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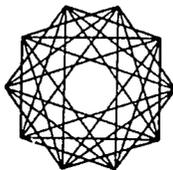
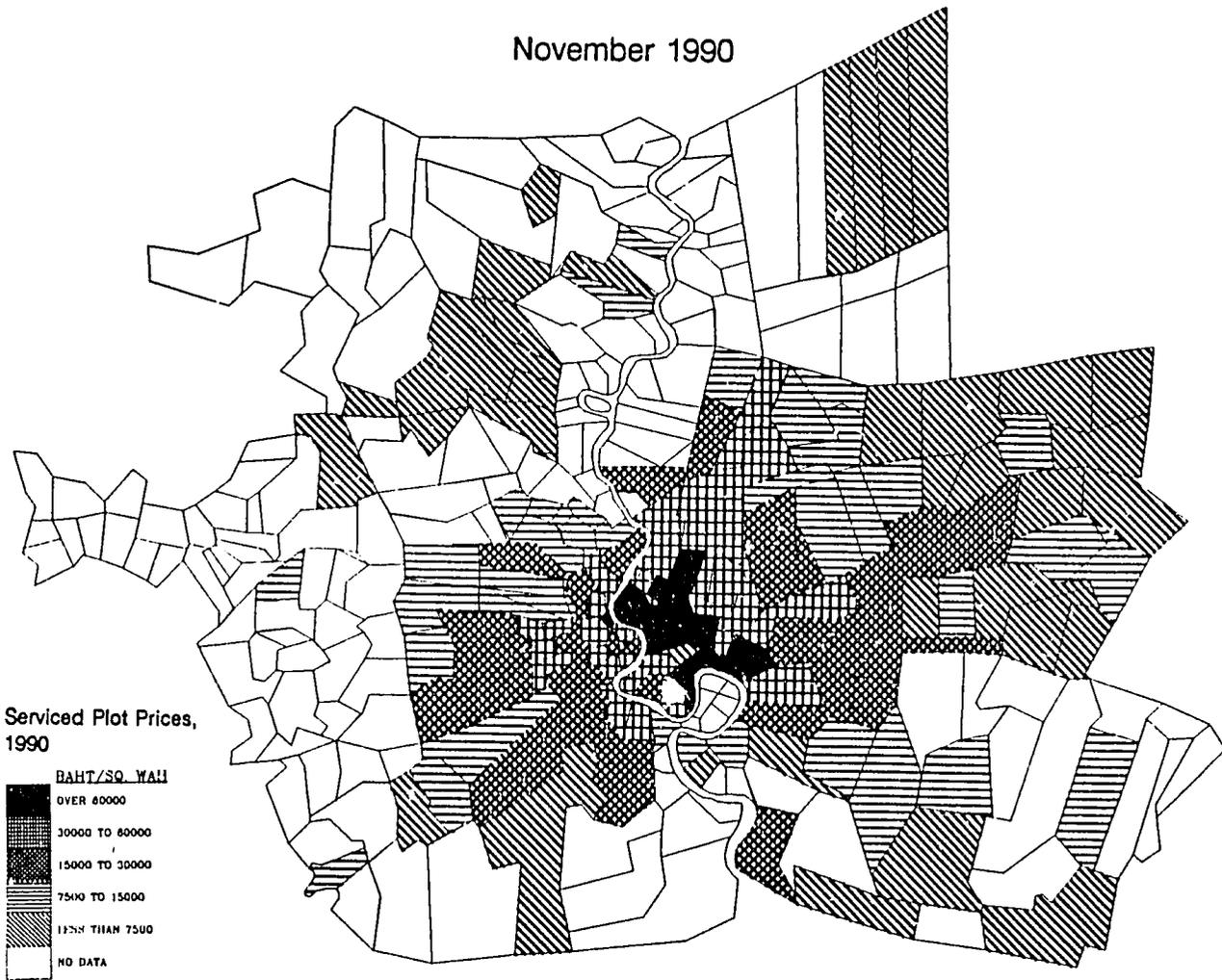
National Economic and Social  
Development Board  
Royal Thai Government

Regional Housing and Urban  
Development Office for Asia  
U.S. Agency for International  
Development

FINAL REPORT

# BANGKOK LAND AND HOUSING MARKET ASSESSMENT

November 1990



PADCO  
Planning and Development Collaborative International  
Washington, DC



LIF  
Land Institute Foundation  
Bangkok, Thailand

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Prepared for:

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and

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## **LIST OF ACRONYMS, THAI WORDS AND CONVERSIONS**

BMA	Bangkok Metropolitan Administration and its jurisdiction
BMR	Bangkok Metropolitan Region
GHB	Government Housing Bank
NESDB	National Economic and Social Development Board
NHA	National Housing Authority
SPURT	Seventh Plan Urban and Regional Transportation Study
Thanon	Road
Soi	Lane

### **CONVERSIONS**

wah=two meters

square wah = four square meters

ngarn = 100 square wah

rai = 1600 square meters

square kilometer = 625 rai

1 USD = 25.4 baht (as of August 21, 1990)

## **PREFACE**

This report is presented to the National Economic and Social Development Board (NESDB) and the Regional Housing and Urban Development Office of the U.S. Agency for International Development by Planning and Development Collaborative International (PADCO) and the Land Institute Foundation (LIF).

The report documents the present land and housing market conditions in the Bangkok metropolitan area. The material contained in the report will be of interest to policy-makers, planners and housing development professionals. The report's findings indicate that Bangkok's land and housing market is one of the most dynamic in Asia, responding to an array of housing needs arising from all income sectors.

The study team has been helped in all phases of its work by many people. We are especially grateful to Khun Sansern Wongcham, Director, Infrastructure Projects Division, NESDB; Khun Sidhijai Tamhipat, Managing Director, Government Housing Bank; Khun Uthis Kaotien, Director Urban Development Coordination Division, NESDB; Khun Charatsri Teepirach, Senior Expert, Department of Town and Country Planning; Khun Orajitt Bumroongsakulsawat, Policy and Plan Analyst, NESDB Infrastructure Projects Division, NESDB; Khun Kiatisak Madyamankura, Chief Public Utilities Projects, NESDB; Khun Chantana Channond, Chief of Foreign Loan Project Management Office, National Housing Authority; and Khun Bellobh Kritayanavaj, Deputy-Chief Managing Directors' Office, Government Housing Bank.

In Berkeley, Stephanie Blackburn prepared the computer maps and copy-edited the final report.

PADCO and LIF sincerely hope that the results of the study will be of use to the NESDB in its future efforts to prepare the Seventh Plan.

David E. Dowall  
Team Leader  
November 5, 1990

## EXECUTIVE SUMMARY

### INTRODUCTION

This study was requested by the National Economic and Social Development Board (NESDB) of the Royal Thai Government (RTG). The purpose of the study is to assess the current state of the Bangkok metropolitan area's land and housing market. The critical questions to be answered by the study are:

1. What is the current pattern of urban land development in the Bangkok Metropolis? How is it different from previous trends?
2. What types of housing is the private sector producing and at what prices? How is the production different from past?
3. What are the trends in land prices in the metropolitan area? How fast have prices increased over the past three years? Where are prices increasing the fastest?
4. How has the cost of housing construction changed over the past three years? Which factors and components of construction costs are most responsible for increasing housing costs?
5. What are the major problems and bottlenecks thwarting the efficient operation of Bangkok's land and housing market?
6. How can urban development be improved?

### STUDY AREA

To insure that the findings are consistent with the earlier work, the current project used the same boundaries established in the previous study of 1986. The land market study area consists of the Bangkok Metropolitan Administrative area (referred to as the BMA), and portions of Nonthaburi, Samut Prakan, Samut Sakhon, Nakhon Pathom and Patum Thani. This area contains urbanized, suburban and agricultural lands located within 90 minutes by commute to the center of Bangkok. The study area contains all of the land likely to be developed or redeveloped for housing over the next ten years.

## **STUDY APPROACH**

The overall research effort has been divided into six tasks, corresponding to the six questions outlined above. The approach taken to answer each question is outlined below.

- 1. Analysis of urban land conversion and housing development between 1984 and 1989.**
- 2. Survey of real estate brokers and appraisers to track land prices over the past three years.**
- 3. Survey of private land and housing development projects currently being marketed in the study area.**
- 4. Analysis of the increase in the costs of housing and examination of what factors have led to increased costs.**
- 5. Identification of the major problems and obstacles impeding the efficient operation of Bangkok's land and housing market.**
- 6. Recommendations for improving urban land development**

## **FORMAT OF THE REPORT**

To help inform policy discussions, this study was conducted to provide some factual information about the structure and performance on Bangkok's land and housing markets. Chapter 2 assesses patterns of spatial development over the past 15 years, illustrating where urban development is now occurring. Chapter 3 provides estimates of residential land prices across the metropolitan area for both serviced and unserviced residential plots. The analysis documents land price inflation between 1988 and 1990 by geographic area. Chapter 4 examines the increasing costs of residential construction and illustrates how rising land prices are driving up the costs of housing. Chapter 5 examines the changing pattern of housing production in Bangkok. It is based on surveys of housing projects in 1990 and 1986. Chapter 6 outlines urban development problems in Bangkok and reviews some of the past and current policy responses that have been initiated. Chapter 7 offers some recommendations for managing urban growth in Bangkok.

## **URBAN LAND CONVERSION AND DEVELOPMENT**

Bangkok's pace of land development has been phenomenal, reflecting its rapid population and economic growth during the 1970s and 1980s. Between 1974 and 1988 a total of 396,000 rai of rural land has been converted to urban uses. This averages out to approximately 28,000 rai per year.

In the BMA, the urban land area increased from 208,881 rai in 1974, to 341,957 rai in 1984 and 397,881 rai in 1988. This has caused the overall percentage of urban land in the BMA to increase from 24.5 percent 1974, to 40.5 percent in 1984 and to 46.7 percent in 1988. Clearly, the massive pace of urban land conversion in the Bangkok region has gradually shifted to the outlying provinces surrounding the BMA.

The pace of urban land conversion from the mid-1970s to the mid-1980s was astonishing, averaging about 21,250 rai per year. But it increased even more during the 1984-8 period -- more than doubling to 46,250 rai per year. Most of the urban development taking place between 1974 and 1984 was concentrated between 11 and 20 kilometers from the city center. Nearly 50 percent of all land converted to urban use was located in this band, despite the fact that it accounts for only 26 percent of the total land in the study area. By 1974 some of the subdistricts had over 60 percent of their land area built-up, and development started to shift to more distant locations. During the 1974-1984 decade, there was considerable conversion of land to urban uses beyond 20 kilometers from the city center. Nearly 80,000 rai of land were converted in this outer fringe area.

In contrast, little land was converted in the inner urban area. In the core of the city, there were nearly 26,000 rai of vacant land in 1974. However, during the 1974-84 decade less than 14,500 rai were converted to urban use. The net result of this lack of development of inner urban land is that by 1984, only 87 percent of the land was urbanized. Despite the fact that this land has excellent access, development still pushes out to the urban periphery.

Between 1984 and 1988, 184,344 rai of land were converted to urban uses. Unlike the period between 1974 and 1984, most of the land development took place on the fringe of the region. In fact, 45 percent of the land conversion between 1984 and 1988 took place beyond 30 kilometers from the city center. During the boom years, residential developers have been forced to fringe areas to seek-out low-cost land for housing estate development, as land located between 11 and 20 kilometers from the city center was no longer affordable for building single-family residences.

In the 1974-84 period as well as more recently, the conversion of land has tended to concentrate in the suburban subdistricts since many of the older, more central subdistricts already have been largely built-up. This forces development to outer zones where land is plentiful and less expensive.

## HOUSING PRODUCTION TRENDS 1974 TO 1988

Over the past fourteen years, Bangkok's housing stock has grown rapidly responding to the needs of an increasing population. The total housing stock is estimated to have increased from 585,163 in 1974 to 1,256,382 in 1988, an absolute increase of 671,219 dwelling units. This translates into an annual increase of 5.7 percent. About 44 percent of the increase took place in the past four years, with the housing stock increasing from 959,775 to 1,265,382 dwelling units. During the past four years Bangkok's housing stock increased at an annual compound rate of 7 percent.

During the 1974 and 1984 period, developer-built housing accounted for one-fourth of the total housing stock increase. During the 1984-88, the share of developer housing production increased to nearly 31 percent as the stock of housing increased from 113,755 in 1984 to 204,620 in 1988. If we include tabulations of condominium projects and adjust the estimate to reflect building permit trends (see Appendix C), the increase in the developer-built housing stock increases to 270,800 units, accounting for 49.6 percent of Bangkok's 1984-1988 housing stock increase.

Small-scale or independently-built housing expanded tremendously between 1984 and 1988, adding 175,535 units to supply. However, after adjusting for over-counting, the increase is much lower--116,672 units (see Appendix C). These projects increased at an annual rate of nearly 20 percent per year (7.2 percent after adjustment), reflecting the continued vitality of small-scale residential developers.

Slum housing continued to decline in relative importance as a housing supplier. The increase in slum housing was modest during the 1984-8 period, increasing at an annual rate of 1.6 percent, about the same rate as during the 1974-84 period.

Public housing in the region continued to expand, but not nearly at the rate achieved in earlier years. Approximately 10,000 dwelling units were added between 1984 and 1988, an annual rate of 3.2 percent. The availability of land for public housing projects continues to be a major problem constraining production.

The increase in Bangkok's housing stock between 1974 and 1984 was largely concentrated in the ring between 11 and 20 kilometers from the city center. This area accounted for 51 percent of total housing production during the ten years. In contrast, outlying areas beyond 20 kilometers comprised 21 percent of the decade's total housing production. The remaining production, 28.7 percent, was concentrated in the core area of the region, within 10 kilometers from the city center.

In contrast, the 1984-1988 period exhibited a shift in the location of housing development, with construction increasing

proportionately in both the core and the fringe. Development in the 11 to 20 kilometer ring accounted for nearly 40 percent of total production. Core area housing development increased to comprise 37 percent of the increase as infill projects became popular. If we add the NHA's ground survey of condominium projects, the housing stock increase in the core is even more pronounced. Most of the condominium projects are located within 10 kilometers of the city center. On the other hand, development has pushed out to the fringe of Bangkok as well, with the area beyond 20 kilometers accounting for 23.5 percent of production.

The housing production patterns indicate that the inner-suburban area is no longer the key center of housing development activity. Housing development is shifting to outlying areas as well as infill locations. In the future, there will be little infill development as the area within 20 kilometers becomes developed. Vacant land for development is declining in the core area of the city--only 11 percent of the area is still vacant, and much of this land is not developable. Massive redevelopment is not likely to occur unless land expropriation and infrastructure development policies change.

#### SURVEY OF RESIDENTIAL LAND PRICES

An appraisal survey technique previously used in Karachi and Jakarta was applied in Bangkok to estimate residential land prices [Dowall, 1989b and 1990]. The method involves asking experienced real estate professionals to appraise the probable selling price of typical residential plots on a neighborhood-by-neighborhood basis. A separate appraisal is made for plots with and without infrastructure. The appraisals were completed for 1990 and retrospectively for 1989 and 1988. Appendix A describes the survey method, and presents the appraisal questionnaire.

The land price survey has provided several key conclusions. First, land price increases in the metropolitan area have been substantial, with the overall prices of serviced plots increasing at 21 percent per year. The rate of increase has been greater for unserviced plots--37 percent per year. Spatially land prices have risen more rapidly in outlying areas. Beyond the BMA prices of unserviced plots increased at an annual compound rate of 41.8 percent between 1988 and 1990. Serviced plots increased half as fast--21.1 percent.

The run-up in real estate prices is largely due to the strong demand for land for residential, commercial and industrial projects over the past several years. A total of 184,344 rai of rural land was converted to urban use between 1984 and 1988. This amount was almost the same as the amount of land converted during the previous ten years (1974-1984). Cross-tabulations of land conversion trends with land prices reveal that there is a clear relationship between the rate of land price increase and land conversion pressure. This pattern of land price increases sug-

gests that land prices are demand driven and that market forces are largely responsible for the upward rise in land values. As the pace of land development continues, land prices can be expected to continue to rise, although perhaps not at the same rate as in 1989 and 1990.

The second major conclusion of the analysis of land price data is the estimation of the effects of infrastructure service provision on plot prices. Holding constant the effects of location, the availability of urban services increases the 1990 value of residential plots by an additional 1.7 times. Over the past several years, the multiplicative effect of infrastructure provision has diminished from 2.2 times in 1988. This is due to the rapid escalation of unserviced land prices in the metropolitan area. The increase in property value accorded by the provision of infrastructure clearly suggests a possible opportunity for government or the private sector to recapture infrastructure investment costs. For example, a 200 square wah plot located 20 kilometers from Bangkok is estimated to have a value of 1,600,000 baht without services and 2,640,000 baht with services, a difference of 1,040,000 baht. In all likelihood, urban services can be extended to this typical plot for less than the value differential. Thus it is feasible to develop and implement a tax assessment or betterment levy to recapture infrastructure investment costs.

The third conclusion of the analysis is that Bangkok's land price gradient is "flattening out" as suburban land prices increase faster than those in the central city. This suggests that the metropolitan area is expanding rapidly and that urban uses are spreading into the fringe area.

#### **RISING LAND COSTS PUSH UP HOUSING COSTS**

To explore exactly why housing prices have increased so much, we conducted a comparative cost study of five actual housing projects. The major cause of the increase in housing development costs is rising land costs. Real, inflation-adjusted land costs increased by 375 percent between 1987 and 1990, an annual compound increase of 67 percent. Rising land costs are making land the key determining factor for housing costs. Land costs in 1987 ranged from 1,173 baht per square wah for the low cost townhouse project to 44,980 baht for the high income condominium project. The increase in land prices depends on the location of the project. Projects located on the suburban fringe areas had the greatest increases, where land prices have been increasing the most. The portion of total housing costs represented by land costs has increased from an overall average of 26 percent in 1987 to nearly 46 percent in 1990. These rising costs are forcing some developers to shift to sites located on the fringe of Bangkok. Many developers have stopped building for the low and middle-income market, because margins are too tight. Some developers

have stated that it is impossible to build middle income housing on separate plots; the price of land is simply too high.

While construction costs in the Kingdom have risen substantially over the past five years, increasing by 35 percent between 1987 and 1990, their impacts on overall housing costs are not as significant as rising land cost. For the five projects, building construction increased by 26.3 percent over the period.

Overall the pattern of cost increases does not reveal any sharp surprises: construction costs and land prices account for most of the upward pressure on housing costs. In terms of housing prices, demand pressures have been captured in the form of higher land prices, and developers are not reaping large windfall profits unless they have been land banking parcels for the past five years. In fact, a recent study of housing developers in Bangkok found that banked land was a critical strategy for building low- and middle-income housing [Foo, 1990].

Rising land and housing costs and prices, rising interest rates, and a growing supply of units are likely to dampen housing demand in the future. As indicated in Chapter 2, housing stock increases over the past three years have been substantial, and are currently increasing at an annual rate of 90,000 units. Based on population and household data, the actual increase in households averages 40,000 to 50,000 per year. While there is still a considerable backlog of unmet housing demand, the level of housing production over the past five years has surely worked some of this down. It is quite likely that inventories of housing stocks will start increasing, especially in the upper-middle- and high-income price ranges. The slowing down of Bangkok's housing market should relieve demand-pull pressures on the prices of construction materials, labor and land.

## **BUILDING IN A CHANGING ENVIRONMENT**

Responding to rising land and construction costs, the housing delivery system has dramatically changed over the past four years. Between 1986 and 1990, housing projects have moved farther into the suburbs (20.3 versus 16.7 kilometers from the city center), are comprised of less land (43 versus 95 rai), and have fewer units (380 versus 530). The density of housing development is now much greater, despite the fact that projects are now even farther from the city center (8.9 versus 5.6 units per rai). The higher densities are the result of considerable condominium development now taking place in the region as developers seek ways of cutting the impacts of rising land prices. In 1986, nearly 50 percent of the housing production was in single-family housing units. Almost all the remainder, 49 percent, was comprised of townhouses and duplexes. The rest were condos-- less than 2 percent. By 1990, the market had shifted dramatically and condominiums now comprise 43 percent of the market. Single-family

housing has fallen to 36 percent of production and townhouses now stand at 21 percent.

Despite the fact that housing projects are shifting to the fringes of the metropolitan area, they are better provided with services now than in 1986. Today's projects more likely to be provided with some form of public or private transportation, piped water, electricity and telephones.

In real, 1990 inflation-adjusted prices, the distribution of housing in 1990 still reflects the bi-modal pattern found in 1986. Between 1980 and 1990 the percentage of housing production taking place at prices below 300,000 baht has increased steadily. In the middle-income range of housing priced between 300,000 and 700,000 baht production has steadily declined from 60 percent of the total in 1980 to 35 percent in 1990. At the upper end of the production, houses priced over 700,000 baht, production has increased, rising from 34 percent in 1980 to 48 percent in 1990.

#### **LOW-INCOME HOUSING PRODUCTION IS STILL SIGNIFICANT**

Despite the rapid increase in housing development inputs, many developers operating in the metropolitan area continue to build and sell housing priced below 250,000 baht. According to a recent survey [Foo, 1990], 7.3 percent of all developers build low-cost housing. Of these only a small portion (1 percent) exclusively build low-cost housing. Instead, most build a variety of types of units, extending from low to medium cost units. On average, the typical project has about 44 percent of its units for sale at prices below 300,000 baht. These developers produced 12,379 housing units, accounting for about 21.5 percent of all units produced by the surveyed development companies. Of these units, about half (6,546) were priced below 300,000 baht.

Low-cost condominiums are highly affordable. Low-cost housing units, priced under 300,000 baht, are affordable to households earning between the 20th and 40th income percentile. In 1989, there were nearly 1,600 units for sale that were affordable to those earning at or below the 40th percentile of the Bangkok household income distribution. Over 5,500 dwelling units, 11.4 percent of the private sector housing supply, were sold at prices below 300,000 in 1989 and were affordable to those earning at or below the 60th percentile of the household income distribution.

This pattern is remarkable, given the rapid escalation of land and housing construction costs in the metropolitan area over the past four years. The production of such a substantial supply of low-cost housing is largely to the production of low-cost condominium units. Of the 6,546 low-cost units, two-thirds--4,432 were condos. Continued production of low and moderate cost condominium units is essential if Bangkok's private sector housing industry is to meet the housing needs of its residents.

## **ISSUE 1: HOUSING AFFORDABILITY AND SLUM EVICTIONS**

During the past three years, land and housing prices have increased dramatically-- rising at over 25 percent per year. However, housing developers have increased residential densities, increasing their production of low and moderate cost condominium units. These units are gradually taking the place of single-family and townhouse units as the principal form of affordable housing.

This form of housing needs to be encouraged. However, there are growing concerns about condominiums, and some government officials believe that their production should be curtailed. Limiting their development would be a grave mistake-- it would essentially eliminate the production of low-cost private sector housing development in most of the BMR.

Another manifestation of rapidly rising land values is the increase in slum evictions. Between 1984 and 1988, slum housing declined by 11,376 housing units in the area within 10 kilometers of the city center. The reduction of these low cost units was undoubtedly caused by the commercial redevelopment pressures. The reductions are substantial. For example, in the core area (within 5 kilometers of the city center), slum housing accounted for 30 percent of the housing stock in 1974. As of 1988, slum housing had been fallen to account for only 20 percent of the core area housing stock.

Because these slum units are not being replaced by low cost public housing, slum dwellers are forced to seek other locations, and considerable slum housing has expanded in the suburban areas beyond 11 kilometers from the city center. Thus, slum development has suburbanized like other forms of housing as well.

As the Thailand economy continues to expand, there will be more pressure to evict the remaining slums. It is appropriate for public agencies to assist slum dwellers with their housing requirements. This role can be filled by the BMA and the NHA, as well as the numerous state agencies with land containing squatter settlements.

## **ISSUE 2: LACK OF DISTRIBUTOR ROADS AND STRIP DEVELOPMENT**

Unlike other cities in the world, Bangkok lacks an adequate system of distributor roads. In Thailand, local governments leave the construction of minor roads to the private sector. In Bangkok, developers have been largely responsible for building roads within the superblocks. Thus the pattern of streets as been designed with the objective of providing access to parcels owned by the initiating builder. Privately constructed roads almost routinely fail to generate opportunities for the further develop-

ment of residential parcels which are not under the control of the builder. Thus many parcels remain "land-locked." Unless the roadway system is corrected, traffic congestion and rapidly expanding leapfrog development will plague the region.

A major consequence of the lack of distributor roads is the pattern of commercial development taking place along the major highways. In the rapidly developing suburban areas, considerable commercial, industrial and residential development fronts these roads. Aside from causing massive traffic congestion, it effectively blocks land off the main roads from being developed. This indirectly encourages leap-frog development. Another contributing factor to strip development is the total lack of effective planning controls to limit commercial development along major highways.

