development approach to produce plots/sites for private building development.

- (2) Sidhijai Tanphiphat, Thailand Country Report on Land Policies in Human Settlements, (Human Settlements Unit, United Nations ESCAP, Bangkok, 1984, p. 30).
- (3) This outline of the Decree and the extracts shown are taken from two English translations of the Decree, these being ... Announcement of the Revolutionary Party No. 286 (1972), (International Translations, Bangkok, pp. 27), and "Annex 1.11: Subdivision Act and Regulations", in S.A. Sherer, Legal and Administrative Issues Regarding Land and Housing Development in Bangkok, Bangkok Land Management Study Working Paper No. 3, (National Housing Authority, Bangkok, 1987, pp. 25-34).
- (4) This outline of the regulations is based on ... Stipulation Relating to Land Appropriation, B.E. 2530 (1987), (International Translations, Bangkok, pp. 369-377); and R.W. Archer and Christoph Schneller, Land Subdivision in Thailand; A Translation of the Land Subdivision Regulations, and the Guidelines for Relaxing the Regulations, HSD Reference Paper No. 8, (Asian Institute of Technology, Bangkok, 1986, pp. 26).
- (5) Sidhijai Tanphiphat, Thailand Country Report on Land Policies in Human Settlements, *op. cit.*, (p. 31).
- (6) See ... Shlomo Angel and Sapon Pornchokchai, "Technical Report 4: The Informal Land Subdivision Market in Bangkok", in PADCO, The Land and Housing Markets of Bangkok: Strategies for Public Sector Participation Volume II: Technical Reports, (National Housing Authority, Bangkok, 1987, pp. 28).
- (7) See ... PADCO and Land Institute Foundation, Bangkok Land and Housing Market Assessment, 1990,

(Infrastructure Projects Division, Office of the National Economic and Social Development Board, Bangkok, 1990, Table 5-10).

- (8) See the review of industrial estates in Thailand by Baring Securities, "Making Space for Future Thai Industry", in The Nation, 2 December, 1990, (p. B5).
- (9) The subdivision regulations guided the design of network infrastructure in the Nava Nakorn new town and industrial park. See ... Appendix 1 in Sindhu Maunsell Consultants, Nava Nakorn Project Phase One Technical Report on Roads, Bridges and Paths, (Nava Nakorn Co. Ltd., Bangkok, 1974).
- (10) See ... R.W. Archer, "The Theory and Practice of Large-Scale Urban Land Development", Royal Australian Planning Institute Journal, Vol. 15, No. 2; May, 1977, (pp. 67-72).
- (11) See ... Yuji Hino, "Land Readjustment Case Study in Thailand", Paper to the First Seminar on Land Readjustment in Thailand, Bangkok, February 1990, (Department of Town and Country Planning, Bangkok, 1990, pp. 35-42).
- (12) See ... R.W. Archer, "Land Sharing in Urban Land Development in Thailand", in Land Readjustment and Urban Development Seminar Proceedings, 1989, (Federal Department of Town and Country Planning, Kuala Lumpur, 1990, pp. 295-317).
- (13) This outline is mainly based on the English translation of the Industrial Estate Authority of Thailand Act, 1979 issued by the Authority and its information brochures, together with articles and supplements in the Bangkok Post on 30 June 1990 and The Nation on 2 December and 13 December, 1990.
- (14) See ... "Industrial Estates", in Bangkok Post Economic Review, 30 June, 1990, (pp. 55-56).

- (15) This outline is partly based on the English translations issued by International Translations, Bangkok, viz ...
City and Town Planning Act, 1975;
Control of the Construction of Building Act, 1979;
Ministerial Regulations Under the Building Control Act, 1979;
By-laws of Bangkok Metropolis on the Control of Construction of Buildings, 1979; and
S.A. Sherer, Legal and Administrative Issues Regarding Land and Housing Development in Bangkok, op. cit.
- (16) Charatsi Teepirach, "Town and Country Planning in Thailand", Paper to the Seventh NHA/IHS/AIT International Seminar on Housing, Bangkok, May 1987, (Department of Town and Country Planning, Bangkok, 1987, p. 16).
- (17) However, the land subdivision regulations do not stipulate that proposed subdivision projects be designed for the zoned land use in those areas that are under an approved general plan.
- (18) The early acquisition of the planned secondary road network R of W should be given the highest priority in order to create a framework of secondary roadways on the ground in advance of urban development. This will also enable the land to be purchased at pre-urban market values. The subsequent early construction of the secondary roads and drains could be financed through mechanisms such as a special assessment or development charge on the benefitting lands.
- (19) See ... "Development Control for Bangkok Metropolitan Area", (City Planning Division, Bangkok Metropolitan Administration, Bangkok, 1989, pp. 12).
- (20) See the series of articles on the building regulations in Manager magazine (Bangkok) for 10-23 September, 1990, (pp. 9-15).

- (21) See ... Bangkok Metropolis Map, 1987, 1/10,000 scale, (Public Works Department, Bangkok Metropolitan Administration, Bangkok, 1989, 61 sheets).
- (22) See ... E.A. Lehan, "Financing Urban Network Infrastructure Expansion: Cost Recovery Options for Thailand", SOFIE Technical Paper No. 4, (Urban Development Coordination Division, Office of the National Economic and Social Development Board, Bangkok, 1991, pp. 102).
- (23) See ... R.W. Archer, The Prospect for Urban Land Pooling/Readjustment in Thailand, Second Edition, HSD Working Paper No. 28, (Asian Institute of Technology, Bangkok, 1990, pp. 30).

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