The effects of strip development are considerable. Beyond the obvious impacts on road congestion, it barricades land from potential housing development and it makes the deployment of infrastructure much more expensive. Telecommunications, electric and water systems, as well as public transportation are more expensive to provide if development is spread over a large array of strips. Strip development can also make it more difficult to check flooding.

### **ISSUE 3: SPATIAL DEVELOPMENT PROBLEMS**

Absent any form of effective planning controls, urban development is market-driven in Bangkok. Industrial and commercial centers are located haphazardly and are not integrated to develop subregional activity centers. As a result developments are scattered about the metropolitan area. The wide-ranging location of these industrial zones makes it difficult to provide adequate infrastructure such as water and roads. Ground water pumping is widespread, particularly in older areas, resulting in continued subsidence. There is little connection between industrial development and provision of worker housing. The frequent mismatch of industrial and residential developments places pressure on transportation systems. The unregulated pattern of industrial development also inflicts adverse environmental impacts on surrounding urban developments.

### **ISSUE 4: LACK OF ADEQUATE INFRASTRUCTURE**

As is well-documented, there is a severe shortage of most urban infrastructure. The roadway system is lacking distribution roads, there is a shortage of buses, flood control is limited, and the water supply and wastewater treatment capacity sorely lags behind urban expansion. The provision of telecommunication services is far behind as well. The main reason for the shortage of services is the lack of adequate finances for expanding infrastructure services. In response to these deficiencies, the pri-

vate sector has stepped in to provide them. Considerable roadway expansion took place in the outlying areas between 1974 and 1984. While the private provision of roads is desirable, it is disorganized.

Thailand and its local governments need to reform the way infrastructure is financed, placing more emphasis on cost recovery. A new system of financing infrastructure is needed. The impacts of infrastructure provision are considerable, adding an average of 165 percent to the value of a typical residential plot. On a plot by plot basis, the potential impact is considerable. For example, the impact of providing a road and infrastructure service boosts the value of the 25 square wah plot located

at a distance of 10 kilometers from the city center by 564,331 baht.

By developing an infrastructure cost recovery system, such as a special assessment district, which would tax these benefiting plots, the provision of roads, water and flood control could be financed. Over a wide area, the increase in assessed values is great. For each rai provided with urban services, located 25 kilometers from the city center, the increase in property value is 1.7 million baht. This increase could form the basis for imposing a betterment charge or a special property tax assessment.

## DEVELOPMENT CONTROLS

In the ramp-up to the Seventh Plan, a number of proposals are being discussed to strengthen the ability of planners and policy makers to control urban development in Bangkok. These controls include a proposal to limit development in specific areas of the BMA to conserve historically significant areas, control strip development along major roads, and mitigate potentially adverse environmental impacts.

Discussions over development controls are a positive sign that Thai policy-makers have come to recognize the important interrelations between urban development and traffic and environmental impacts. What is needed is a more precise and fully elaborated system of planning controls to guide and shape future development. Past plans and policies have been far too general to provide much needed direction for infrastructure planning and programming. Also, past planning policies were never implemented so there has never been any effective control over urban development.

High land prices mean that the density of urban development must increase. Housing developments will need to be multi-story and in the 1.5 to 2.5 FAR range if housing is to be affordable. Such high-density development requires a more coordinated approach to planning and infrastructure provision. As it now

stands, the Bangkok metropolitan area is ill-equipped to accommodate such patterns of urban development.

For Bangkok to grow in an orderly and efficient manner, government planners and the private sector should come together to prepare a fully elaborated regional structure plan for the BMR. This structure plan should provide the framework for the subsequent preparation of detailed urban and suburban district plans covering the developed and developing portions of the BMR. These plans should precisely identify the location of distributor as well as main roads and other urban services. A zoning and land development control system should be prepared for all areas. The overall zoning and development control system should provide for sufficient opportunities for urban expansion over the next twenty years and promote the economical use of land in appropriate areas. The current ad hoc approach to land use planning and control where policies for FAR, green belts and the like are discussed independently and without reference to overall urban development goals and infrastructure programs should be avoided.

Solving these problems will require a major coordinated effort-- including the full participation of the NESDB, the BMA, the National Housing Authority, Land Department, the various providers of infrastructure, and the private sector. The concluding chapter outlines some recommendations for public and private sector action.

## RECOMMENDATIONS FOR IMPROVING HOUSING AND URBAN LAND DEVELOPMENT

A number of recommendations are offered for consideration. These include:

1. legislate regulations limiting bank financing of land acquisition for speculative purposes;
2. impose property tax policies which increase the costs of holding land for speculative purposes;
3. impose taxes, user charges and betterment levies to finance the construction of roads and infrastructure;
4. program infrastructure (mainly distributor roads) projects to increase the supply of land for residential development;
5. develop and implement planning and development controls to ensure that higher density development is compatible with existing land uses and causes minimal environmental impacts;
6. draft and adopt standard laws and procedures for the establishment, financing and operation of condominium owners associations;

7. prepare "specific plans" for development in suburban areas;
8. adopt effective zoning and development controls which compel developers to follow regulations in order to receive building permits;
9. implement "retrofitting programs" in urban areas to expand roads and increase land supply, including the use of land readjustment, land pooling and land sharing;
10. decentralize the financing of infrastructure to local governments and service districts;
11. increase local capacity to design, program and finance infrastructure systems;
12. reform property tax system to fund infrastructure;
13. establish special assessment districts to recover costs of new services;
14. levy developer fees and exactions to pay for needed off-site services;
15. undertake a special study to design and implement land use, zoning and infrastructure investment plans to encourage the growth of suburban activity centers;
16. levy a tax on income derived from short-term trading of land;
17. increase taxes on properties withheld from development;
18. lower income taxes for low-income housing projects; and
19. increase the power of the BMR Committee to allow it to set and coordinate zoning and land use decisions and to determine where and when infrastructure should be developed.

## CHAPTER 1

### PURPOSE OF STUDY AND CONTEXT

#### PURPOSE

This study was requested by the National Economic and Social Development Board (NESDB) of the Royal Thai Government (RTG). The purpose of the study is to assess the current state of the Bangkok metropolitan area's land and housing market. The findings and recommendations of the research will be used to prepare portions of the Seventh Plan for the Kingdom of Thailand which address housing and infrastructure development in the Bangkok metropolitan area. The study builds on the earlier Bangkok Land Management Study, which was completed in 1987. It is, however, far less ambitious than its predecessor and was completed in one-third the time with one-third the staff and resources. Therefore, this study could not address all of the questions posed by the earlier study. Nonetheless, the overall intent of the present study is to update this earlier work and pinpoint the key changes which have taken place in Bangkok's land and housing market. The critical questions to be answered by the study are:

1. What is the current pattern of urban land development in the Bangkok Metropolis? How is it different from previous trends?
2. What types of housing is the private sector producing and at what prices? How is the production different from past?
3. What are the trends in land prices in the metropolitan area? How fast have prices increased over the past three years? Where are prices increasing the fastest?
4. How has the cost of housing construction changed over the past three years? Which factors and components of construction costs are most responsible for increasing housing costs?
5. What are the major problems and bottlenecks thwarting the efficient operation of Bangkok's land and housing market?
6. How can urban development be improved?

## **STUDY AREA**

To insure that the findings are consistent with the earlier work, the current project used the same boundaries established in the previous study of 1986. The land market study area consists of the Bangkok Metropolitan Administrative area (referred to as the BMA), and portions of Nonthaburi, Samut Prakan, Samut Sakhon, Nakhon Pathom and Patum Thani. This area contains urbanized, suburban and agricultural lands located within 90 minutes by commute to the center of Bangkok. The study area contains all of the land likely to be developed or redeveloped for housing over the next ten years. Map 1-1 illustrates the study area. Much use has been made of the aerial photographic interpretation efforts carried out by the NHA's Center for Housing and Human Settlements. Aerial photographic information was organized and tabulated according to kwaengs or subdistricts. There are a total of 353 subdistricts in the study area.

## **STUDY APPROACH**

The overall research effort has been divided into six tasks, corresponding to the six questions outlined above. The approach taken to answer each question is outlined below.

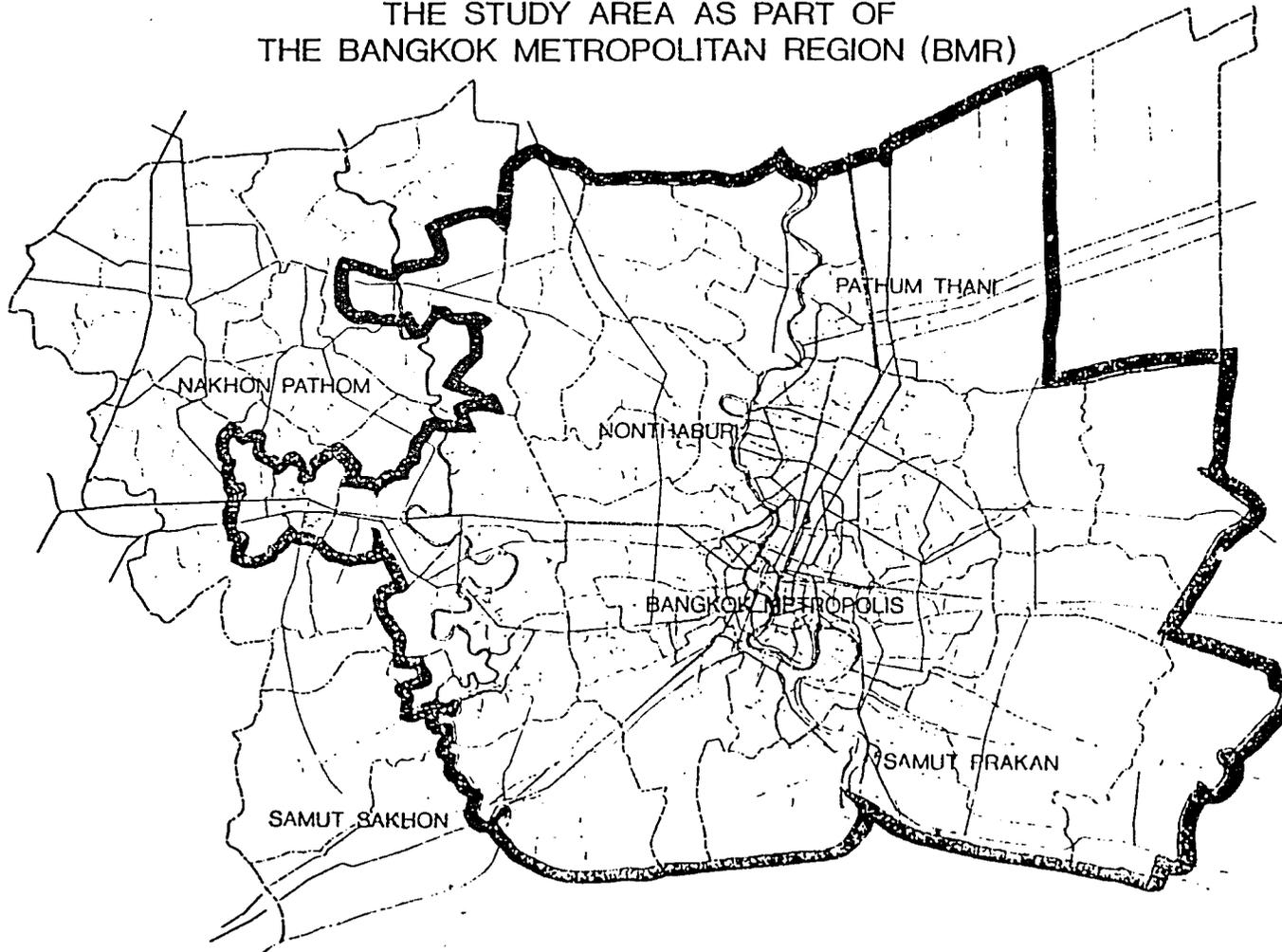
### **Analysis of urban land conversion and housing development between 1984 and 1989**

Since 1974, the National Housing Authority of Thailand has conducted aerial photographic interpretation of the growth of the Bangkok metropolitan area. The area was photographed in 1974, 1984 and 1988. To tabulate the growth of the housing stock and record overall urban development, a series of housing types have been developed and applied to the aerial photographic data. In the present assessment we have combined land subdivisions and individual housing categories with canal housing to provide for consistent data over the 1974-1988. The data on land conversion will be limited to "urbanized land", and tabulations of changes in the overall housing stock, according to the following categories:

1. Shophouses
2. Large-scale developer-built housing
3. Small-scale developer-built housing and individually constructed units
4. Public housing
5. Slum housing
6. Other housing

The data tabulations are organized according to the exact subdistrict-by-subdistrict zonation used in the previous study. The tabulations of 1988 urbanized land and housing stock are

THE STUDY AREA AS PART OF  
THE BANGKOK METROPOLITAN REGION (BMR)



MAP 1-1

merged with the existing land and housing stock database constructed during the previous study for 1974 and 1984.

By combining these, the changing patterns of urban land development and housing construction are analyzed on a subdistrict-by-subdistrict basis. The results are mapped and collated into tables and charts, presented in Chapter 2.

### **Survey of real estate brokers and appraisers to track land prices over the past three years**

During the past three years, land prices in Bangkok have gone through the ceiling. It is almost a daily occurrence to find a front page newspaper article centering on this upward land price spiral--someone making a 200 percent gain on a land sale, a developer saying that land is simply too expensive for building moderate-cost housing, or allegations of rampant speculation, especially by foreigners.

Given the jump in land prices, the land valuations published by the Land Department are regarded as being woefully out of date. Unfortunately, the real estate market lacks any systematic source of transactions on prices. Consequently we applied a survey method that has been successfully applied in Jakarta and Karachi to generate land values for residential plots. A full description of the method and the questionnaire is contained in Appendix A; what follows is a brief description of the approach used in Bangkok.

To develop a valid cross-sectional database on land prices a series of structured interviews was held with three sets of knowledgeable professionals: real estate brokers, Government Housing Bank appraisers and Land Department officials.

Each interview focused on asking the respondent to appraise the probable selling price of two types of residential plots: 1) a fully-serviced (piped water and electric) plot located on a paved residential street, and 2) an unserviced plot located about 100 meters from a paved residential street. The appraisal is made for 1990 for typical plots in each and every subdistrict the respondent has experience with. The appraisal process is repeated for 1989 and 1988, asking the respondent to estimate the selling price for the plots in these years.

In cases where there was overlap between surveys (of brokers, bank appraisers and Land Department officials), the median values were selected for inclusion in the data base. All of the data was reviewed by a panel of active private real estate valuers. Appraisal estimates which were considered to be too high or too low were either adjusted or dropped by the panel.

The survey generated over 2,000 cases. After selecting median values and dropping aberrant estimates, a total of 991

cases covering three years was compiled into the land value database. The database is analyzed to assess trends in land values over time and across the metropolitan area. Several maps are generated and numerous tabulations of the data are presented in Chapter 3.

**Analysis of the increase in the costs of housing and examination of what factors have lead to increased costs.**

To systematically assess what has caused housing costs to rise over the past several years, a set of appraisal cost studies of five housing projects were made for 1986 and 1990. These studies follow the building code and planning regulations in place in the respective years. To validate the cost and price estimates, the surveys were reviewed by a panel of active real estate developers. These cost studies are presented in Chapter 4.

**Survey of private land and housing development projects currently being marketed in the study area.**

To gauge the current characteristics of private sector housing production, a random sample of 60 housing projects was surveyed. These projects were selected from a roster of over three hundred projects actively marketing housing units in April, 1990. Each project was asked a series of questions about:

- \* number of housing units in project
- \* price range of units
- \* type of project (condo, townhouse, single-family detached)
- \* location and transportation access
- \* financing terms
- \* rate of sales
- \* buyer profile

Appendix B contains a copy of the project survey questionnaire. The results of this survey are compared with previous surveys of private housing projects in 1980 and 1987. The comparisons center on assessing changes in housing types and prices, locations of projects, and rates of sales. These results and comparisons are presented in Chapter 5.

**Identification of the major problems and obstacles thwarting the efficient operation of Bangkok's land and housing market.**

An assessment of the major housing affordability and urban development problems now facing the Bangkok metropolitan area is provided in Chapter 6. It is based on the results of the foregoing analysis and interviews with government officials and housing developers.

## **Recommendations for improving urban land development**

Based on the study's research results and consultations with public and private sector professionals, Chapter 7 presents policy recommendations for consideration for improving the efficiency of the Bangkok land and housing markets.

### **SETTING THE BASELINE: BANGKOK'S LAND AND HOUSING MARKET IN 1987**

Completed over one year, the Bangkok Land Management Study was the most comprehensive assessment ever made of Bangkok. The results of the study revealed that the land and housing market was operating very efficiently and that land and housing supply was expanding to meet demand. Over the period between 1980 and 1987, land prices were found to be increasing moderately and real housing prices had actually remained stable. These findings are the results of five factors: easy access to land for housing development, a dynamic and expanding housing development industry, limited land use and building controls, growing incomes, and ample capital to fund construction loans and permanent mortgages.

Between 1974 and 1984 the supply of housing in Bangkok grew at a faster rate than its population. Population growth slowed down, averaging 3.0 percent per annum. In absolute terms this amounted to an average increase of approximately 200,000 persons per year. Housing growth recorded an annual compound growth rate of 5.5 percent. Bangkok's housing stock increased from 585,163 to 998,436 total units between 1974 and 1984-- an annual average increase of over 41,000.

There were no apparent bottlenecks in land supply. Bangkok sits in the middle of a vast and flat agricultural plain and there are no serious limitations on where and what types of projects can be built. The supply of urban land for housing increased steadily through the provision of road access. This was accomplished by a combined public and private road building program. Almost a quarter of the land area in the fringe districts surveyed was provided with road access to every land parcel between 1974 and 1984.

Between 1974 and 1984 the urban area of Bangkok expanded at an average rate of 20,000 rai (32 square kilometers) per year, with residential development accounting for approximately one-third. By 1984, the urbanized area of the Bangkok Metropolitan Region was 805 square kilometers, accounting for 22.1 percent of its total land area. Between 1974 and 1984, most development of vacant land took place in the band from between 11 and 20 kilometers from the city center, and the elastic supply of land for housing development held down land prices. Between 1983 and 1986 residential land prices as a whole increased in real terms at a moderate rate of 6 - 10 percent per annum, somewhat faster than per capita income.

A major finding of the Land Management Study was the marked shift in the composition of housing production in the metropolitan area. Prior to 1974, most of the housing development was carried out by individuals building their own housing. In the late 1970s and 1980s, land-and-house projects built by developers grew rapidly, increasing by 463 percent.

Easy access to land and the rapid expansion of the housing development industry helped keep the lid on land and housing prices. Between 1980 and 1986, real housing prices were stable.

#### **THE SITUATION TODAY: SIGNIFICANTLY DIFFERENT**

Fueled by a booming economy, Bangkok's land and housing markets have soared. Robust business expansion, rising domestic and foreign investment, and the rapid growth of household incomes have spurred the demand for all types of property-- commercial, industrial and residential. According to the statistics compiled by the Bank of Thailand (see Table 1-1), the Kingdom's index of manufacturing activity grew by 51 percent between 1986 and 1989-- a 14.5 percent annual compound increase. During the same period, Gross Domestic Investment increased from 241.28 to 442.76 billion baht (in constant 1986 baht), an annual compound increase of nearly 22.2 percent. Real per capita Gross Domestic Product has increased by an annual compound rate 9.0 percent.

The impact of surging economic growth on Bangkok's property market has been tremendous. In terms of its contribution to Gross Domestic Product, the construction industry grew 8.1 percent in 1987, 13.7 percent in 1988 and 19.8 percent in 1989. The recovery of the construction sector started in 1986 and was led by the residential sector. In 1987 construction of commercial and industrial projects picked up as investment increased. Table 1-2 illustrates trends in construction activity in municipal areas of Thailand (dominated by Bangkok) from 1984 to 1989. Overall construction activity in urban areas, measured in square meters of permitted construction has increased at an annual compound rate of 42 percent since 1986.

Much of the residential boom can be explained by excess liquidity in the banking sector which pushed down mortgage interest rates. Between 1984 and 1987, minimum lending rates declined from 16.5 to 11.5 percent and mortgage terms increased to 15 years and beyond-- substantially lowering the costs of homeownership.

For example, as Table 1-3 illustrates, between 1987 and 1989, residential building permits in the Bangkok Metropolitan Administration (BMA) increased from 53,527 to 77,145, a 44.1 percent increase. The total housing stock as tabulated by the National Housing Authority increased by nearly 300,000 units between 1984 and 1990.

TABLE 1-1  
KEY INDICATORS OF THE THAI ECONOMY  
1986-1989

INDICATOR	1986	1987	1988	1989	ANNUAL COMPOUND GROWTH RATE
GDP (1977=100) (a)	411.81	446.36	499.80	554.00	10.3%
Per Capita GDP (1986=100)	20,790	22,438	25,009	26,998	9.0
Gross Domestic Investment (1986=100) (a)	241.28	310.39	375.31	442.76	22.2
Total Commercial Bank Deposits (1986=100) (a)	627.15	733.50	838.89	1,002.66	16.8
Total Commercial Bank Loans (1986=100) (a)	543.73	655.85	801.50	981.04	21.5
Index of Manufacturing Activity (1987=100)	88.04	100.00	115.33	132.68	14.5
Population	52,960,000	53,870,000	54,960,000	56,006,000	1.9
Labor Force	28,040,000	28,860,000	29,920,000	30,870,000	3.2
Employment	26,140,000	26,928,000	28,457,000	29,440,000	4.0

(a) = billions of baht

Source: Department of Economic Research, Bank of Thailand,  
Thailand Key Economic Indicators, March 1990.

TABLE 1-2  
 CONSTRUCTION ACTIVITY IN THAILAND'S MUNICIPAL AREAS  
 BY TYPE, 1984-1989 IN THOUSANDS OF SQUARE METERS

TYPE OF PROJECT							ANNUAL COMPOUND INCREASE
	1984	1985	1986	1987	1988	1989*	1986-89
Residential	5,409	4,869	5,638	7,583	11,988	15,604	39.9%
Commercial	3,901	4,014	3,185	3,914	5,687	9,680	44.3
Industrial and Other	1,052	1,056	814	1,100	2,195	2,282	40.5
<b>TOTAL</b>	<b>10,362</b>	<b>9,939</b>	<b>9,637</b>	<b>12,597</b>	<b>19,870</b>	<b>27,566</b>	<b>41.5%</b>

\* Preliminary estimate.

Source: N. NONTAPUNTHAWAT, "Monetary and Investment Situation: The Effect on Construction," Bangkok Bank Monthly Review, September, 1989, pp. 357-363.

Table 1-3  
 Building Permits Issued in  
 Metropolitan Bangkok 1987-1990  
 by Type of Unit

YEAR	SELF BUILT	DEVELOPER BUILT	CONDO\ FLAT	TOTAL
1987	22,650	29,082	1,785	53,527
1988	26,116	28,315	2,983	57,414
1989	21,527	49,483	6,135	77,145
1990*	9,772	22,918	6,260	38,950
<b>TOTAL</b>	<b>80,075</b>	<b>129,798</b>	<b>17,163</b>	<b>227,036</b>

\*1990 is for first five months

Source: GHB Housing Registration Database

Applications for investment projects to the Board of Investment increased ninefold between 1986 and 1988, from 59.7 to 530.7 million baht. The construction of industrial plants and commercial facilities expanded accordingly. For example, as Table 1-2 shows, the increase in industrial construction increased by 80 percent between 1987 and 1988. According to Richard Ellis, Bangkok's stock of office space has increased dramatically between 1978 and 1988, growing from 330,000 to 1,080,000 square meters of prime space [Bangkok Post, November 15, 1989]. The rapid expansion of Thailand's industrial, commercial and tourism sectors placed great strains on the Kingdom's infrastructure systems. In response, the government boosted investment allocations to infrastructure projects from 60 million baht in 1989 to 102 million in 1990.

Thailand's remarkable growth and surging property markets have generated a number of ripple effects on Bangkok's land market. First, the sheer scale of demand for land, for residential and for commercial projects has been enormous. According to the analyses of changing land use patterns in the metropolitan areas, over 29,495 hectares of land have been converted to urban uses and approximately 350,000 dwellings have been constructed between 1984 and 1988. Nonresidential urban land uses such as industrial estates, commercial and recreational complexes as well as public and private supporting facilities have accounted for the conversion of an estimated 15,000 hectares of land in the region. This massive scale of demand for land has pushed up land prices.

At the same time, rising land prices and increasing domestic and foreign liquidity has created a speculative demand for land. A review of Bangkok newspapers over the past three years clearly illustrates a preoccupation with the bull speculative land market. Not a week passes without some mention of phenomenal land price increases. Hard evidence on the extent of land speculation is hard to come by, and the present study was not able to systematically assess the market. However, it is clear that a substantial portion of condominium purchases in Bangkok and elsewhere are for speculative purposes. According to some developers, nearly 50 percent of the sales of condos are for investment purposes. In the land market, evidence is hard to obtain, but it is clear that there is much speculation in land on the fringes of the city and along the Eastern Seaboard. Data on land transactions indicate that turnover of properties has increased dramatically in some areas. According to recent figures compiled by the Land Department, Kingdom-wide title transfers reached 3.1 million over the past year-- a 70 percent increase over the previous year [Bangkok Post, August 10, 1990, page 3].

As will be described in greater detail in Chapter 3, the inflation-adjusted real value of serviced land in Bangkok has increased an average of 23.8 percent over the past year. For unserviced land the comparable rate of increase is higher--57.9 percent. These increases are lower than is reported in the press because they reflect land values for residential plots, not

commercial or industrial parcels. Also, since the data are not based on specific transactions, but on appraisals of typical plots, the land value increases are lower. But even so, the increases recorded by the land value database are impressive. The rate of increase clearly exceeds the growth rates of per capita income or Gross Domestic Product. Thus, in the long term, they are not sustainable.

Aside from claims of land speculation and foreign "land-grabbing", the biggest issue raised by the property market boom has been the crushing impacts of real estate development on the over-burdened infrastructure system. Traffic congestion is at unparalleled levels approaching "gridlock". The major problem is simply the lack of a planning and capital budgeting system to gear urban development with infrastructure placements. Up until now, the system of real estate development has been a "build whatever you want, wherever you want" system with little if any regard for the attendant impacts such developments impose on streets and neighborhoods.

In the face of these infrastructure problems, government is searching for a program to manage development. These approaches are the subject of intense debate. Some factions argue that planning and development controls will drive up land and housing prices, and reduce the affordability of housing. Still others claim that the only way to stop traffic congestion and pollution is for Bangkok to closely control where development can take place. Others are intent on linking urban development with infrastructure investments so that the impacts of real estate development can be mitigated by expanding infrastructure capacity.

## FORMAT OF THE REPORT

To help inform policy discussions, this study was conducted to provide some factual information about the structure and performance on Bangkok's land and housing markets. Chapter 2 assesses patterns of spatial development over the past 15 years. Chapter 3 provides estimates of residential land prices across the metropolitan area for both serviced and unserviced residential plots. The analysis documents land price inflation between 1988 and 1990 by geographic area. Chapter 4 examines the increasing costs of residential construction and illustrates how rising land prices are driving up the costs of housing. Chapter 5 presents the results of a random survey of housing projects currently marketing units in Bangkok, describing the types and prices of housing sold. The results are also compared with the previous survey of projects conducted in 1986. Chapter 6 outlines housing and urban development problems and reviews some of the past and current policy responses that have been initiated. Chapter 7 offers some recommendations for promoting affordable housing development and managing urban growth in Bangkok.

## CHAPTER 2

### THE BANGKOK METROPOLIS: ITS GROWTH AND PHYSICAL TRANSFORMATION 1974-1990

#### PHYSICAL DESCRIPTION OF THE BANGKOK METROPOLITAN AREA

Bangkok is Thailand's major administrative, economic and cultural center. As the major port, Bangkok straddles the Chao Phraya River at a point 33 kilometers north of the Gulf of Thailand. It is located on the fertile plains of the Chao Phraya delta. The city was established on the banks of the river to make it easier to defend against attacks, and the central urban area is surrounded by klongs (canals). Access across the Chao Phraya River is not abundant; lack of crossings has limited development in Nonthaburi and the areas south of the central district.

Until the late 1980s, much of the development of Bangkok was low density, with shophouses and residential structures rarely exceeding five stories in height. Now, there is a high-rise building boom and over 500 condominium projects have been initiated in the past five years. Most of the high-rise residential construction activity is concentrated around the Sukhumvit area. But rising land prices are pushing high rise development to other areas as well. High-rise office development has also taken off. From 1978 to 1988, office space increased by 750,000 square meters.

The mushrooming pattern of high-rise projects has inflicted tremendous traffic congestion on Bangkok. The pattern of circulation is poor with only limited options for cross-town travel, and limited roadway widths are incapable of handling travel demands at acceptable levels. As a result average travel time is quite high. Traffic problems are likely to worsen as more development comes on line and as the rate of auto ownership increases at an estimated 5.7 percent annual rate during the 1990s [SPURT, 1990].

Traffic congestion has started to spawn the decentralization of development outside of the city. As will be illustrated below, there has been considerable urban development in the fringe of Bangkok, outside the boundaries of the BMA. This pattern is the result of high land prices, a poorly developed system of distributor roads and traffic congestion.

## DEMOGRAPHIC GROWTH OF BANGKOK

From its founding until the 1950s, the population of Bangkok did not increase rapidly. In fact, from 1782 until 1937, its population increased by only 490,000. In 1937, the Bangkok Municipal Area was established consolidating administrative units in Pranakorn Province. These early patterns of urbanization are outlined in Table 2-1. The trend in population illustrates that growth did not really accelerate until the 1960s, when the city's population increased by 660,000 between 1965 and 1971, a 4.2% annual compound growth rate.

Since 1974, when aerial photographic coverage of the Bangkok Metropolitan area commenced, the changing pattern of urban development can be closely observed. In 1974, the urban area of the region was 466 square kilometers. Between 1974 and 1984, the urbanized area increased by about 34 square kilometers per year to 805 square kilometers in 1984. Since 1984, the pace of land conversion has been considerable, increasing nearly twice as fast--converting 74 square kilometers of land to urban development per year. Map 2-1, taken from the Seventh Plan Urban and Regional Transport Study, reveals the explosion of urban land conversion in the Bangkok region.

The population and demographic patterns exhibited in the Bangkok region reflect its growth and dominance as the Kingdom's key economic center. The current population of the BMR is estimated to be over 8,500,000 million and is projected to grow to over 11 million by the year 2001 [NESDB, 1986].

The sources of population growth in the BMR have shifted over the past several decades. Historically, migration has played an important role in shaping population growth. Migration to Bangkok accounted for 90 percent of the Kingdom's net internal migration in 1960 [NESDB, 1986]. But now, as the region grows, migration's role is declining. Natural increase currently accounts for the largest part of the region's population increase. According to the 1980 census, net migration into the BMR accounted for a population increase of 286,275 persons between 1975 and 1980, representing approximately 25 to 30 percent of the region's total population increase during this period.

The patterns of migration are complex and reflect the vitality of the rural sector, especially its ability to generate employment. If employment conditions in rural Thailand deteriorated, due to adverse weather conditions, for example, or falling commodity prices, the pace of migration to Bangkok could increase substantially, raising the rate migration to Bangkok to levels comparable to other Asian cities.

Jakarta, for example, with a 1950 population 1.8 million grew to 6.7 million in 1980. During the 1970s, it grew by nearly 4 percent per year. Bombay and Calcutta both grew tremendously

TABLE 2-1

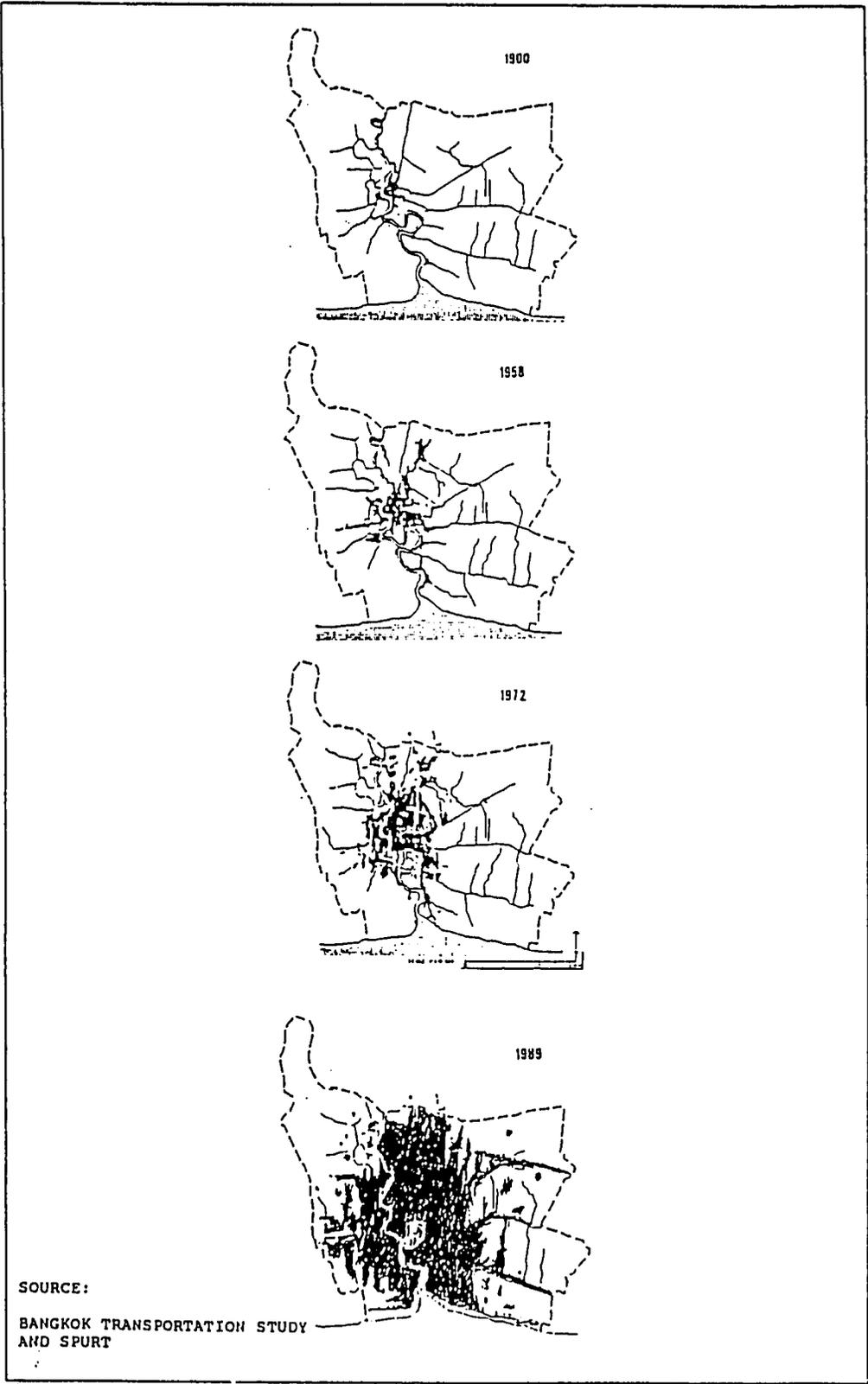
## BANGKOK POPULATION TRENDS 1937-1988

YEAR	POPULATION	ADMINISTRATIVE URBAN AREA Sq.Km.	DENSITY POPULATION Sq.Km.
1937	890,453	43.1	20,660
1953	1,171,654	66.7	17,566
1958	1,622,461	96.3	16,848
1965	2,407,585	173.0	13,917
1971	3,075,300	290.0	10,604
1974 *	4,910,300	466.4 **	10,528
1984 *	7,747,000	805.0 **	9,624
1988 *	8,509,000	1,100.0 **	7,735

\* BMR Population

\*\* Urbanized Area

Source: Pruanvatkarn, 1979, Halcrow Fox Associates,  
et.al. 1990, PADCO/NHA Bangkok Land Management  
Study, 1987.



MAP 2-1

during the 1950-80 period, increasing from 2.9 and 4.4 million to 8.5 and 9.5 million, respectively. If Bangkok's population increased at Jakarta's rate, its population could reach 14.8 million by the year 2001, 34 percent above the NESDB estimate. With such an increase in population, the resulting demand pressures would severely strain land and housing markets.

The patterns of population growth in the BMR have been following a typical process of suburbanization. Table 2-2 presents population data for the Bangkok Metropolitan Region by province, from 1970 to 1988. The pattern of population growth has clearly shifted to the suburban areas where there is ample land for expansion. In 1970, the BMA accounted for nearly 70 percent of the BMR population. However, by 1988, its share had declined by three percent to 67 percent. This is due to the rapid population growth and urban development in suburban areas. This pattern reflects the fact that most of the other provinces surrounding the BMA are increasing their share of the overall increase in population. Currently, Nonthaburi and Samut Prakan are the fastest growing provinces, increasing at compound growth rates of approximately 12 percent per year.

In absolute terms, the region is gaining between 150,000 and 200,000 persons per year. At an average household size of between 4 and 5 persons, this suggests that between 30,000 and 50,000 dwelling units are needed per year to meet population growth. Add to this the demand for housing by overcrowded households and the need to replace old and dilapidated units and the annual demand is likely to exceed 75,000 units per year.

## **THE BANGKOK ECONOMY**

During the 1970s and again in the later 1980s, the region's economy grew phenomenally, averaging over 8 percent per year during the 1970s and 10 percent during the past several years (in terms of real gross regional product). With the rapid growth has come a shift in the structural character of the economy, in terms of the types of prevailing economic activities. These changes are beginning to influence the physical and spatial development of the region.

While Bangkok represents only 15 percent of the Kingdom's population, in 1987 the BMR accounted for nearly 50 percent of the Kingdom's gross national product. Table 2-3 illustrates the distribution of gross national and regional products for the Kingdom and the region and the percent of national production originating in the BMR. As the table shows, manufacturing, construction, transport, banking, dwellings (residential building), and services are concentrated in the BMR. Manufacturing is heavily concentrated in the capital with about 75 percent of the gross regional product originating there for 1983 and 1987.

**TABLE 2-2**  
**DISTRIBUTION OF POPULATION GROWTH IN THE**  
**BANGKOK METROPOLITAN REGION**

PROVINCE	POPULATION IN THOUSANDS				ANNUAL COMPOUND GROWTH RATE %		
	1970	1980	1986	1988	70-80	80-86	86-88
BMA	3,185	4,852	5,773	5,717	4.3	2.9	-0.5%
NONHABURI	278	383	473	596	3.2	3.5	12.3
PATHUM THANI	242	332	406	435	1.8	3.4	3.5
SAMUT PRAKAN	341	503	625	789	4.0	3.6	12.4
SAMUT SAKHON	208	256	294	341	2.1	2.3	7.7
NAKHON PATHOM	434	545	614	631	2.3	2.0	1.4
<b>TOTAL SMR</b>	<b>4,688</b>	<b>6,871</b>	<b>8,185</b>	<b>8,509</b>	<b>3.9%</b>	<b>3.0%</b>	<b>2.0%</b>

Source: National Economic and Social Development Board, 1986; SPURT, 1990.

TABLE 2-3

TRENDS IN ECONOMIC ACTIVITY, BANGKOK METROPOLITAN REGION, 1983-87,  
IN MILLIONS OF CONSTANT 1972 BAHT

SECTOR	1983	BMR % OF KINGDOM	1986	BMR% OF KINGDOM	1987	BMR % OF KINGDOM	ANNUAL COMPOUND GROWTH RATE
Agriculture	5,732	8.2%	6,600	8.4%	6,647	8.6%	3.8%
Mining	436	5.4	449	4.5	653	6.3	10.6
Manufacturing	57,475	74.9	67,172	82.5	77,882	76.8	7.9
Construction	8,231	52.1	6,846	41.2	7,690	44.0	-1.7
Utilities	4,358	52.8	5,596	56.3	6,229	51.2	9.3
Transportation	14,997	61.1	18,557	65.9	20,264	62.0	7.8
Trade	27,834	48.3	33,461	52.2	41,579	55.6	10.6
Banking	6,773	64.4	7,647	65.0	10,052	65.9	10.4
Dwellings	5,198	32.4	5,719	33.0	6,113	32.2	4.1
Public Admin.	6,368	31.7	6,932	32.5	7,083	31.2	2.7
Services	23,877	50.1	28,943	52.8	32,520	51.3	8.0
TOTAL	161,280	45.4%	187,921	47.7%	216,711	48.6%	7.7%

Source: Gross Regional and Provincial Product, 1981-1987, 1989.

If the pattern of economic concentration in the BMR is not limited by ambitious development plans for the Eastern Seaboard, the economic vitality of the nation will depend greatly on the ability of the Bangkok region to efficiently support continued economic growth. This means that there must be an ample supply of land for industrial, commercial, and residential development and that the region's infrastructure must work properly to facilitate economic activity and social well-being.

The geography of economic growth is changing Bangkok's landscape, as the economy expands, its need for land for development increases. In terms of 1972 baht, economic output increased from 40,713 to 112,435 million baht, a 176 percent increase between 1970 and 1983-- 8.1 percent per year. During the 1980s, as illustrated in Table 2-4, the BMA grew at an average annual compound rate of 6.4 percent. In the outlying provinces, the rate of growth has been greater, averaging 7.5 percent per year. While the BMA is still the main location of economic activity in the region, averaging about 82 percent of all BMR economic output, there are signs that its dominance is slowly starting to shift toward outlying areas such as Samut Prakan.

New projections of 1989 employment, prepared by the NESDB's SPURT project, strongly suggest that employment growth is shifting to the suburban areas of the BMR. As Table 2-5 illustrates, between 1984 and 1985, total employment in the region increased by 654,000, a 3.5 percent annual compound increase. Of this total, slightly less than one-half (299,000) was located in the BMA. In percentage terms the BMR area outside the BMA is growing nearly three times as fast as the BMA. The major new growth areas are in Pathum Thani, Samut Sakhon and Nakhon Pathom. Samut Prakan and Pathum Thani have evolved into the region's two manufacturing districts since more than one-half of their economic activity is accounted for by manufacturing activity. The BMA and Nonthaburi, on the other hand, have evolved into predominantly service providing areas. As employment and housing development expand in these zones, they will become less dependent on the core of Bangkok and evolve as free-standing activity centers.

Pathum Thani, to the north of Bangkok, has been largely transformed from an agricultural to a residential area and, as mentioned above to a new center of industrial activity. It is well situated relative to central Bangkok and is not subject to periodic flooding. Large-scale manufacturing is locating in this area, particularly textiles and metal products. With its proximity to the airport and residential neighborhoods, this area will continue to develop into a major urban growth corridor.

To the southeast of Bangkok lies Samut Prakan, the first area to industrialize outside of the BMA in the 1960s. It still attracts the biggest share of large industrial facilities, but the level of environmental quality in the area is deteriorating and it may not compete well with Pathum Thani for clean manufacturing activities [Chulalongkorn Social Research Institute,

TABLE 2-4

ECONOMIC ACTIVITY IN THE BMR BY PROVINCE, 1981, 1983, 1987  
IN CONSTANT 1972 BAHT

PROVINCE	1981	SHARE OF BMR	1983	SHARE OF BMR	1987	SHARE OF BMR	ANNUAL COMPOUND GROWTH 1981-87
BMA	121,939	82.7%	132,818	82.4%	177,140	81.7%	6.4%
NONHABURI	2,065	1.4	2,461	1.5	3,477	1.6	9.1
PATHUM TANI	5,149	3.5	6,125	3.8	8,230	3.8	8.1
SAMUT PRAKAN	12,467	8.5	13,874	8.6	19,050	8.8	7.3
SAMUT SAKHON	2,589	1.8	2,569	1.6	4,450	2.1	9.4
NAKHON PATHOM	3,315	2.2	3,433	2.1	4,365	2.0	4.7
TOTAL	147,524	100.0%	161,280	100.0%	216,712	100.0%	6.6%

Source: Gross Regional and Provincial Product Accounts, 1981-87.

TABLE 2-5  
 EMPLOYMENT GROWTH IN THE  
 BANGKOK METROPOLITAN REGION,  
 1970-89 BY PROVINCE

PROVINCE	THOUSANDS OF EMPLOYEES				ABSOLUTE INCREASE 1984-89	ANNUAL GROWTH RATE 1984-89
	1970	1980	1984	1989*		
BMA	1,139	2,018	2,495	2,794	299	2.3%
NONHABURI	112	132	156	211	55	6.2
PATHUM THANI	107	167	236	333	97	7.1
SAMUT PRAKAN	131	221	243	269	26	2.1
SAMUT SAKHON	88	122	132	212	80	9.9
NAKHON PATHOM	199	229	246	341	95	6.5
TOTAL	1,776	2,889	3,506	4,160	654	3.5%

\* Estimated in Halcrow Fox and Associates, et. al.

Source: Chulalongkorn University Social Research Institute, Final Report on Projections of Economic Activities and Employment in the BMR, and Halcrow Fox and Associates et. al., Socioeconomic Projections, Working Paper No. 4 SPURT:NESDB 1990.

1986]. It is however, Bangkok's gateway to the Eastern Seaboard Economic Development Area, and it is the recipient of considerable public and private investments. With the development of new port facilities and the second Bangkok airport, this area will continue to urbanize well into the next century.

On the northwest lies Nonthakuri Province. Historically, it has been hampered by poor access to Bangkok, but now with the construction of the new Ratanathibet Road bridge over the Chao Praya River, its growth is accelerating.

These growth figures suggest that the BMA will slowly relinquish its economic dominance, as large-scale decentralization of economic activity out of the region continues. Much of the new industrial expansion in the outlying areas is the result of new foreign investment in Thailand.

The decentralization of Bangkok's economy and employment means that pressures for agricultural land conversion are increasing. The extent to which these lands can be used for industrial and residential development will largely determine whether land and housing supplies will be sufficient for guaranteeing affordable housing in the future. Given the scale of urbanization, making these suburban and exurban land markets competitive is critical for delivering affordable housing and ensuring that the region can expand.

## URBAN LAND CONVERSION AND DEVELOPMENT

Bangkok's pace of land development has been phenomenal, reflecting its rapid population and economic growth during the 1970s and 1980s. Between 1974 and 1988 a total of 396,000 rai of rural land has been converted to urban uses. This averages out to approximately 28,000 rai per year. This section assesses the patterns and trends in urban land conversion in the metropolitan area.

How land is urbanized greatly affects the quality of the urban environment, the cost and location of housing, the accessibility of jobs, and the flow of traffic. Shortages of land or development restrictions can greatly increase land prices and housing costs. Ultimately, by forcing up costs of living these rising prices can stifle Bangkok's continued economic expansion. Upward wage pressure can make Bangkok relatively less economically attractive.

But unbridled growth has costs as well. The increased urbanization will increase the impervious surface coverage of the region and exacerbate flooding problems. Without proper land-use planning, traffic congestion, loss of farmland and diminished open space will cause a reduction in the environmental quality of the Bangkok. Thus, the tremendous growth of Bangkok presents a great challenge. Land development policies need to consider both

the demand for and supply of land for urban development, particularly housing, and the implications of land development for the environment. Policies should be set to match demand with supply and minimize the environmental impacts [Dowall, 1981].

### **Description of the urbanization database**

Fortunately for this study, the NHA has been assembling data on urban development in the BMR since 1974. In 1987 the Bangkok Land Management Study team made use of the NHA data for the period from 1974 to 1984. This section reports on our updating of this analysis to the end of 1988, using new aerial photographic information tabulated by the NHA.

The analysis of spatial patterns of urban development in the region is based on data covering housing and land-use information for each subdistrict in the study area. A subdistrict is an administrative unit similar to a township. There are 353 subdistricts located in the study area. For the assessment of urban land conversion, data for 306 subdistricts is complete.

### **Detailed description of land conversion process**

Using the Bangkok Land Management Study database, it is possible to assess the patterns of land use change between 1974 and 1984 and compare it with recent trends up to 1988. Tables 2-6 and 2-8 provide a breakdown of the land conversion trends by distance from the city center, Tables 2-7 and 2-9 tabulate land use and urban land conversion according to three geographic areas outlined in Map 2-2. In 1974, approximately 13 percent of the study area was urbanized, that is, 291,481 of 2,281,300 rai. Ten years later, by 1984, the urbanized area increased to 503,156 rai, putting the portion of the study area that is urbanized at 22 percent. During the next four years, the urbanized area increased to 687,500 rai, indicating that 30 percent of the metropolitan area was urbanized.

In the BMA, the urban land area increased from 208,469 rai in 1974, to 341,957 rai in 1984 and to 397,881 rai in 1988. This has caused the overall percentage of urban land in the BMA to increase from 24.5 percent in 1974, to 40.5 percent in 1984 and to 46.7 percent in 1988. Clearly the massive pace of urban land conversion in the Bangkok region has gradually shifted to the outlying provinces surrounding the BMA. This trend is clearly shown in Tables 2-7 and 2-9, Figure 2-1, and Map 2-1.

The pace of urban land conversion from the mid-1970s to the mid-1980s was phenomenal, averaging about 21,250 rai per year. But it increased even more during the 1984-8 period-- more than doubling to 46,250 rai per year. Most of the urban development taking place between 1974 and 1984 was concentrated between 11 and 20 kilometers from the city center. Nearly 50 percent of all

TABLE 2-6

URBAN LAND USE 1974, 1984, 1988 BANGKOK METROPOLITAN AREA  
BY DISTANCE FROM CITY CENTER, IN RAI

DISTANCE FROM CITY CENTER, KM	TOTAL LAND AREA	1974	1984	1988	PERCENT OF LAND AREA IN URBAN USE		
		URBAN LAND USE	URBAN LAND USE	URBAN LAND USE	1974	1984	1988
0-5	63,019	52,150	57,906	57,925	82.8%	91.9%	91.9%
6-10	114,988	41,006	59,613	69,031	35.7	51.8	60.0
11-20	594,125	126,150	221,913	269,088	21.2	37.4	45.3
21-30	548,538	44,394	84,619	128,675	8.1	15.4	23.5
OVER 30	960,638	27,781	79,106	162,781	2.9	2.9	16.9
TOTAL *	2,281,300	291,481	503,156	687,500	12.8%	22.1%	30.1%

\* TOTALS may not add due to rounding.

Source: Tabulations of National Housing Authority Aerial Photographic Surveys, 1987 and 1990.

TABLE 2-7

BANGKOK METROPOLITAN AREA URBAN LAND USE BY AREA  
1974, 1984, 1988, IN RAI

AREA	TOTAL LAND AREA	URBAN LAND USE RAI			PERCENT OF LAND AREA IN URBAN USE		
		1974	1984	1988	1974	1984	1988
Central Core	89,038	63,144	77,369	79,400	70.9%	86.9%	89.2%
Outer BMA	762,488	145,325	264,588	318,481	19.1	34.7	41.8
Fringe Area *	1,429,775	83,013	161,194	289,620	5.8	11.3	20.3
TOTAL STUDY AREA	2,281,300	291,481	503,156	687,500	12.8%	22.1%	30.1%

\* Beyond BMA Boundaries

\*\* Totals may not add due to rounding

Source: Tabulations of National Housing Authority Aerial Photographic Surveys, 1987 and 1990.

TABLE 2-8

URBAN LAND CONVERSION 1974-1984 AND 1984-1988,  
BY DISTANCE FROM CITY CENTER, IN RAI

DISTANCE FROM CITY CENTER, KM	1974-84 LAND CONVERTED URBAN USE RAI	PERCENT OF TOTAL CONVERTED	1984-88 LAND CONVERTED URBAN USE RAI	PERCENT OF TOTAL CONVERTED
0-5	5,756	2.7%	19	0.0%
6-10	18,606	8.8	9,425	5.1
11-20	95,763	45.2	47,175	25.6
21-30	40,225	19.0	44,056	23.9
OVER 30	51,325	24.2	83,675	45.4
TOTAL	211,375	100.0%	184,344	100.0%

Source: Tabulations of National Housing Authority Aerial Photographic  
Surveys, 1987 and 1990.

TABLE 2-9

URBAN LAND CONVERSION 1974-1984 AND 1984-1988,  
BY AREA, IN RAI

AREAS	1974-84 LAND CONVERTED URBAN USE RAI	PERCENT OF TOTAL CONVERTED	1984-88 LAND CONVERTED URBAN USE RAI	PERCENT OF TOTAL CONVERTED
CENTRAL CORE	14,225	6.7%	2,031	1.1%
OUTER BMA	119,263	56.3	53,894	29.2
FRINGE AREA *	78,181	36.9	128,431	69.7
TOTAL**	211,675	100.0%	184,344	100.0%

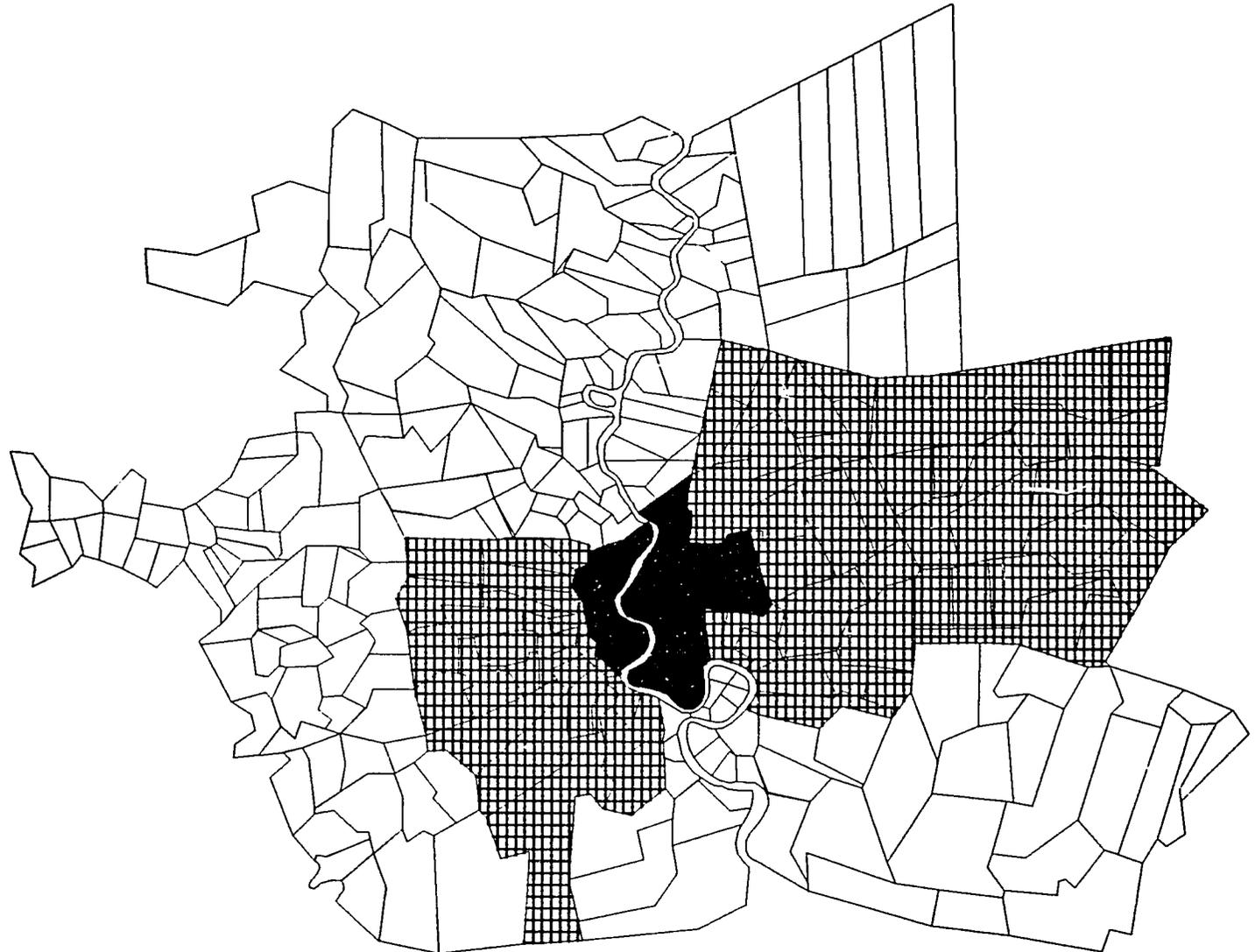
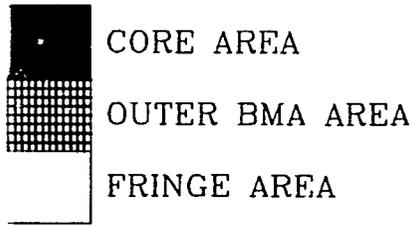
\* Beyond BMA boundaries

\*\* Totals may not add due to rounding

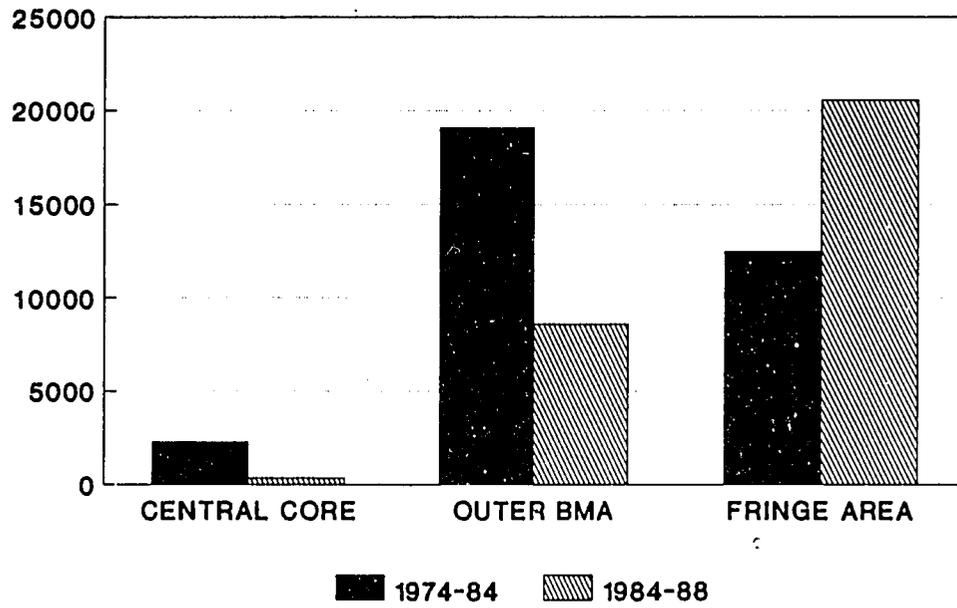
Source: Tabulations of National Housing Authority Aerial Photographic Survey, 1987 and 1990.

# MAP 2-2

## CENTRAL CORE, OUTER BMA & FRINGE AREAS



**FIGURE 2-1**  
**URBAN LAND CONVERSION IN STUDY AREA**  
**1975-84, 1984-88**



PADCO-LIF LAND MARKET ASSESSMENT, 1990

land converted to urban use was located in this band, despite the fact that it accounts for only 26 percent of the total land in the study area. By 1974, some of the subdistricts have had over 60 percent of their land area built-up, and development started to shift to more distant locations. During the 1974-1984 decade, there was considerable conversion of land to urban uses beyond 20 kilometers from the city center. Nearly 80,000 rai of land were converted in this outer fringe area.

In contrast, little land was converted in the inner urban area. In the core of the city, there was nearly 26,000 rai of vacant land in 1974. However, during the 1974-84 decade less than 14,500 rai were converted to urban use. The net result of this lack of development of inner urban land is that by 1984, only 87 percent of the land was urbanized. Despite the fact that these land has excellent access, development still pushes out to the urban periphery.

Between 1984 and 1988, 184,344 rai of land were converted to urban uses. Unlike the period between 1974 and 1984, most of the land development took place on the fringe of the region. In fact, 45 percent of the land conversion between 1984 and 1988 took place beyond 30 kilometers from the city center. During the boom years, residential developers have been forced to fringe areas to seek out low-cost land for housing estate development. As we will see in the next chapter, land located between 11 and 20 kilometers from the city center was no longer affordable for building single-family residences.

In the 1974-84 period as well as more recently, the conversion of land has tended to concentrate in the suburban subdistricts since many of the older, more central subdistricts already have been largely built-up. This forces development to outer zones where land is plentiful and less expensive. Maps 2-3, 2-4, and 2-5 illustrate the percent of total subdistrict land area that was developed for 1974, 1984 and 1988 respectively. Maps 2-6 and 2-7 show the amount of land converted to urban uses for the 1974-84 and 1984-88 period respectively.

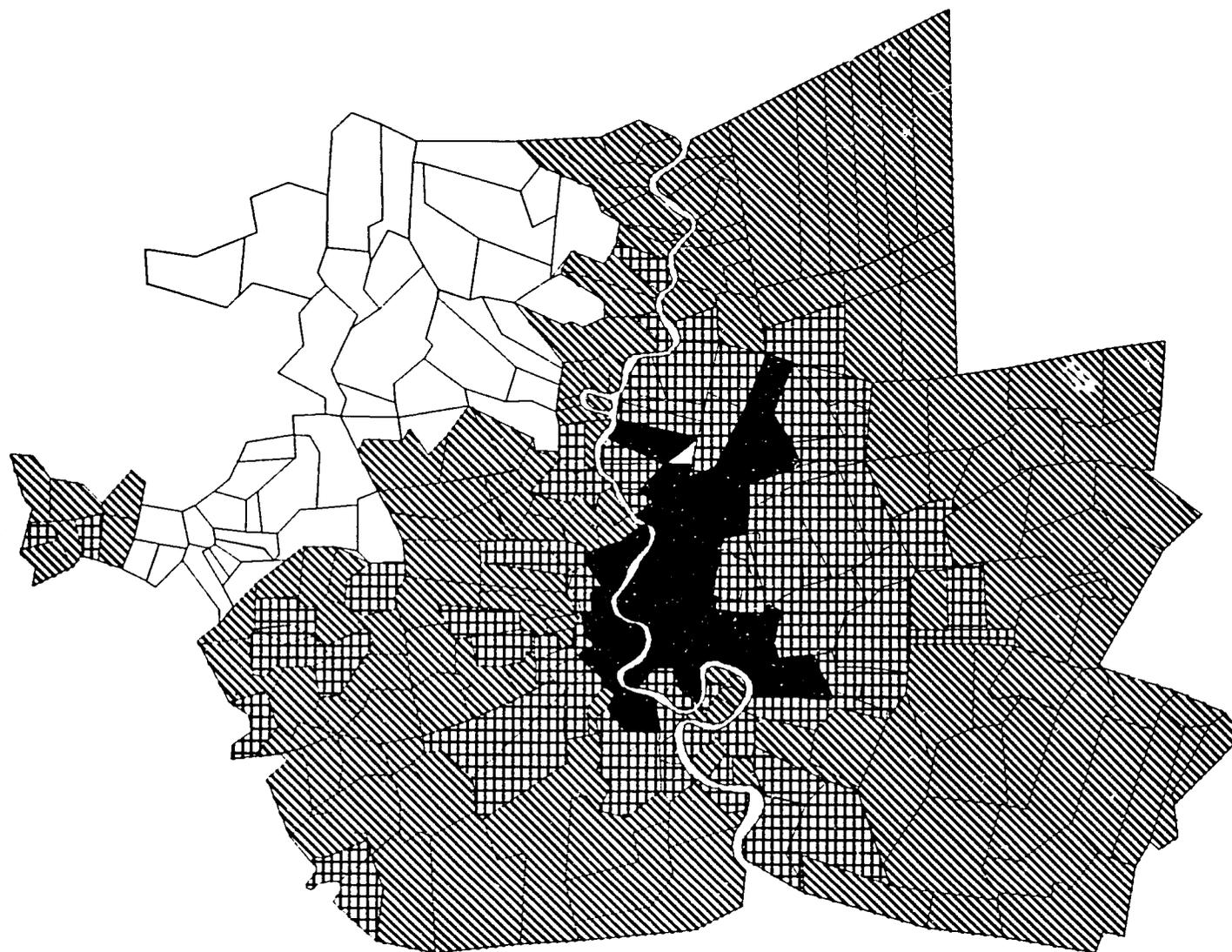
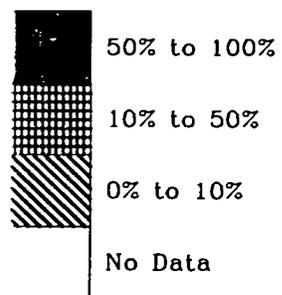
The next section of this chapter presents tabulations of housing stock in the study area for 1974, 1984 and 1988. These data illustrate the spatial decentralization of housing production in the region.

#### **HOUSING PRODUCTION TRENDS 1974 TO 1988**

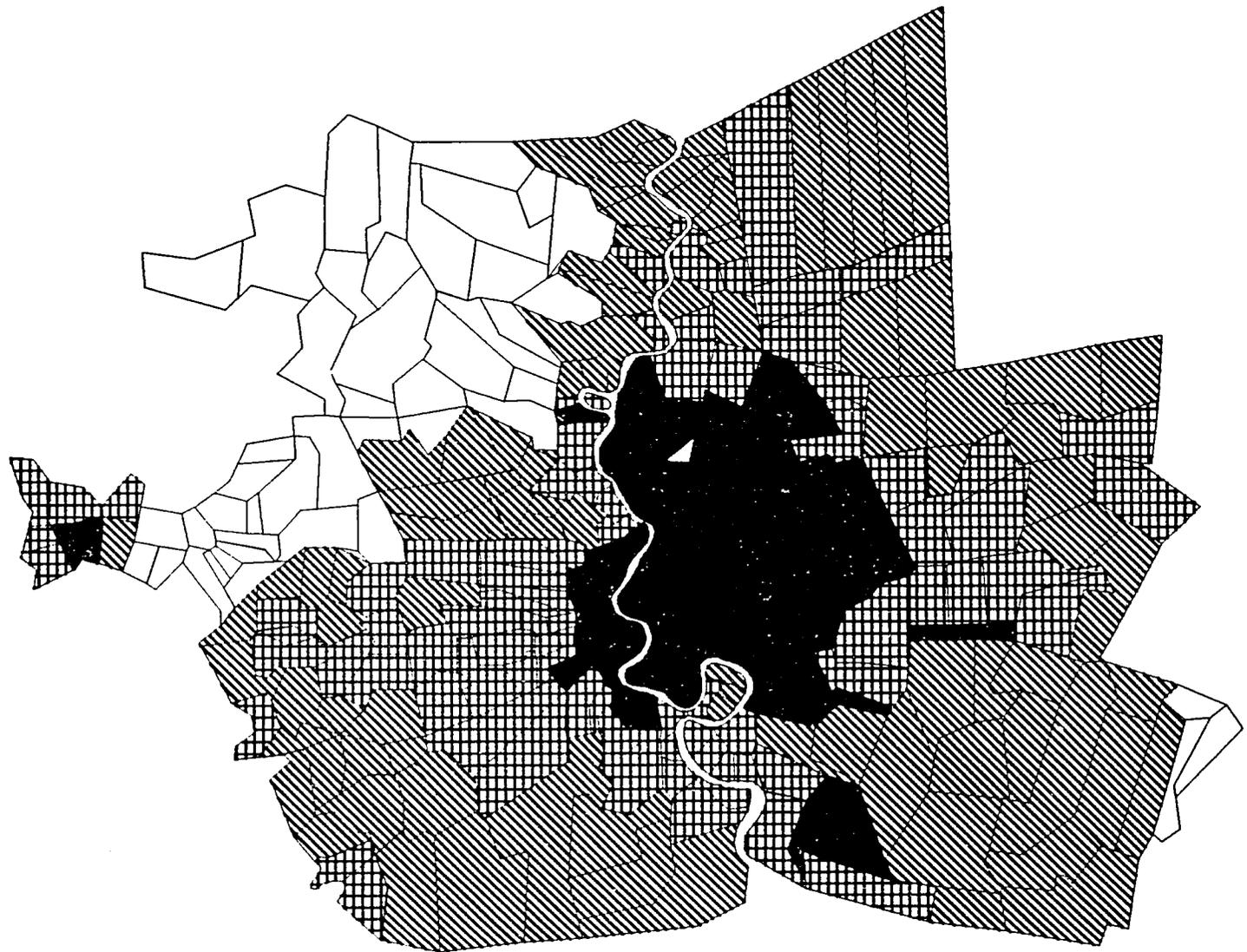
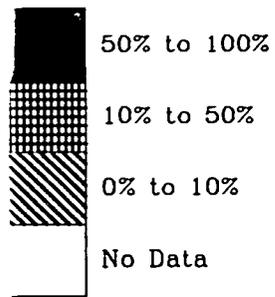
Residential development accounts for about 50 percent of the land used by urban development. Thus, housing development patterns closely shape the urban landscape. Over the past fourteen years Bangkok's housing stock has grown rapidly responding to the needs of an increasing population. The total housing stock is estimated to have increased from 585,163 in 1974 to 1,256,382 in 1988, an absolute increase of 671,219 dwelling units. This trans-

# MAP 2-3

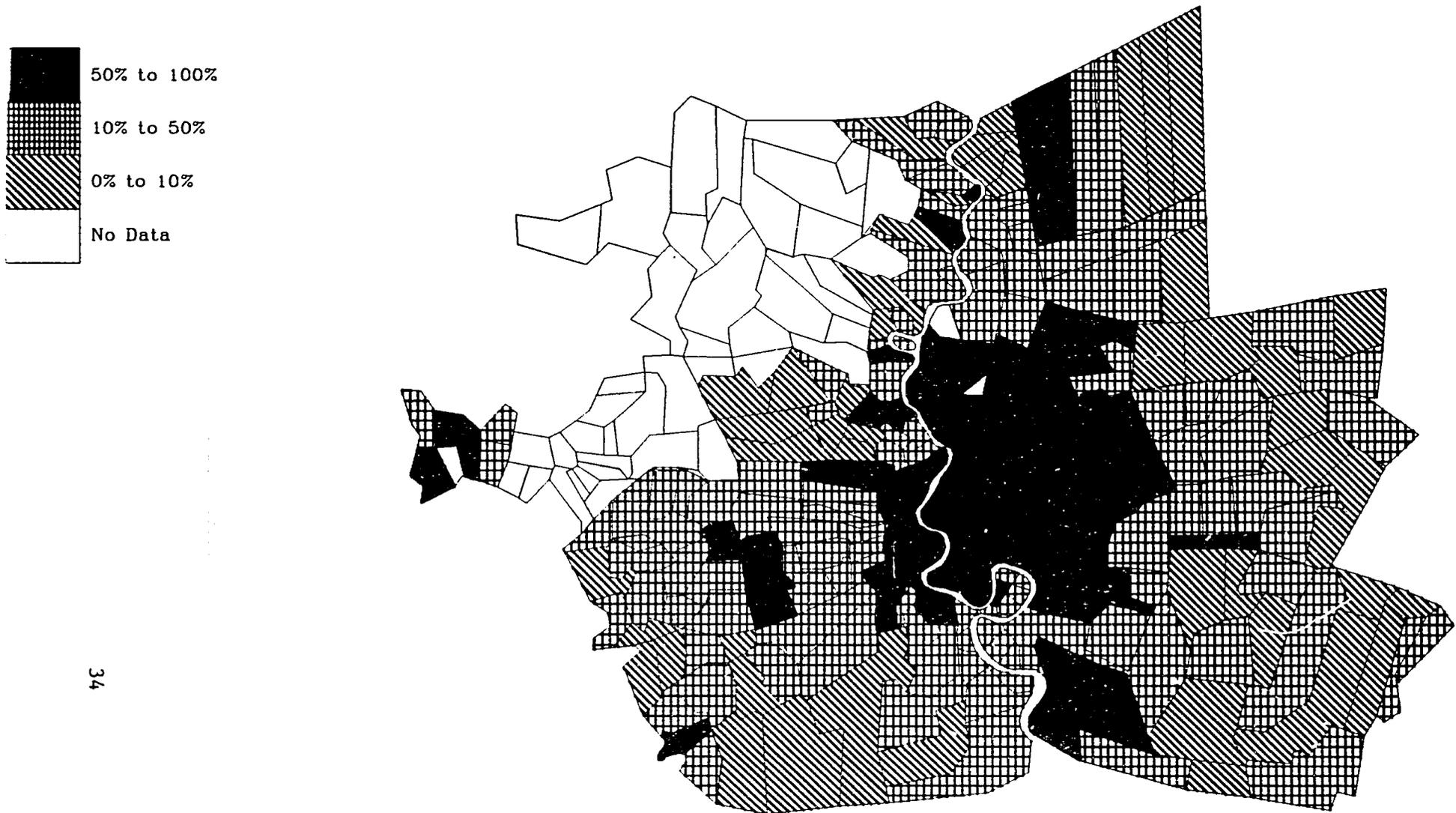
## PERCENT OF URBANIZED LAND, 1974



MAP 2-4  
PERCENT OF URBANIZED LAND, 1984

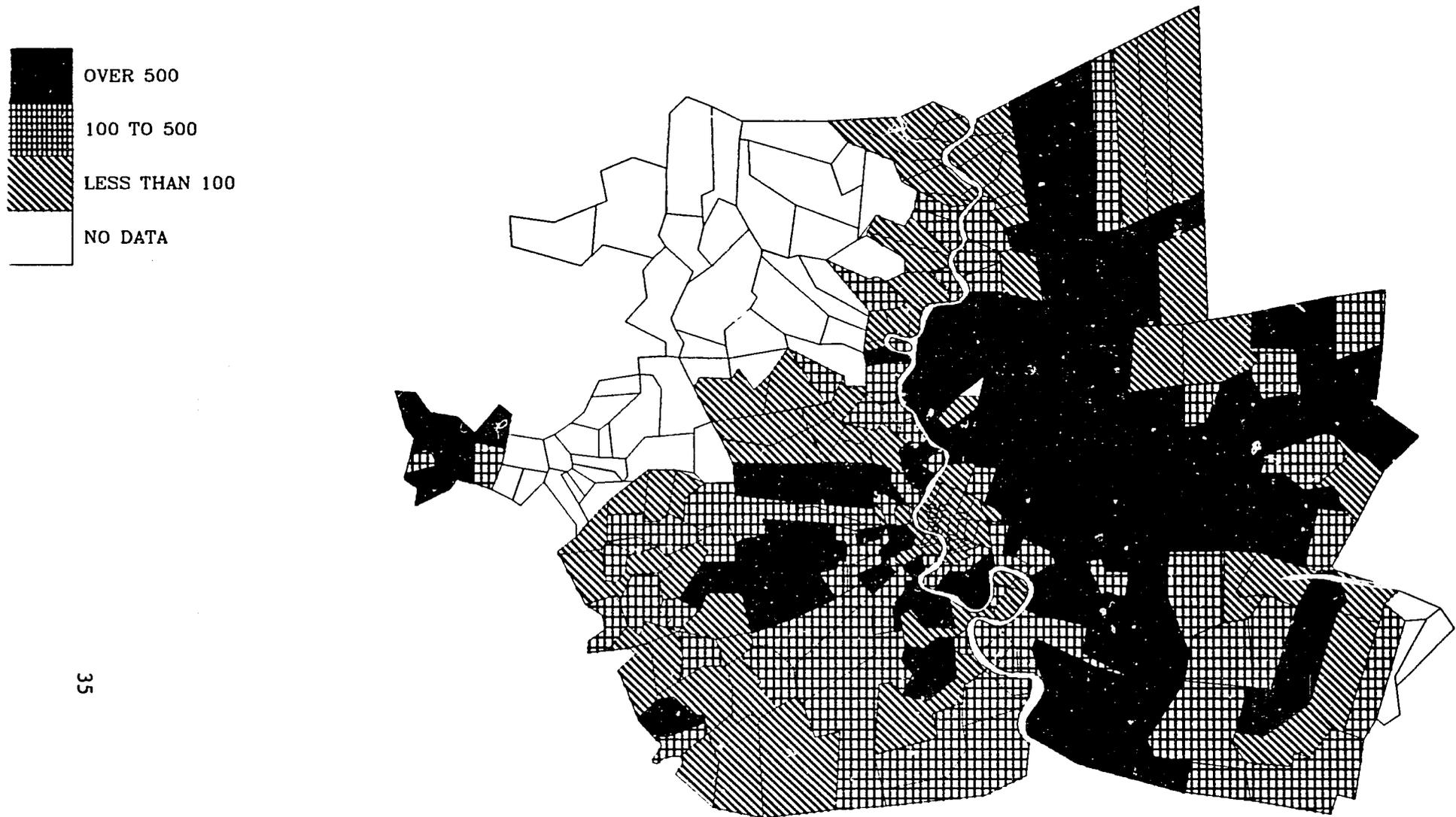


# MAP 2-5 PERCENT OF URBANIZED LAND, 1988



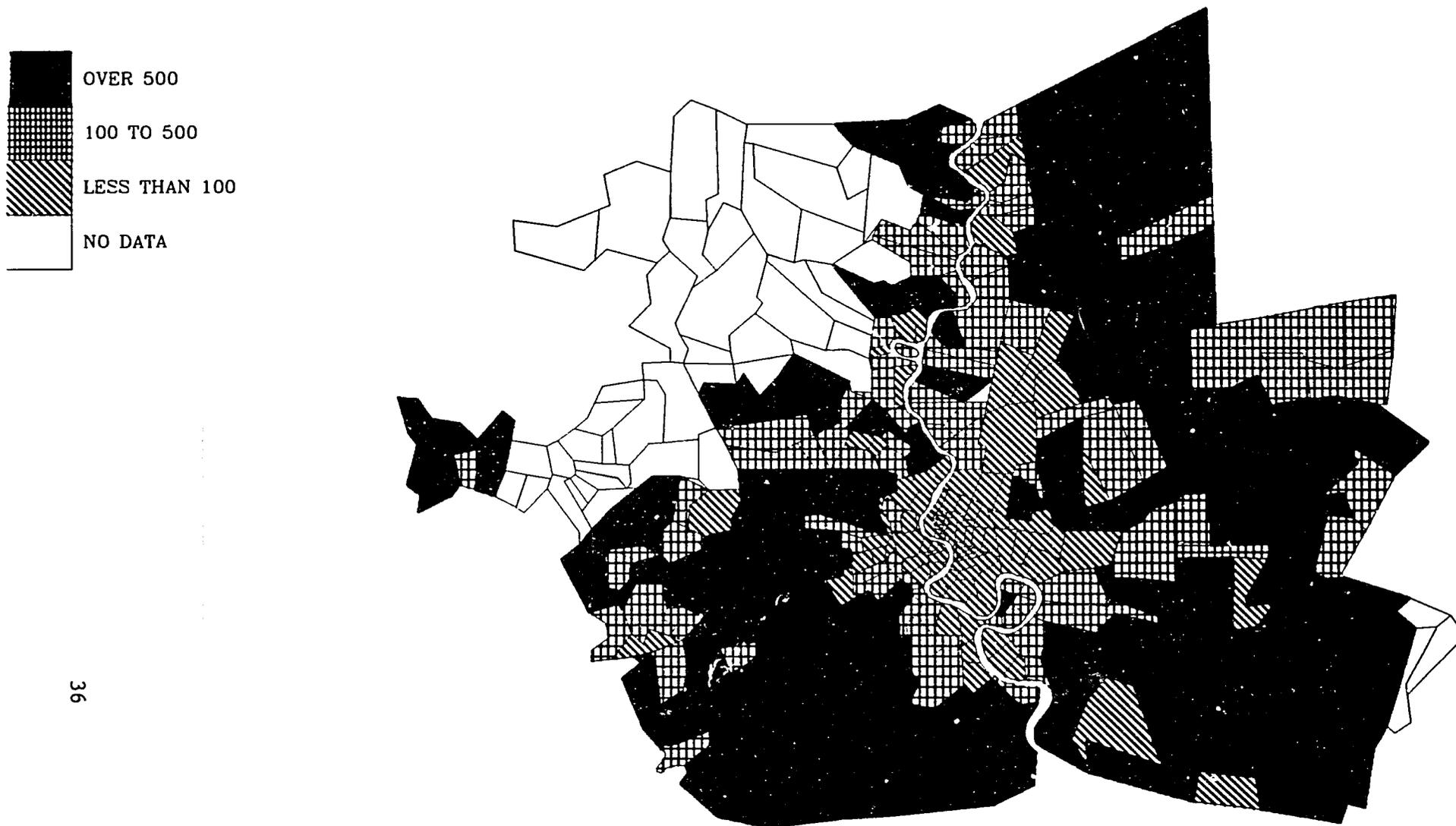
MAP 2-6

RAI CONVERTED TO URBAN USE, 1974-84



MAP 2-7

RAI CONVERTED TO URBAN USE, 1984-88



lates into an annual increase of 5.7 percent. About 44 percent of the increase took place in the past four years, with the housing stock increasing from 959,775 to 1,265,382 dwelling units. During the past four years, Bangkok's housing stock increased at an annual compound rate of 7 percent.

Table 2-10 presents information of housing stock for 1974, 1984 and 1988 for selected types of housing units. The data presented in this table are based on revised tabulations of the 1974, 1984 and 1988 aerial photographs taken of the region. The data in Table 2-10 do not include tabulations of other housing for 1984 or condominiums for 1988. Thus the totals slightly underestimate Bangkok's actual stock of housing for 1984 and 1988. Appendix C contains a revised estimate of housing for 1974, 1984 and 1988 which incorporate these adjustments. It also modifies tabulations of both large-scale developer-built housing and small-scale/independently built housing categories. These tabulations of housing stock are different from those reported in previous years and consequently must be explained.

According to the Housing and Urban Poor Sector Study report prepared by the National Housing Authority's Center for Housing and Human Settlement Studies [1985], there are eight distinct types of housing currently represented in the region. These include the following:

1. **Shophouses:** These units are typically constructed in blocks or terraces of eight to 20 units. Each unit is between three and five stories high, with four stories being the most frequent. The size of each unit is approximately four meters wide by 12 meters deep. Thus the size of a shop house unit ranges from 144 to 240 square meters with 192 square meters as the average. The ground floor of each unit is normally used for commercial activities, with the second and third floors used for residential purposes. In some cases, the second and even the third floors are used for commercial activities such as storage of products or the fabrication of goods. Normally, shop houses border thanons and large sois. They are frequently built on the front portions of large residential land and housing subdivisions.

2. **Land and housing projects:** These are developer-built residential projects ranging from 50 units up to over 2,000 dwelling units. A variety of housing units are normally built in these projects, including single-family detached housing, duplexes, townhouses, and occasionally multi-flat buildings. The projects are normally well-placed and contain a wide range of services, and amenities such as recreational areas, water, sewage disposal, and security. Plot sizes range from 20 to more than 100 square wah (each wah is four square meters) depending on the type of unit and the price and market orientation of the development.

3. **Land subdivision projects:** These projects are basic land development schemes in which land is offered for sale to individ-

TABLE 2-10

HOUSING STOCK IN METROPOLITAN BANGKOK, 1974  
1984, AND 1988 BY TYPE OF HOUSING\*

TYPE OF HOUSING	1974	1984	1988	ABSOLUTE INCREASE 1974-88	SHARE OF 1974-84 INCREASE	ANNUAL COMPOUND INCREASE	ABSOLUTE INCREASE 1984-88	SHARE OF 1984-88 INCREASE	ANNUAL COMPOUND INCREASE 1984-88
Large-Scale/ Developer-Built	20,193	113,755	204,620	93,562	25.0%	18.9%	90,865	30.6%	15.8%
Shophouses	134,766	247,552	257,266	112,786	30.1	6.3	9,714	3.3	1.0
Small-Scale/ Independently-Blt.	262,345	363,323	538,858	100,978	27.0	3.3	175,535	59.2	19.7
Slum Housing	139,326	160,145	170,638	20,819	5.6	1.4	10,493	3.5	1.6
Public Housing	28,533	75,000	85,000	46,467	12.4	10.1	10,000	3.4	3.2
<b>TOTAL</b>	<b>585,163</b>	<b>959,775</b>	<b>1,256,282</b>	<b>374,612</b>	<b>100.0%</b>	<b>5.1%</b>	<b>296,607</b>	<b>100.0%</b>	<b>7.0%</b>

\* Based on aerial photographic surveys for 1974, 1984 and 1988. The 1984 the count excludes the categories "other housing" and "condominiums". Appendix C contains a retabulation of these counts and reclassification of large-scale developer-built housing projects.

Source: Tabulations of National Housing Authority Aerial Photographic Surveys, 1987 and 1990.

uals for housing construction. The level of services provided in the projects varies, with some projects providing little more than a plot of land. On the other hand, the some land development projects are geared to very high income households, offering large plots, golf courses, and security.

4. Individual housing: In some portions of Bangkok housing is located on small plots of land. These are typically single units, small terraces or blocks of housing. These types of developments are often located in infill areas or in outlying areas where buyers have purchased several rai of land.

5. Klong housing: Housing units have been constructed out over Bangkok's numerous canals. In some of the inner urban areas these housing settlements have deteriorated into slums.

6. Slum and squatter settlements: These informal settlements are located on public, private, or religious land which is either rented or squatted on. The housing is self-built and much of it is temporary. Living conditions vary from poor to fair.

7. Public housing projects: The public sector, through the NHA, or the Bangkok Metropolitan Administration, has built detached, semi-detached, row walk-up, and multi-story housing. Many projects are large-scale, comprised of between 300 and several thousand units.

8. Other: There are other forms of housing in the region, such as dormitory housing for workers, students, and military personnel. Also, some people are living in other types buildings such as factories, garages, and warehouses.

It is quite difficult to clearly delineate these eight categories of housing through aerial photographic interpretation. On the basis of discussions with NHA staff and review of the three sets of housing stock data, adjustments have been made. Some categories have been combined with others. The new categories are as follows:

1. Large-scale developer-built housing: This is the same as the land and housing projects listed above. It concentrates on large-scale housing estates, normally over 50 units.

2. Shophouses: Same as above.

3. Small-scale or independently built housing: This category is a combination of the land subdivision, individual housing, and klong housing listed above. Its common thread is that the housing units are not built on a mass-production scale as is the case of developer-built housing or public sector housing. This type of housing spans a wide range of housing, extending from low-cost infill klong housing to orchard housing ("ranchettes" or "hobby farms") constructed on several rai. It can include small developer-built housing projects.

4. Slum housing: Same as listed above.

5. Public housing: Same as listed above.

An additional adjustment has been made for statistical purposes. The category, "Other housing", was tabulated for 1974 and 1984 but not in 1988. For consistency, it has been dropped from these earlier years.

These adjustments preserve the important distinctions between the range of housing found in the Bangkok metropolitan area. The reassessment of the data suggests that there is some apparent overlap between the classifications of large-scale developer built housing and small-scale or independently built housing. This has led to the under-counting of developer-built projects and the over counting of small-scale or independently-built housing.

For example, in Table 2-10, the increase in developer-built housing between 1984 and 1988 was 90,865 units. Small-scale or independently-built housing increased by 175,535 over the same time-period. However, building permit data tabulated by the Government Housing Bank (see Table 1-3) indicates that between 1987 and June of 1990, permits for developer housing increased by 170,555 units and permits to individual builders increased by 105,424 units. The difference in proportions is striking and suggests that there may be some overlap in the two categories. However, the addition of 58,640 condominium units tabulated in a special ground survey conducted by the NHA in 1988 increases the "developer-built" housing stock considerably, close to the GHB estimate. It should be mentioned that overall the two estimates of housing stock increase are quite similar. The aerial photograph-based approach suggests an annual housing stock increase of 74,000. The GHB's tabulations suggest 75,700. Appendix C contains an estimate of Bangkok's housing stock for 1974, 1984 and 1988, making adjustments for other housing and condominiums, and the underestimation of developer-built housing.

During the time period of the study it was not possible to resolve the issues regarding housing typologies. The overlapping categories should be clarified and modified for future tabulations. It would be appropriate for a working group to be established to develop a set of housing typologies suitable for planning and policy-making purposes.

During the 1974 and 1984 period, developer-built housing accounted for one-fourth of the total housing stock increase. Between 1984 and 1988, the share of developer housing production increased to nearly 31 percent as the stock of housing increased from 113,755 in 1984 to 204,620 in 1988. If we include tabulations of condominium projects as a form of developer housing and adjust the estimate to reflect building permit trends (see Appendix C), the increase in the developer-built housing stock in-

creases to 270,800 units. With this adjustment, the developer-built housing segment of the market contributed 49.6 percent of the adjusted increase in Bangkok's housing stock between 1984 and 1988.

As expected, the production of shophouses plummeted as excessive inventory was gradually sold off. The share of shophouse production between 1974-84 was 30.1 percent. In the 1984-88 period it was 1 percent.

Small-scale or independently-built housing expanded tremendously between 1984 and 1988, adding 175,535 units to supply. However, if we adjust for over-counting, the increase is much lower--116,672 units (see Appendix C). These projects increased at an annual rate of nearly 20 percent per year (7.2 percent after adjustment), reflecting the continued vitality of small-scale residential developers.

Slum housing continued to decline in relative importance as a housing supplier. The increase in slum housing was modest during the 1984-8 period, increasing at an annual rate of 1.6 percent, about the same rate as during the 1974-84 period.

Public housing in the region continued to expand, but not nearly at the rate achieved in earlier years. Approximately 10,000 dwelling units were added between 1984 and 1988, an annual rate of 3.2 percent. The availability of land for public housing projects continues to be a major problem constraining production.

### **The location of housing**

Tables 2-11 and 2-12 present tabulations of housing stock for 1974, 1984 and 1988 by distance from the city center and by area. The increase in Bangkok's housing stock between 1974 and 1984 was largely concentrated in the ring between 11 and 20 kilometers from the city center. This area accounted for 51 percent of total housing production during the ten years. In contrast, outlying areas beyond 20 kilometers comprised 21 percent of the decade's total housing production. The remaining production, 28 percent was concentrated in the core area of the region, less than 10 kilometers from the city center.

In contrast, the 1984-1988 period exhibited a shift in the location of housing development, with construction increasing proportionately in both the core and the fringe. Development in the 11 to 20 kilometer ring accounted for nearly 40 percent of total production. Core area housing development increased to comprise 37 percent of the increase as infill projects became popular. If we add the NHA's ground survey of condominium projects, the housing stock increase in the core is even more pronounced. As Table 2-13 illustrates, most of the condominium projects are located within 10 kilometers of the city center. On the other hand, development has also pushed out to the fringe of

TABLE 2-11

HOUSING STOCK IN METROPOLITAN BANGKOK 1974,  
1984, AND 1988 BY DISTANCE FROM CITY CENTER

DISTANCE FROM CITY CENTER, KM	1974 TOTAL HOUSING STOCK	1984 TOTAL HOUSING STOCK	1988 TOTAL HOUSING STOCK	1974-84 ABSOLUTE INCREASE 1974-84	1974-84 SHARE ANNUAL COMPOUND INCREASE	1984-88 ABSOLUTE INCREASE 1984-88	1984-88 SHARE OF INCREASE	1984-88 ANNUAL COMPOUND INCREASE	
0-5	228,100	278,187	319,154	50,087	13.4%	2.0%	40,967	13.8	3.5%
6-10	116,183	173,640	242,322	57,457	15.3	4.1	68,967	23.2	8.7
11-20	159,276	330,809	448,107	191,533	51.1	9.0	117,298	39.5	7.9
21-30	42,210	85,012	125,218	42,802	11.4	7.3	40,206	13.6	10.2
OVER 30	59,393	92,127	121,581	32,734	8.7	4.5	29,454	9.9	7.2
TOTAL	585,163	959,775	1,256,382	374,612	100.0%	5.1%	296,607	100.0%	7.0%

Source: Tabulations of National Housing Authority Aerial Photographic Surveys, 1987 and 1990.

TABLE 2-12

HOUSING STOCK IN METROPOLITAN BANGKOK  
1974, 1984, 1988 BY LOCATION

LOCATION	1974 TOTAL HOUSING STOCK	1984 TOTAL HOUSING STOCK	1988 TOTAL HOUSING STOCK	ABSOLUTE INCREASE 1974-84	1974-84 SHARE OF INCREASE	1974-84 ANNUAL COMPOUND INCREASE	ABSOLUTE INCREASE 1984-88	1984-88 SHARE OF INCREASE	1984-88 ANNUAL COMPOUND INCREASE
CITY CORE	278,338	334,461	401,818	56,123	15.0%	1.9%	67,357	22.7%	4.7%
OUTER BMA	177,472	376,017	510,882	198,545	53.0	7.8	134,865	45.5	8.0
FRINGE AREA *	129,353	249,296	343,682	119,943	32.0	6.8	94,386	31.8	8.4
TOTAL	585,163	959,775	1,256,382	372,612	100.0%	5.1%	296,607	100.0%	7.0%

\* Outside BMA Study Area.

Source: Tabulations of National Housing Authority Aerial Photographic Surveys, 1987 and 1990.

TABLE 2-13  
 RESIDENTIAL CONDOMINIUM UNITS BY DISTANCE  
 FROM CITY CENTER, 1988

DISTANCE FROM CITY CENTER, KM	NUMBER OF UNITS	PERCENT TOTAL
0-5	26,304	44.8%
6-10	19,795	33.8
11-20	12,541	21.4
21-30	0	0.0
OVER 30	0	0.0
<b>TOTAL</b>	<b>58,640</b>	<b>100.0%</b>

Source: National Housing Authority tabulations of a ground survey of condominium projects, 1989.

Bangkok as well, with the area beyond 20 kilometers accounting for 23.5 percent of production. These trends are also reflected in Table 2-12 as well. Maps 2-8 through 2-19 illustrate the location of housing production by type for the 1974-1984 and 1984-1988 periods.

The housing production patterns indicate that the inner-suburban area is no longer the key center of housing development activity. As illustrated by Maps 2-8 through 2-19, increasingly, housing development is shifting to outlying areas as well as infill locations. In the future, there will be little infill development as the area within 20 kilometers becomes developed. Table 2-7 shows that vacant land for development is declining in the core area of the city--only 11 percent of the area is still vacant, and much of this land is not developable. Massive redevelopment is not likely to occur unless land expropriation and infrastructure development policies change.

Given the strong demand existing for housing and commercial and industrial development, urbanization will clearly shift to the fringe areas. These are areas with limited infrastructure and support services. Housing development in these areas will also tend to consume more land as residential plot sizes on the fringe tend to be larger. This will increase pressures on more urban lands in the future.

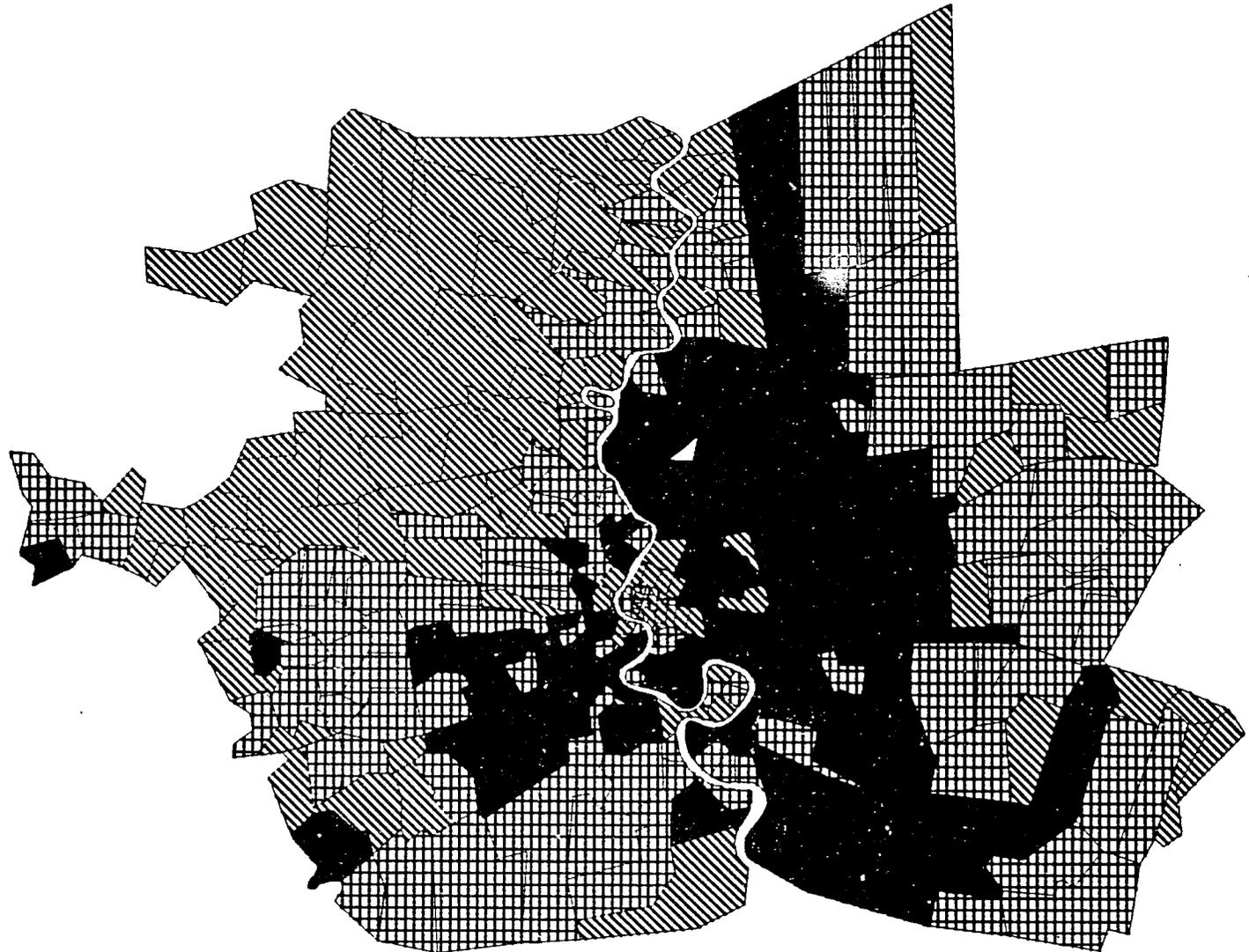
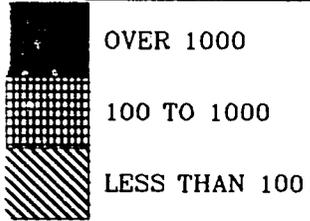
Despite the rapid decentralization of residential development, rising land prices are forcing developers to increase residential densities. As discussed in Chapter 5, there have been some interesting changes in project densities. For example, between 1986 and 1990, the density of private developer land and housing projects increased sharply from 5.6 to 8.9 units per rai. This shift reflects the private land and housing market sector's strategy to deliver more economical units to the massive Bangkok lower-middle-income housing market. The average density of land subdivision, institutional projects, and slum and squatter settlements also increased modestly. On the other hand, the density of individual housing developments declined. This reflects the fact that these projects are increasingly locating on the outer edges of the periphery (43 percent of the additional individual units built between 1974 and 1984 were located beyond 20 kilometers of the city center). As would be expected, shophouses have maintained their high levels of density over time. The biggest shift in the market has been the rebirth of the condominium. After flooding the market in the 1970s, condo projects are back and providing housing opportunities for middle as well as upper-income households. Some developers have even taken the concept and applied it to low-cost housing projects as well.

The patterns of increasing density for subdivisions and private developer housing reflect increasing costs of land and the deliberate attempt by many developers to aim their products at the lucrative mass market. In the future, if this pattern of increased density holds, less land will be converted from

MAP 2-8

TOTAL HOUSING STOCK CHANGE 1974-84

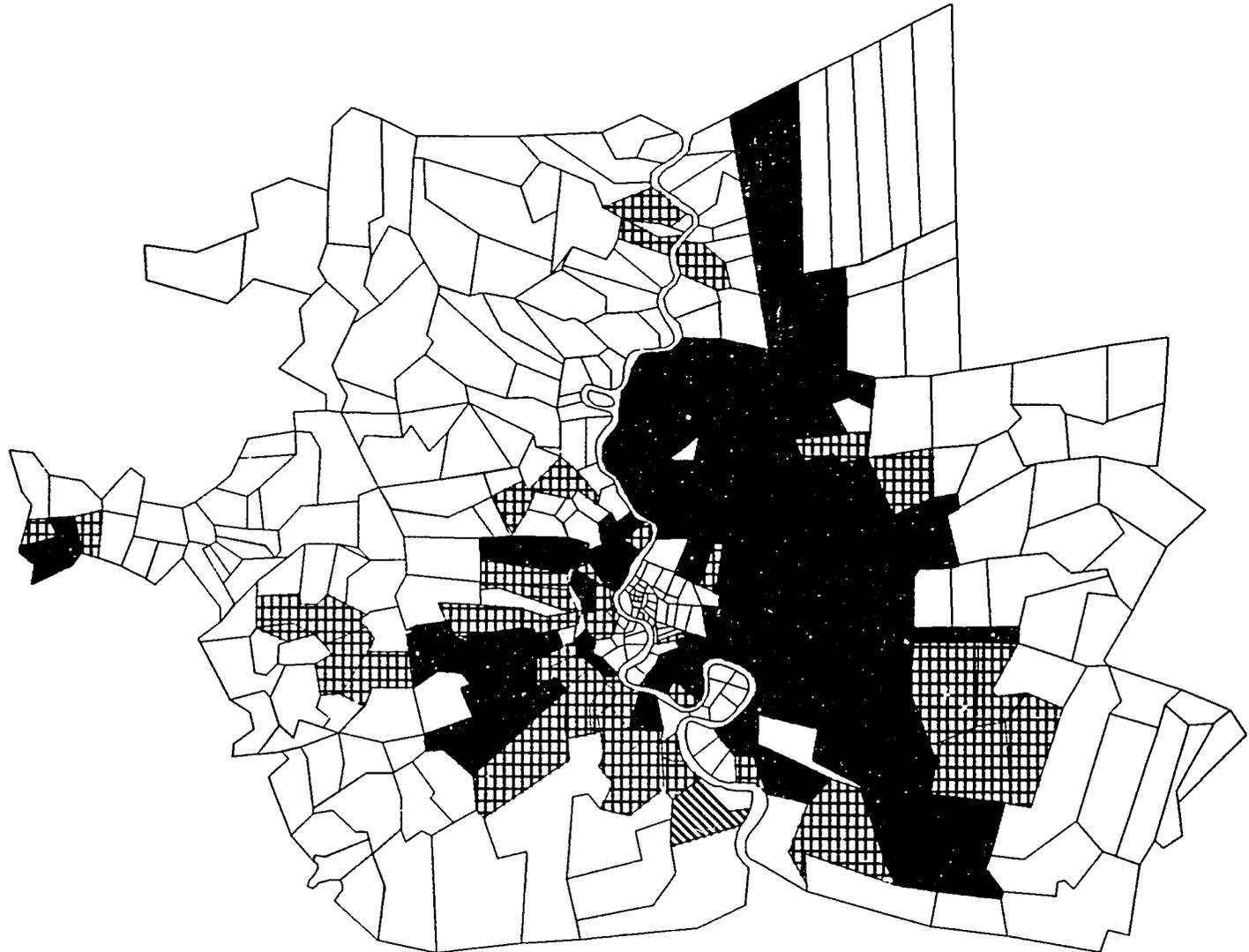
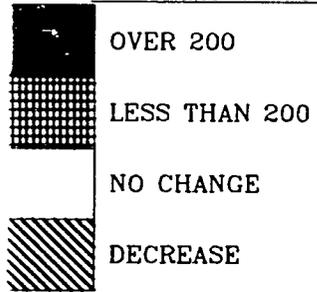
DWELLING UNITS



# MAP 2-9

## LARGE-SCALE/DEVELOPER-BUILT HOUSING CHANGE 1974-84

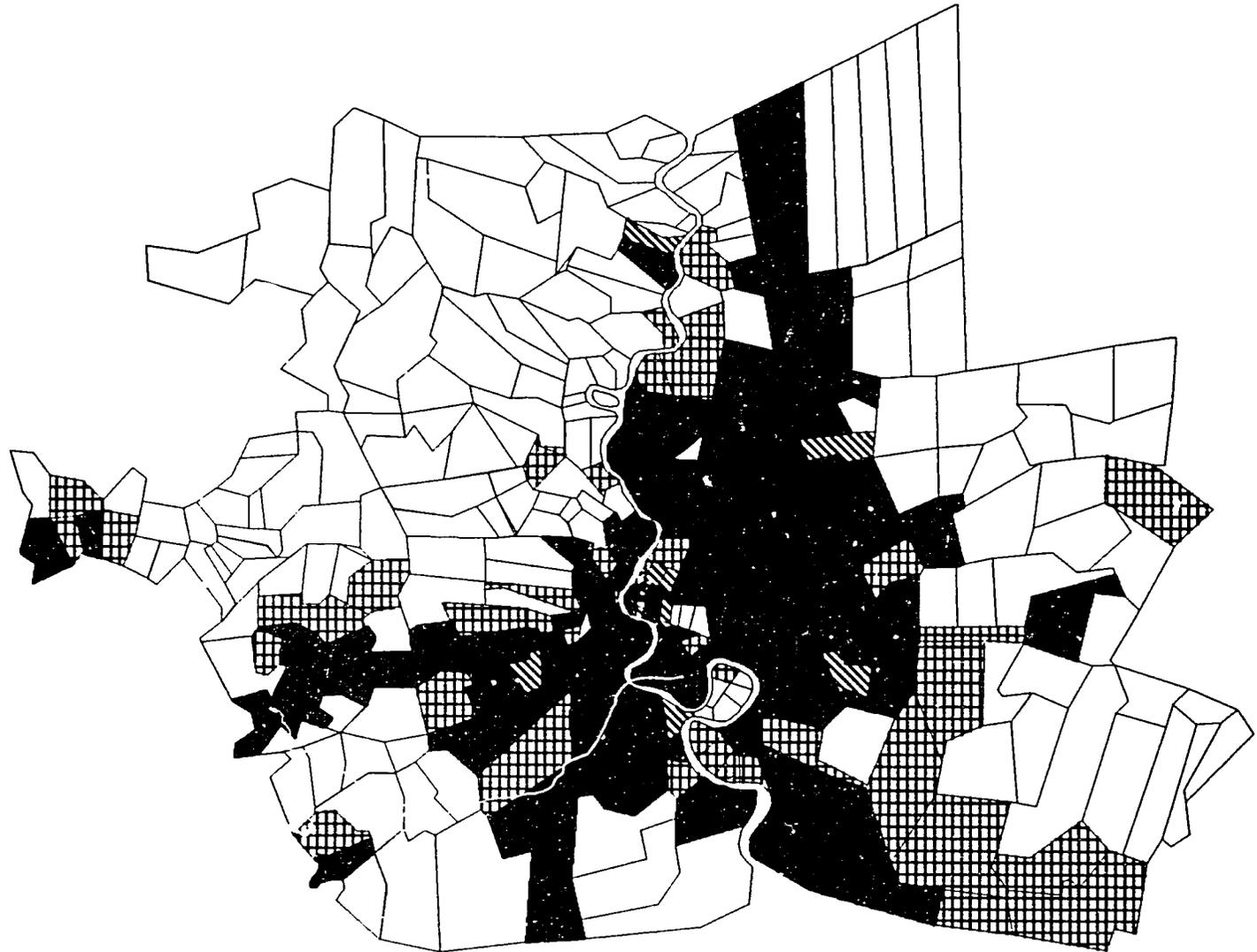
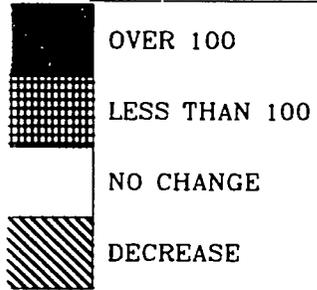
### DWELLING UNITS



# MAP 2-10

## SHOPHOUSE CHANGE 1974-84

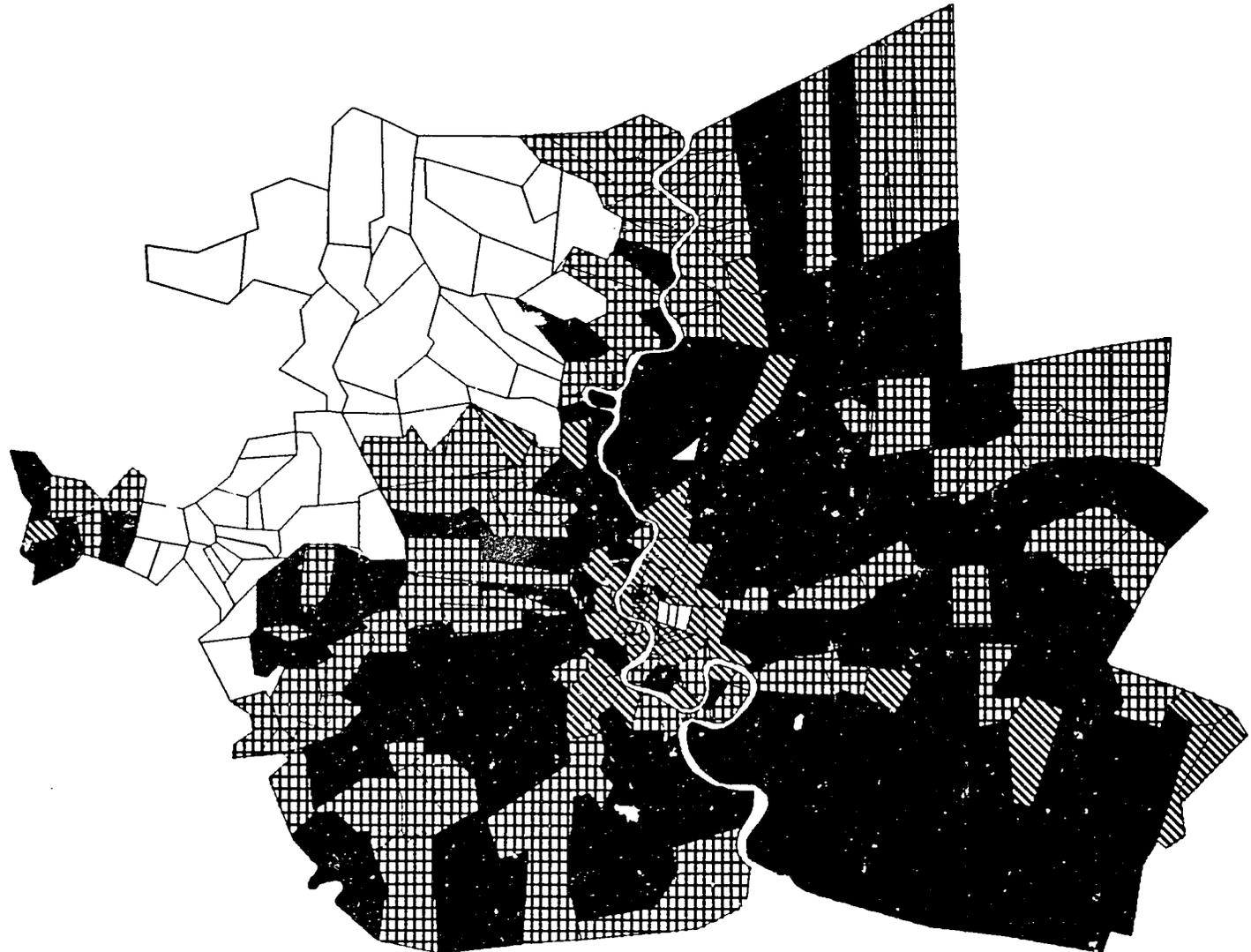
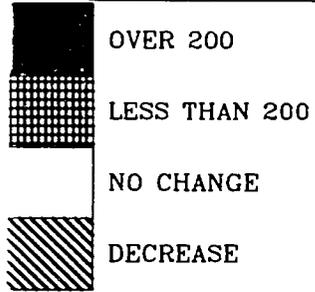
### DWELLING UNITS



# MAP 2-11

## SMALL-SCALE/INDEPENDENTLY-BUILT HOUSING CHANGE 1974-84

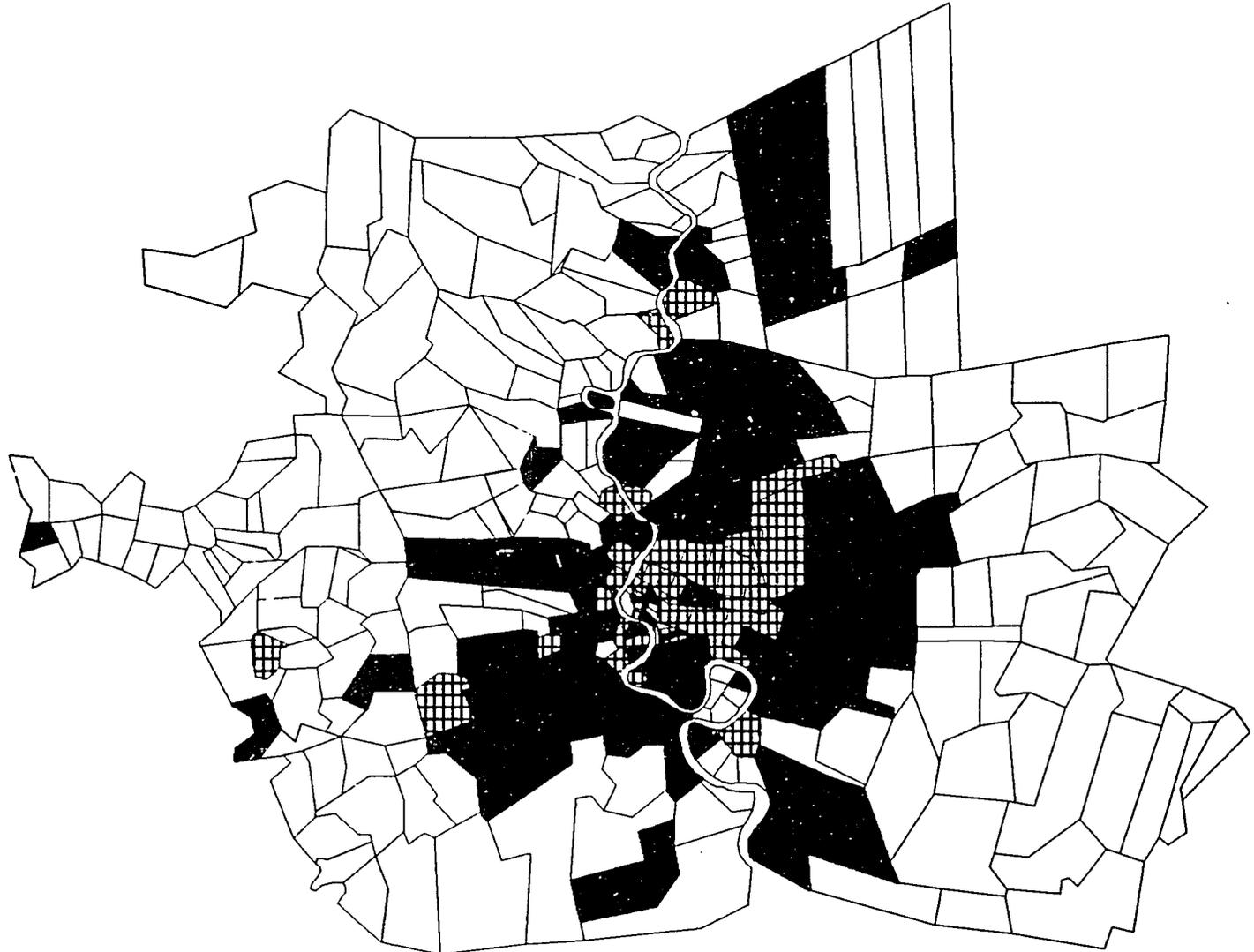
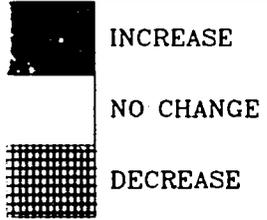
### DWELLING UNITS



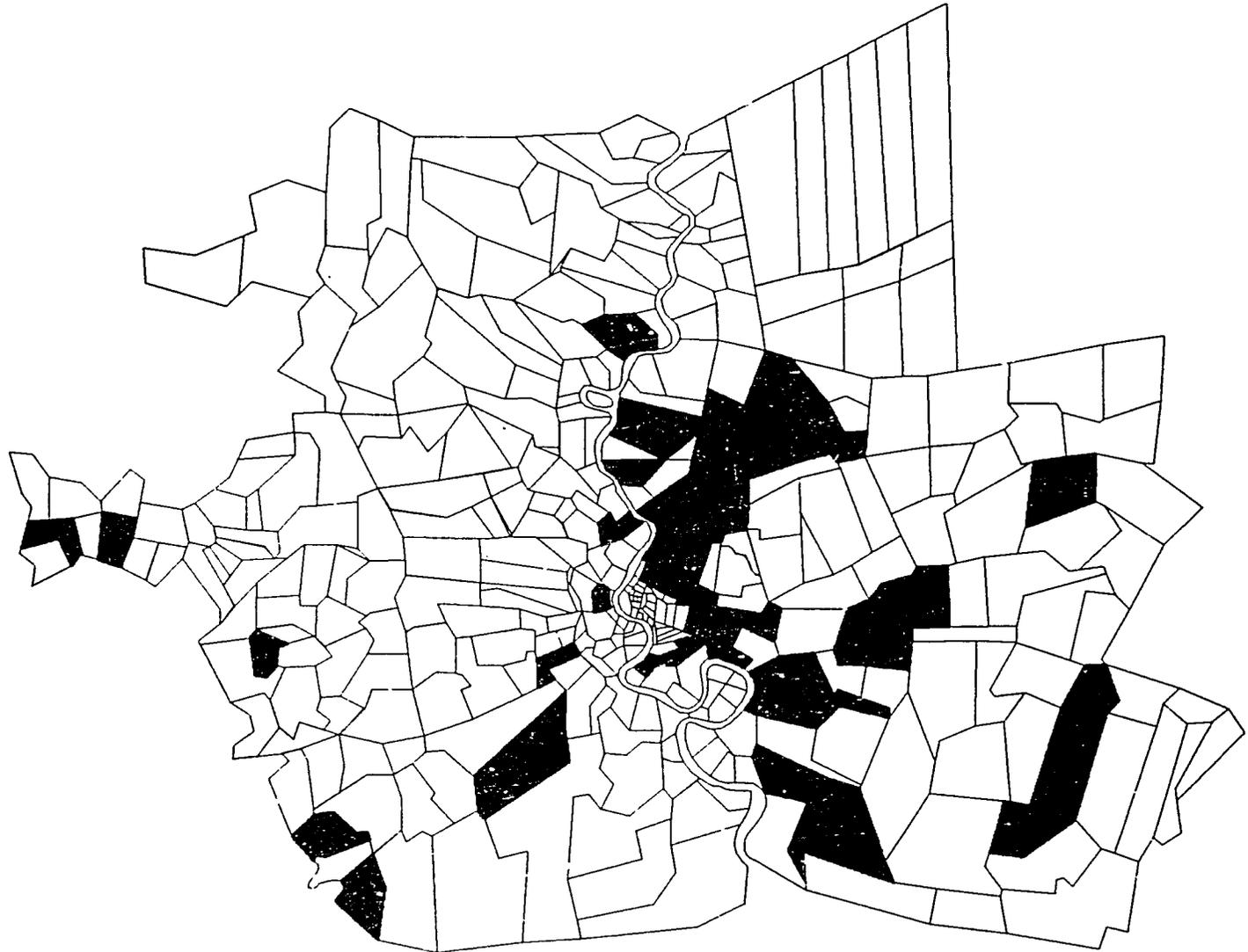
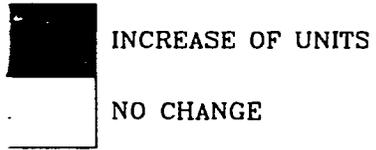
MAP 2-12

SLUM HOUSING CHANGE 1974-84

DWELLING UNITS



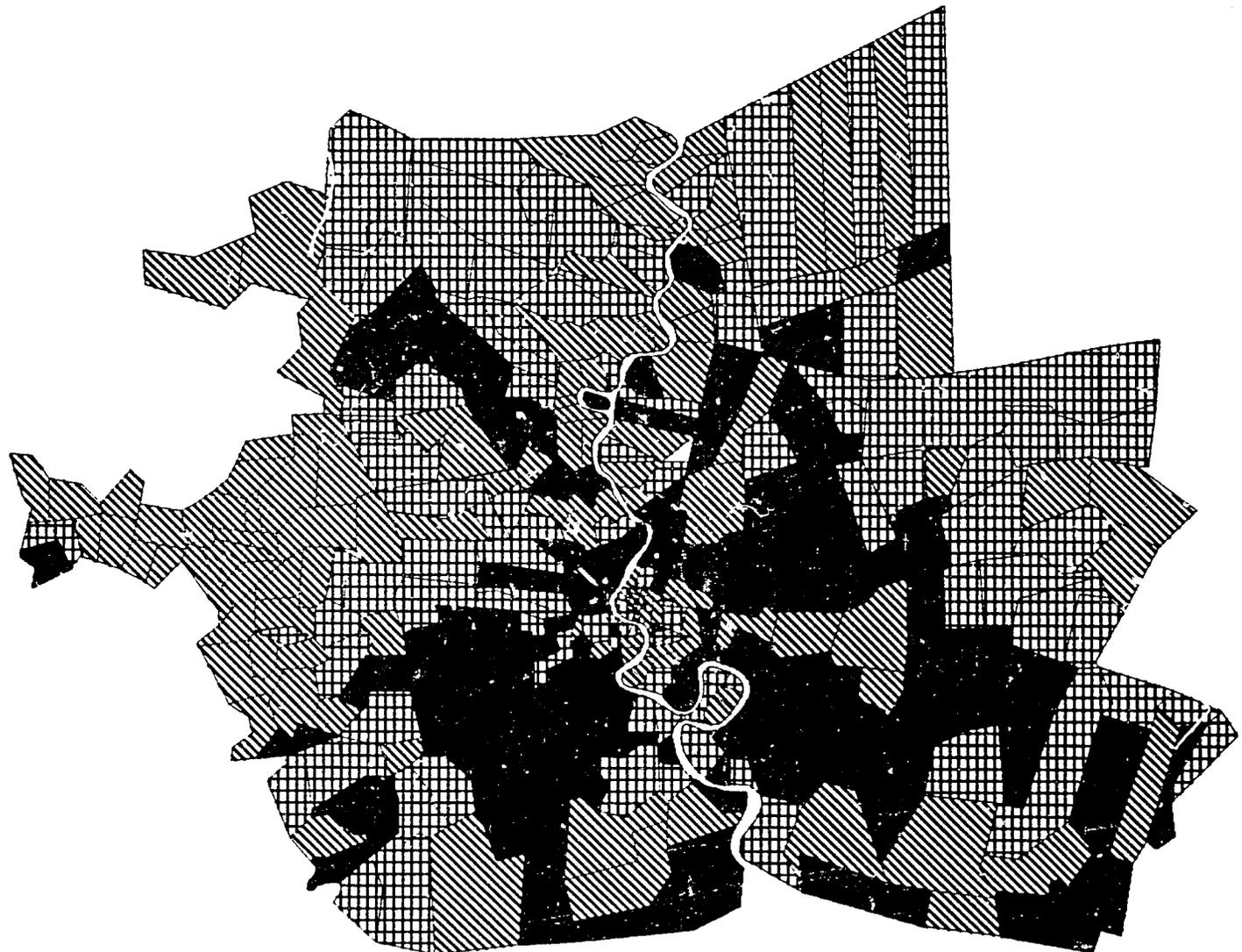
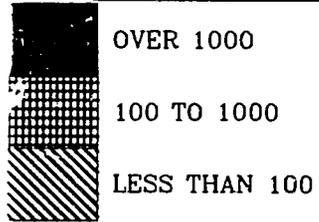
MAP 2-13  
PUBLIC HOUSING CHANGE 1974-84



MAP 2-14

TOTAL HOUSING STOCK CHANGE 1984-88

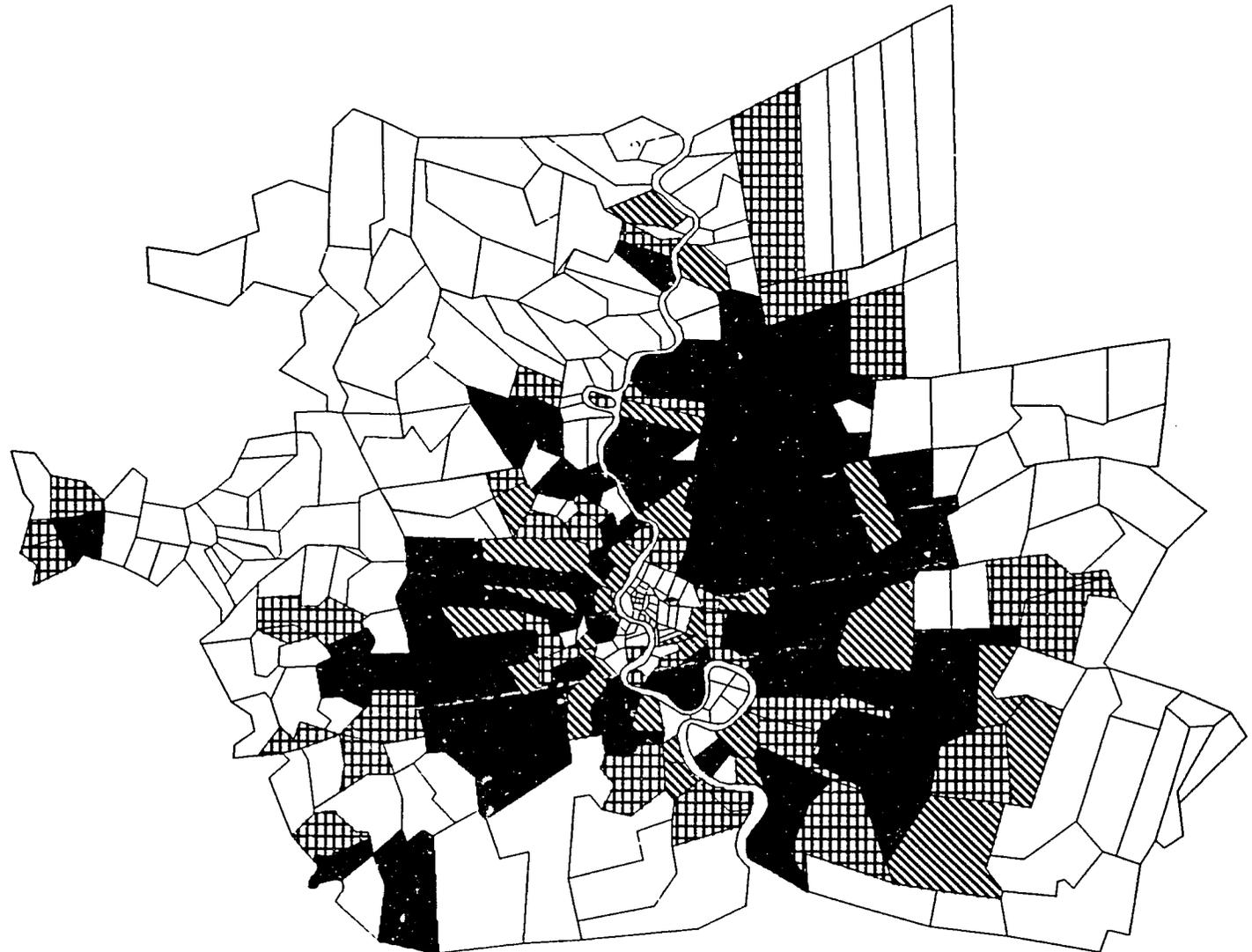
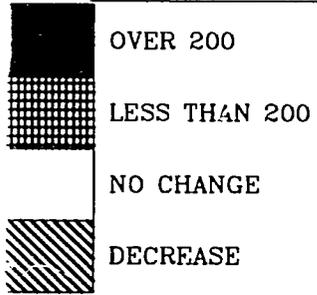
DWELLING UNITS



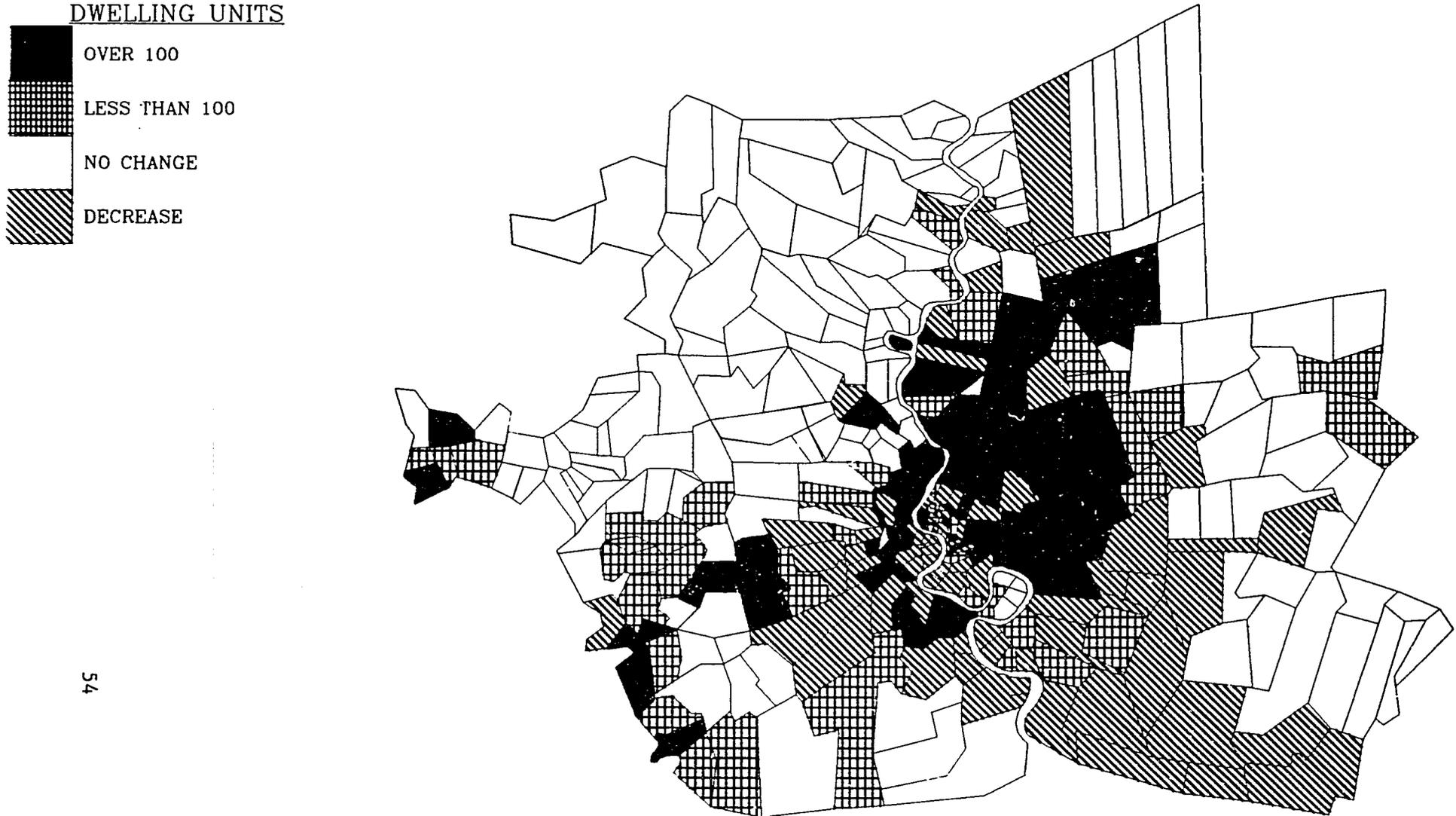
# MAP 2-15

## LARGE-SCALE/DEVELOPER-BUILT HOUSING CHANGE 1984-88

### DWELLING UNITS



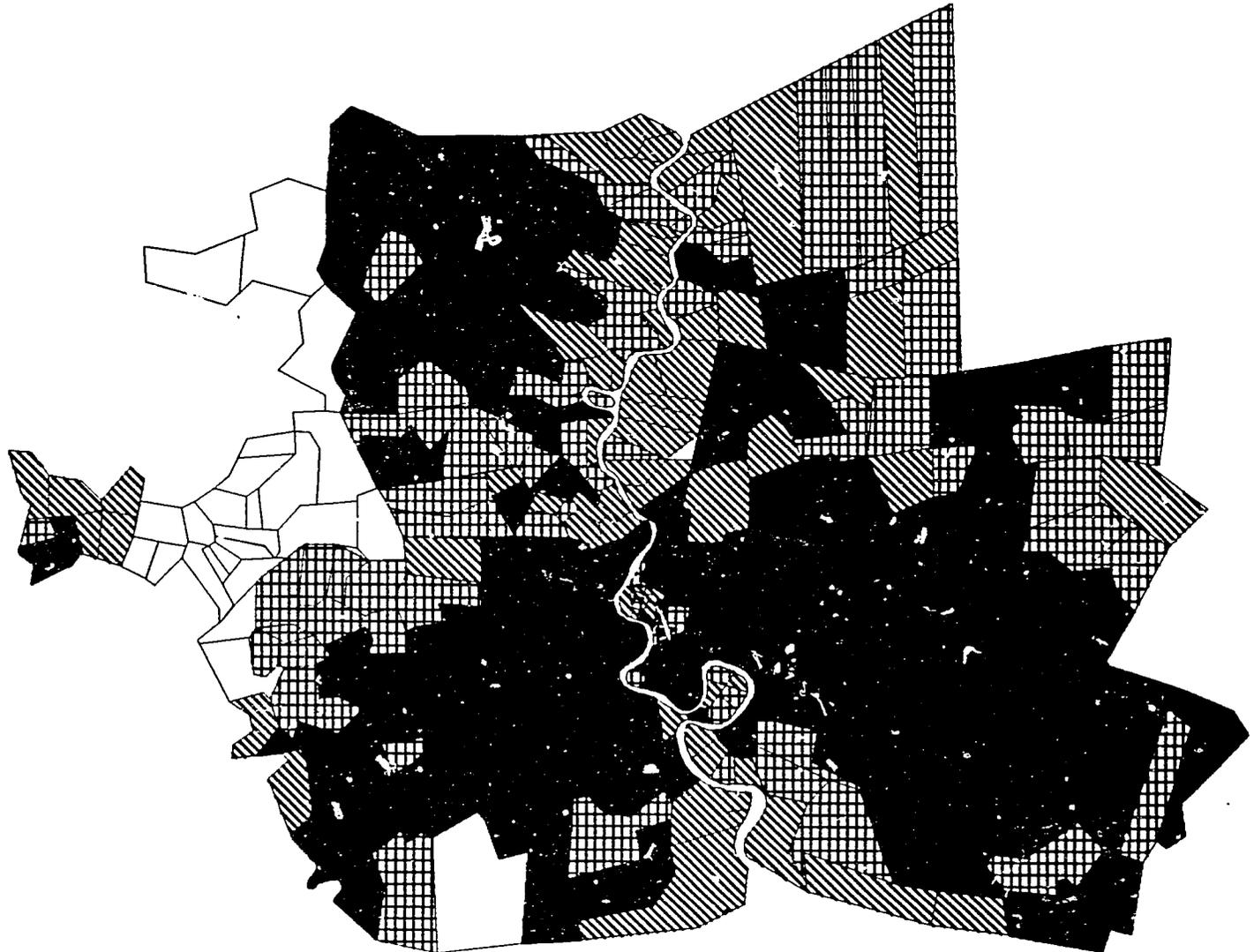
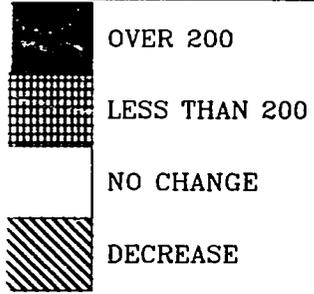
MAP 2-16  
SHOPHOUSE CHANGE 1984-88



# MAP 2-17

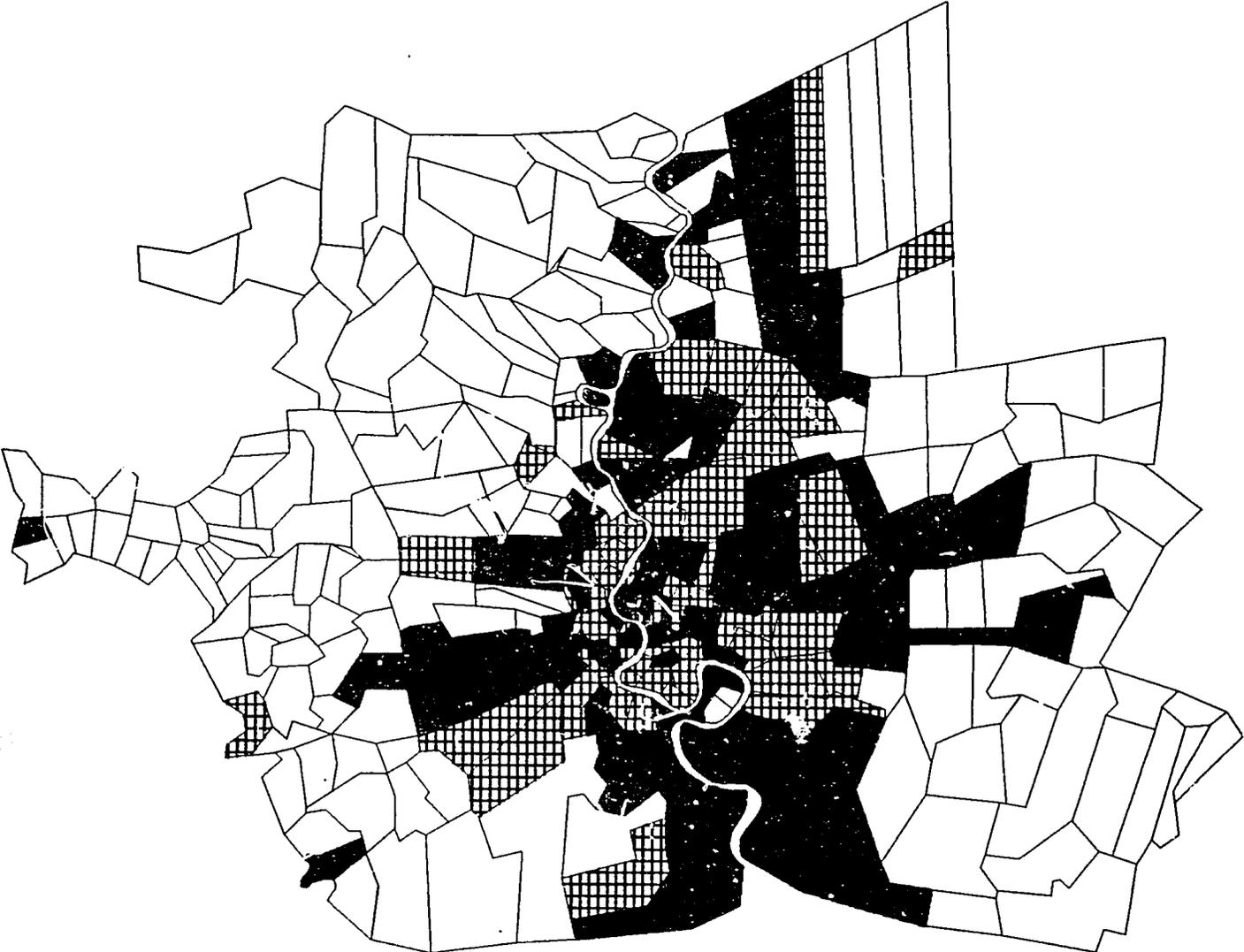
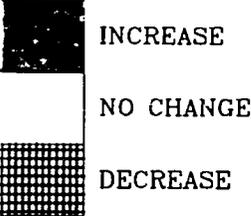
## SMALL-SCALE/INDEPENDENTLY-BUILT HOUSING CHANGE 1984-88

### DWELLING UNITS

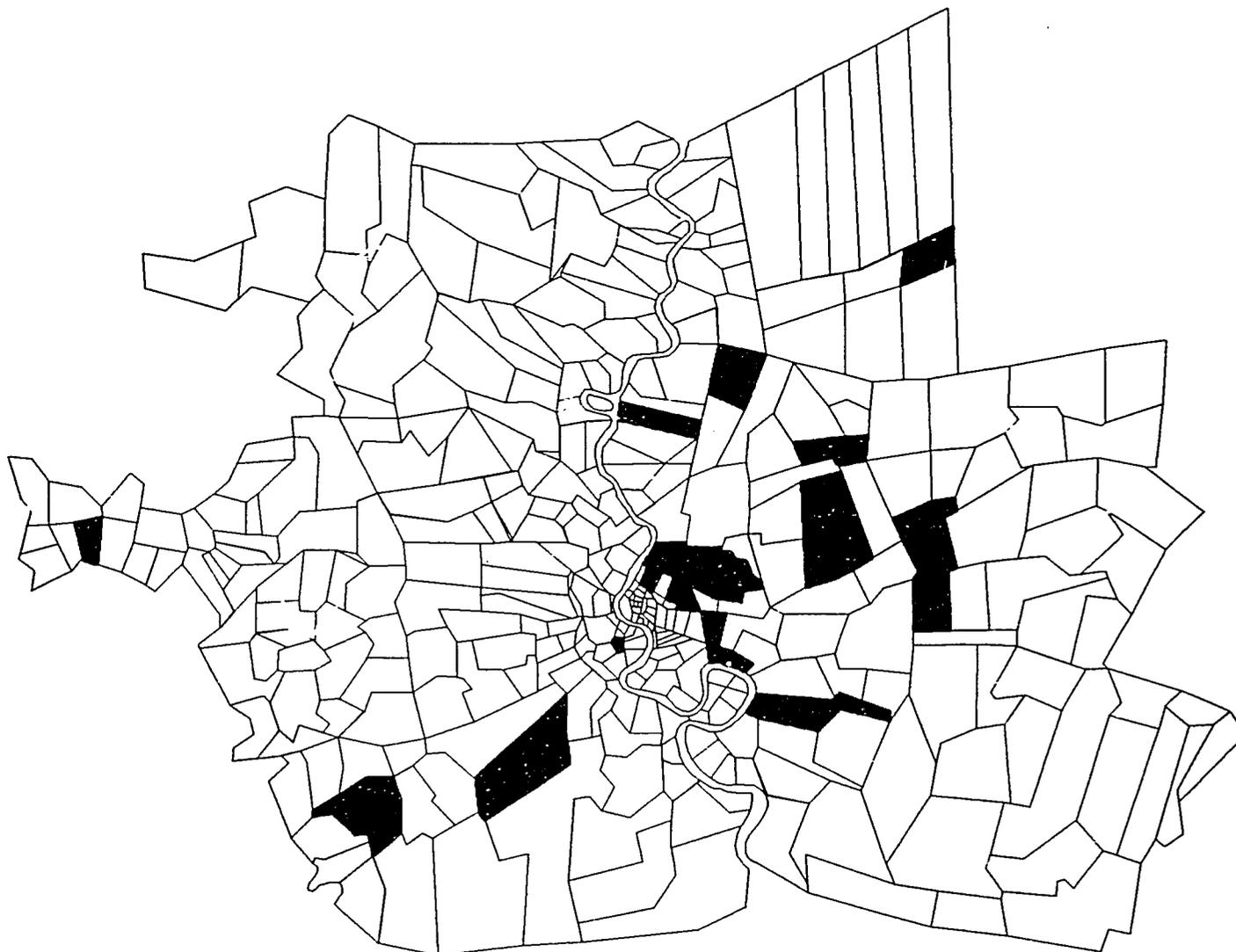
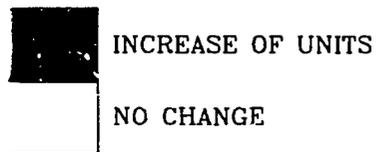


MAP 2-18  
SLUM HOUSING CHANGE 1984-88

DWELLING UNITS



# MAP 2-19 PUBLIC HOUSING CHANGE 1984-88



agricultural uses to urban uses for a given increase in population.

## CONCLUSIONS

This chapter has reviewed the economic and urban development of the Bangkok metropolitan area over the past fifteen years. The growth trend has been breathtaking, especially during the past four years. As the data presented suggest, the pace of urban development during the past four years has equaled the total urban growth in the region over the preceding ten years. Unlike other large cities in Asia, Bangkok's growth is not fueled by massive population immigration but by economic growth and rising household incomes.

With urbanization, Bangkok has started to rapidly decentralize. As Tables 2-2, 2-4 and 2-5 illustrate, population and employment growth has spread into the outlying provinces of Nonthaburi, Pathum Thani, Samut Sakhon and Nakhon Pathom. These trends developed strongly in the past four years and are expected to continue for the foreseeable future. The obvious physical manifestation of the decentralization of population and employment is the conversion of rural, largely agricultural lands to urban uses. As Tables 2-6 through 2-12 suggest, there has been a massive amount of urban land conversion in the region. The extensive computer-generated maps included in this chapter illustrate the patterns of urban development across the region.

The rapid conversion of land in the region has contributed to unprecedented increases in land prices. As will be documented in the next chapter, these increases are particularly high in areas with intensive conversion of land to urban uses.

## CHAPTER 3

### RESIDENTIAL LAND PRICES IN BANGKOK

#### INTRODUCTION

Bangkok's land market reflects the dynamism of its booming economy--land trades are common and prices are rising. In Bangkok the topic of land prices is like the weather: everyone talks about it. However, there is little systematic information about land prices to consult.

Despite the obvious benefits of having good land price information, no public or private sector agency in Bangkok is systematically tabulating current land prices. While the Land Department periodically publishes estimates of land values, these are woefully out of date and do not reflect actual market conditions. There is no central recording of property transactions and tax records are incomplete and inaccurate.

To try to fill this gap, an appraisal survey technique that had been previously used in Karachi and Jakarta was applied in Bangkok [Dowall, 1989b and 1990]. The method involves asking experienced real estate professionals to appraise the probable selling price of typical residential plots on a neighborhood-by-neighborhood basis. A separate appraisal is made for plots with and without infrastructure. The appraisals were completed for 1990 and retrospectively for 1989 and 1988. Appendix A describes the survey method, and presents the appraisal questionnaire.

#### SURVEY METHODS

The purpose of the survey was to obtain price appraisals of hypothetical serviced and unserviced residential plots within the boundaries of the Bangkok metropolitan area. The survey was carried out by subdistrict, the lowest level governmental division within Bangkok, and corresponds to a geographical division roughly comparable to a neighborhood. In all, the survey covered 328 out of 353 subdistricts, and was carried out over an eleven-week period (from May to July, 1990), by 15 trained surveyors.

To develop a valid cross-sectional database on land prices a series of structured interviews was held with three sets of knowledgeable professionals: real estate brokers; appraisers at the Government Housing Bank; and Land Department officials.

Contacts between surveyors and brokers were made through a variety of informal channels; by asking housing developers to provide contacts with brokers they use, using rosters of real estate associations, and contacting Land Department officials and Village Headman to get recommendations of active brokers. Interviews were held throughout Bangkok.

A second set of interviews was held with appraisers of the Government Housing Bank. These staff were interviewed to tabulate appraisal information on a variety of hypothetical plots. All these interviews took place at the GHB headquarters.

The third set of interviews was held with officials of District Land Department offices. Within the BMA, district officers were interviewed to obtain estimates of probable selling prices of serviced and unserviced residential plots in each subdistrict covered by each District Office.

For the sake of having a consistent standard for qualifying our informants, each informant was required to have at least five years of continuous professional experience in land appraisal or land brokering, whether it was with the Government Housing Bank, the Land Department or in private practice as a land broker.

In the interviews, brokers were asked to appraise two types of typical residential plots: one plot was to be located on a paved soi with piped water and electricity, the other was to be located approximately 100 meters from a soi and not currently provided water or electricity. All other characteristics should be the same, such as the level of fill required. All plots were to have the following characteristics:

1. Plots are in purely residential areas.
2. Plots are located mid-block.
3. Plots are on or off small sois.
4. There are no buildings existing on the plots.
5. Purchase of a plot is made in a single payment.

Overall for the three survey years, there are a total of 991 observations, an average of about 330 cases per year. Of these cases about 130 represent unserviced plots and 200 cover fully serviced plots. The number of unserviced plots is lower because there were no unserviced plots in the city center. Recognizing that the survey is for only residential plots, the survey is widely distributed and inclusive of about 50 percent of the total number of subdistricts in the study area (353). Thus, the data are sufficient for carrying out a broad analysis of residential land price trends within the city.

## **ANALYSIS METHODS**

The data collected from the survey are used in the analysis below for two basic purposes: to examine price changes over the last three years for lands with certain characteristics, and to estimate the contribution to land value (market price) of these characteristics. All price data were recalculated in constant 1990 baht, so as to control for the effects of general price inflation in our analysis of price trends over time. As it was determined from the analysis that distance from the center of the city is the single strongest variable for estimating land prices, a series of concentric rings was laid out about the center. Mean values of price were calculated for each of these rings.

Two different analytical methods were employed in this study to systematically assess how land prices vary. In the first of these, average land prices were calculated according to distance from the city center and the level of infrastructure service.

The other method for estimating values for particular characteristics of land was the use of multiple regression analysis to estimate values for the dependent variable (current land price) in terms of the proportional contribution of location and availability of infrastructure. This same technique was used for constructing a land price gradient for the city, which relates current prices and those for the past two years to distance from the center of the city. Each of these methods - comparing means by category and regression analysis - is discussed in greater detail in the sections below.

These analytical methods allow us to examine the interrelationships between location and urban infrastructure and land prices. Such an assessment can be useful to policy makers for understanding the potential economic benefits of infrastructure improvements.

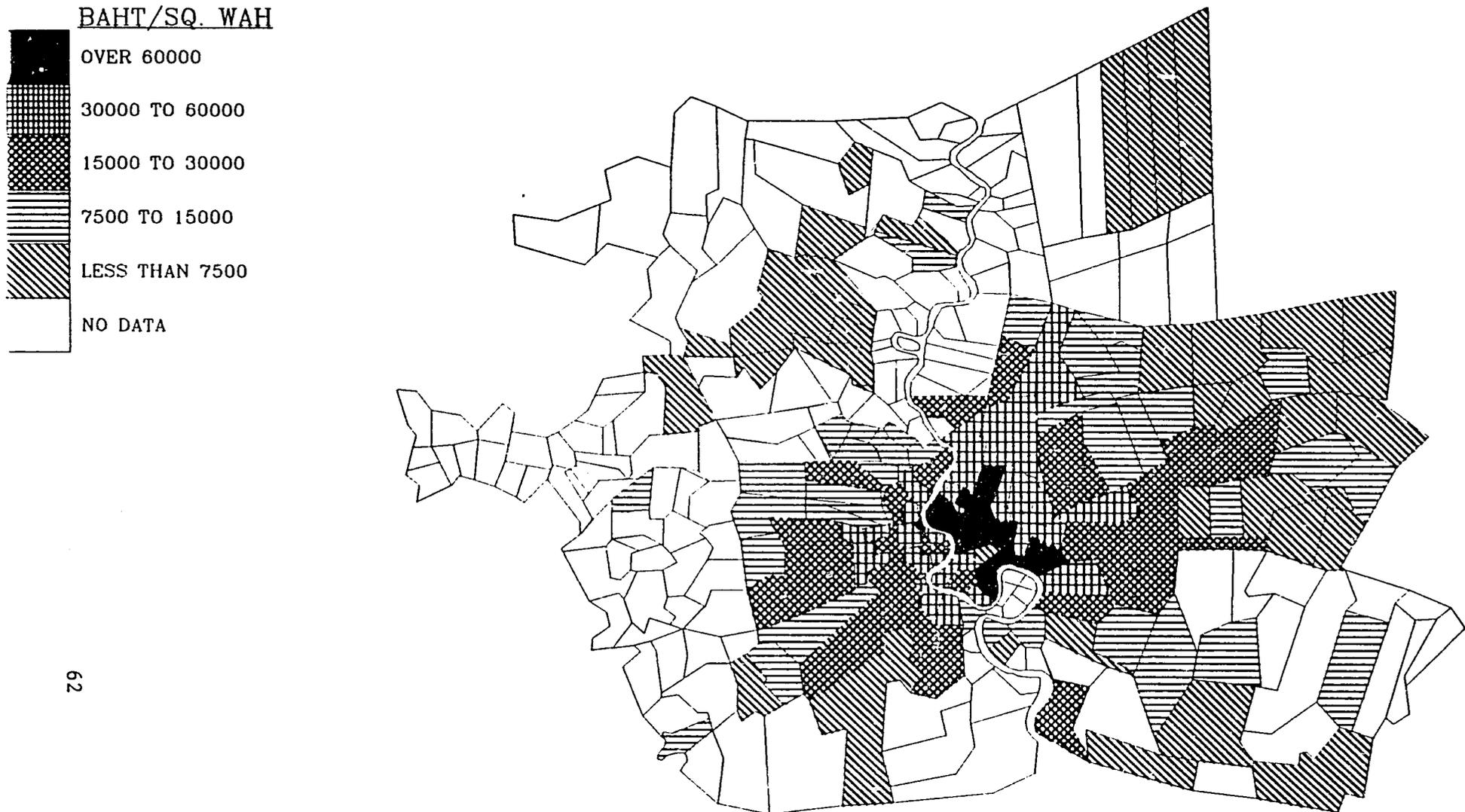
## **SPATIAL PATTERNS OF LAND PRICES IN BANGKOK**

Typical of other large cities in market economies, the spatial pattern of land values is highest in the center of Bangkok and prices decline with distance from the city center. In this section, prices of serviced and unserviced residential plots are presented. Maps 3-1 and 3-2 illustrate the distribution of land prices for serviced and unserviced residential plots by subdistrict 1990. The prices do not reflect commercial land values typical of plots located along major arterials.

Table 3-1 presents land values for serviced and unserviced residential plots by distance from the city center for 1990. As it shows, serviced plots are priced between 2.15 and 2.59 times more than unserviced ones. The ratio rises as distance from the city center increases up to 30 kilometers, then it falls. The lower ratios in the more central locations reflect the fact that

# MAP 3-1

## SERVICED PLOT PRICES, 1990



# MAP 3-2 UNSERVICED PLOT PRICES, 1990

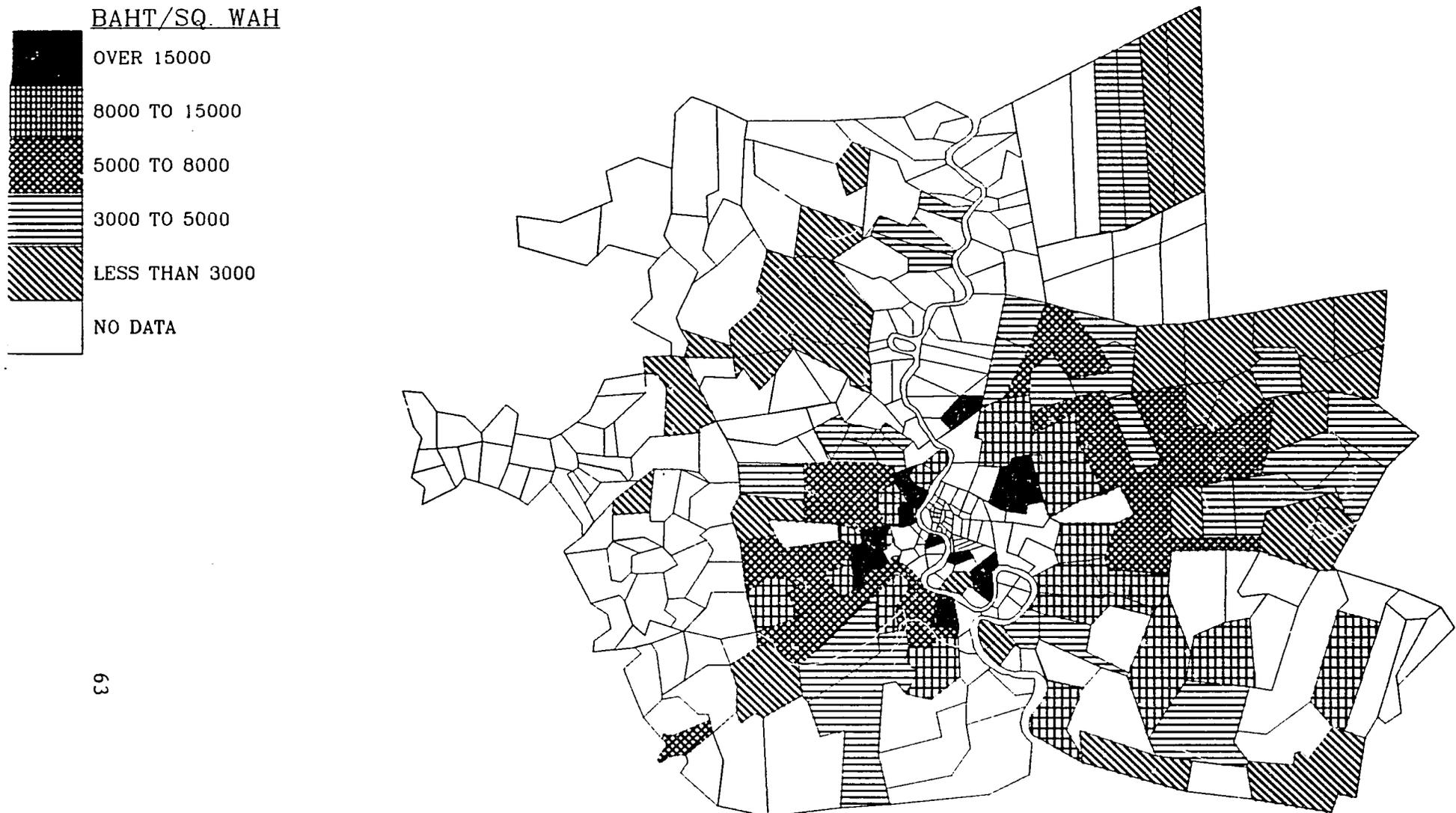


TABLE 3-1

SERVICED AND UNSERVICED RESIDENTIAL PLOT PRICES IN  
METROPOLITAN BANGKOK BY DISTANCE FROM CITY CENTER, 1990

DISTANCE FROM CITY CENTER, KM	SERVICED RESIDENTIAL PLOTS BAHT SQ. WAH	UNSERVICED RESIDENTIAL PLOTS BAHT SQ. WAH	RATIO OF SERVICED/ UNSERVICED
0-5	74,813	*	*
6-10	43,998	20,393	2.15
11-20	21,684	9,419	2.30
21-30	15,356	5,920	2.59
OVER 30	7,582	3,342	2.27
OVERALL	34,129	9,191	N.M.

\* less than 10 cases

N.M: Not Meaningful

Source: PADCO-Land Institute Foundation Land Price Survey, 1990.

it is easier to get infrastructure there than in outlying locations. On the far fringe of the metropolitan area, the lower ratio reflects the fact that the market makes little distinction between serviced and unserviced plots, an indication of the speculative nature of the suburban land market.

Overall (serviced and unserviced) residential land prices in Jakarta, Karachi and Bangkok for both 1986 and 1990 are presented in Table 3-2. A comparison of the values suggests that residential land prices in Bangkok far exceed those found in Jakarta and Karachi. Residential land values in the central areas of both Jakarta and Karachi are far lower than in Bangkok and the rate of decrease in land prices is much steeper than in Bangkok as well. As will be discussed below, the 1990 pattern of residential land prices in Bangkok is far different than that found in 1986.

Even when adjustments are made for differences in income, the Bangkok case is startling, since at a GDP per capita of \$902 (1986) it would require approximately 29 percent of per capita GDP to purchase one square meter of residential land ten kilometers from the city center. In contrast, a similarly situated piece in Karachi would require 13 percent (GDP per capita of \$350 in 1987). In Jakarta, the same type square meter would require 9 percent (GDP per capita of \$490 in 1986). Thus Bangkok's land to GDP ratio is much higher. As will be described below, over the past two years land prices have increased much faster than Bangkok's regional GDP.

A systematic and precise method for assessing the relationship between land values and location is to develop a land value gradient model [Alonso, 1964]. Worldwide, researchers have found that land values decline with distance, illustrating that land users are willing to pay less for a square meter of land the farther it is from the center of the city.

In recent years economists have attempted to determine whether these patterns apply to third world cities. Mills, in 1972; Ingram and Carroll, in 1981; Ingram, 1982; Mohan and Vilamizar, in 1982; Haddad, in 1982; Dowall, 1989a; among others, have generally found that these patterns of declining land values hold true for cities around the world regardless of their stage of development.

The best method of fitting the data is to use a non-linear logarithmic function. The most widely used estimation of land value gradients is the following specification:

$$V_x = V_0 e^{-hx}$$

where:  $V_x$  is land value at distance  $x$  kilometers from the city;  $V_0$  is land value at the center of the city;  $e$  is the naperian logarithm; and  $h$  is the land value gradient parameter to be estimated.

TABLE 3-2  
 COMPARISON OF OVERALL RESIDENTIAL LAND PRICES  
 IN JAKARTA, KARACHI AND BANGKOK

FROM CITY CENTER, KM	PRICE PER SQUARE METER IN U.S. DOLLARS *		
	JAKARTA 1989	KARACHI 1988	BANGKOK 1989
5	\$111.88	\$140.22	\$352.74
10	48.06	91.47	261.24
15	20.64	69.71	193.45
20	8.87	38.90	143.28

\* To assume comparability, these prices are based on the results of land price gradient models developed for each city.

Source: Jakarta: Dowall and Leaf, 1990; Karachi: Dowall 1989b., Bangkok 1986: Dowall 1989a.

Table 3-3 presents regression estimates of the land value data for 1988 through 1990, using the results of our survey of brokers. The results of the regression models are highly statistically significant. All of the variables enter with the correct sign: the intercept value (the estimated land value at the center of the city) is positive; and the land value gradient (h) is negative, indicating that land values decline with distance from the city center. Each variable in each equation is statistically significant at the .001 level of confidence. The overall variation in land values is well explained by distance. The  $R^2$  values indicate that between 62 and 65 percent of the variation in land values is alone explained by distance from the city center.

The equations show that the intercept values increase in real terms between 1988 and 1990, from 32,675 to 48,582 baht per square wah. This reflects higher prices for land in the center of the city. However, prices in the outlying areas have increased even faster and as a result the gradient parameter is smaller for 1990 than for 1988. The gradient, that is, the proportional change in land value for each one kilometer change in distance from the city center, has decreased from -0.0645 in 1988 to -0.06006 in 1990.

Relative to other Asian cities, Bangkok's current gradient is "flatter" than that recently estimated for Jakarta. In Jakarta, the gradient ranges from -.169 to -.181, nearly three times greater than Bangkok. Karachi's gradient is similar to, although still steeper than, Bangkok's-- ranging from -.07 to -.08. These differences reflect the differences of transportation accessibility and the patterns of urban land conversion found in the cities. In Karachi, for example, residential plots are generally much larger than found in the other two cities and infrastructure availability is far more important, and the deployment of infrastructure is mainly to outlying suburban estates controlled by the Karachi Development Authority. In Bangkok, recent residential land development has moved into the suburban areas, and the price of residential land is quite high on the fringe of the city.

Despite the differences in the gradient levels all cities have experienced a pattern of "flattening out" which reflects the impact of increasing mobility and the decentralization of urban activities. The Bangkok results here closely match those reported by Ingram [1982] for cities in Columbia and Korea and by Dowall [1989a and 1989b] for Bangkok in 1986 and Karachi.

### **HOW INFRASTRUCTURE SHAPES LAND PRICES**

After accessibility, the availability of urban services is the most important determinant of residential land values. This section reports on our assessment of the effects of infrastructure availability on plot prices. In the survey, we collected appraisal data for both serviced and unserviced plots. Serviced plots are located adjacent to a paved soi and have piped water.

TABLE 3-3

REGRESSION MODEL ESTIMATES OF BANGKOK'S RESIDENTIAL  
 LAND PRICE GRADIENT, 1990, 1989, 1988  
 (Intercept Values in Real 1990 Baht per Square Wah)

YEAR	INTERCEPT VALUE (Vo)	LAND VALUE (b) GRADIENT (h)	R <sup>2</sup>
1990	48,582 (155.22) (a)	-0.06006 (-24.60)	64.8
1989	39,201 (139.88)	-0.06291 (-23.58)	63.0
1988	32.675 (132.27)	-0.0645 (-23.21)	62.0

(a) t statistics in parenthesis

(b) The gradient value is the proportional change in land value for each one-kilometer change in distance from city center. All values statistically significant at the 0.001 percent confidence level.

Source: PADCO-Land Institute Foundation Land Price Survey, 1990.

Unserviced plots are over 100 meters from a soil and do not have piped water.

The availability of infrastructure service adds considerably to the value of a typical residential plot. The precise benefit will vary according to the location of the plot. In this section we will compare the differences in land values for plots with and without infrastructure services.

As Figure 3-1 illustrates the effect of infrastructure is significant, essentially more than doubling land values. The figure reveals that the impact of infrastructure increases slightly with distance from the city. This increasing effect is due to the fact that in the closer-in areas, parcels without infrastructure are less disadvantaged than those located in more remote locations. In central areas, it is relatively less expensive to provide infrastructure than in outlying areas.

The differential impact of urban services on residential parcels has declined over the past two years. This is due to the rapid escalation of land prices in general and the fact that unserviced land prices have increased more rapidly than serviced plots. These price trends will be discussed in a subsequent section.

## **HEDONIC PRICE MODELS**

Previous sections reporting on the relative effects of infrastructure availability on residential plot prices relied on table analysis of means. In this section, multivariate regression analysis is employed to gauge the combined effects of distance and infrastructure availability.

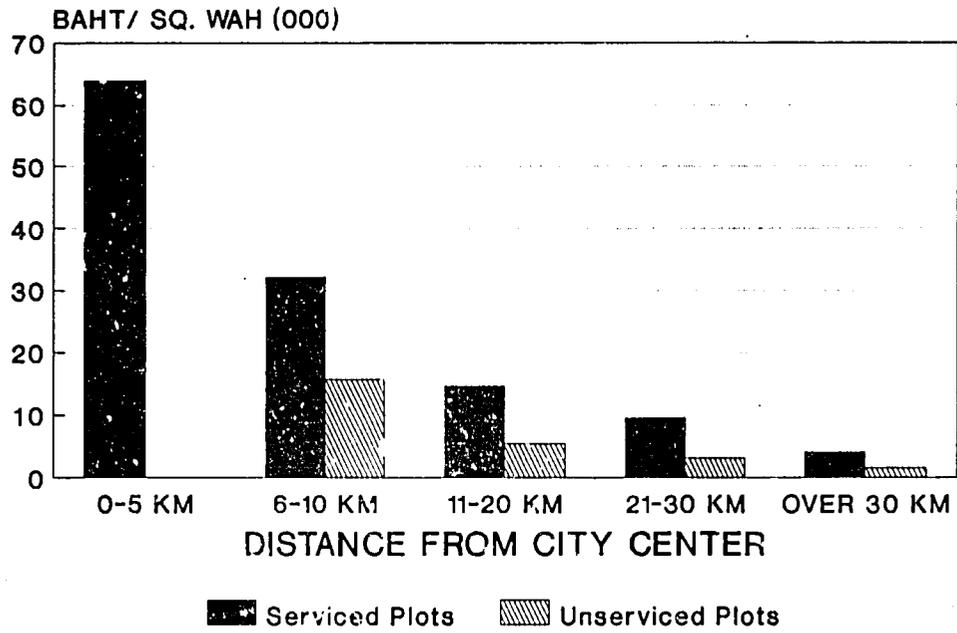
The regression analysis builds on the simple land value gradient model introduced in Table 3-3 above. We now introduce into the regression equation a dummy variable (a variable which takes the value of either 0 or 1) which flags serviced plots. Following the log form of the previous equation, the current equation is estimated and presented in Table 3-4, for 1988, 1989 and 1990:

$$V_x = e^c * e^{d1} * e^{hx},$$

where  $V_x$  is the estimated plot price at a distance of kilometers from the city center in constant 1990 baht per square wah;  $c$  is the constant;  $e$  is the naperian logarithm;  $d1$  is the dummy variables for serviced plots;  $h$  is the distance gradient coefficient; and  $x$  is the distance from the city center in kilometers. For all years the regression estimates are highly significant and all independent variables have the correct sign.

The results are quite good for such spatial models. The model explains between 79 and 81 percent of the variation in plot

**FIGURE 3-1 1990 PRICE TRENDS FOR  
SERVICED & UNSERVICED RESIDENTIAL PLOTS**



PADCO-LIF LAND MARKET ASSESSMENT, 1990

TABLE 3-4

## BANGKOK LAND PRICE MODEL 1988, 1989, 1990

YEAR	CONSTANT (a)	SERVICED (b)	DISTANCE GRADIENT (c)	R <sup>2</sup>
1990	23,401 (138.99) (d)	2.652 (15.01)	-0.0538 (-27.91)	79.2
1989	16,708 (130.96)	3.120 (17.09)	-0.0558 (-28.14)	80.5
1988	13,844 (121.94)	3.206 (16.47)	-0.0574 (-27.94)	79.2

(a) Intercept value in baht per square wah.

(b) Serviced value is in multiple of constant.

(c) The gradient value is the proportional change in each value for each one kilometer change in distance from the city center.

(d) t statistics in parenthesis; all values are statistically significant at 0.001 confidence level.

Source: PADCO-Land Institute Foundation Land Price Survey, 1990.

values for the three years. The inclusion of the dummy variable for infrastructure does not significantly alter the price gradient coefficients presented in Table 3-3-- they are about the same. Figure 3-2 illustrates the land price gradients for 1990 for serviced and lands and it is based on the results presented in Table 3-4.

The model estimates that the availability of complete infrastructure increases residential plot values by an additional 165 to 221 percent, independent of location. This finding is important because it clearly establishes the beneficial impact of infrastructure on residential property values. The measured effect is consistent with recent results of studies of the benefits of infrastructure in Karachi and Jakarta. In Karachi it was estimated that the availability of services added 195.8 percent to the value of a residential plot in 1985. In Karachi, where desert conditions make it impossible to drill individual water wells, such a substantial impact is logical. In Jakarta, where wells can be drilled almost anywhere, the impacts are substantial but much less, with infrastructure provision adding between 50 and 60 percent to residential plot values.

The Bangkok findings are important. The beneficial impact of infrastructure provision suggests that a property tax or special assessment could be used to finance infrastructure development. We will return to this issue in our recommendations.

## **RECENT LAND PRICE TRENDS**

Land prices have skyrocketed in Bangkok in recent years. Rarely a week passes when there is not a major news article discussing land inflation, speculation or foreign land-grabbing. In this section, we use the results of the real estate professionals survey to assess land price trends in the metropolitan area. Before presenting the findings, it is important to again stress that the land value database is for only residential plots located on soils. As such it does not report on the much higher prices of commercial properties location along major streets.

Table 3-5 presents tabulations of land price trends for serviced and unserviced residential plots by distance from the city center. The overall price increase for serviced plots has averaged 21 percent per year over the past two years. The rate of increase of residential plot prices has been greatest on the fringe of the metropolitan area, with prices rising by 36 percent per year. This pattern of higher price increases for fringe lands is common, reflecting the fact that rural land is being purchased for urban uses. The higher long term income stream associated with urban uses causes a jump in rural land prices.

The spatial trends for unserviced plots follows the same pattern where fringe plots increase faster than most central city areas. The overall rate of price increase of unserviced plots was

Fig. 3-2 BANGKOK LAND PRICE GRADIENTS

SERVICED & UNSERVICED PLOTS, 1990

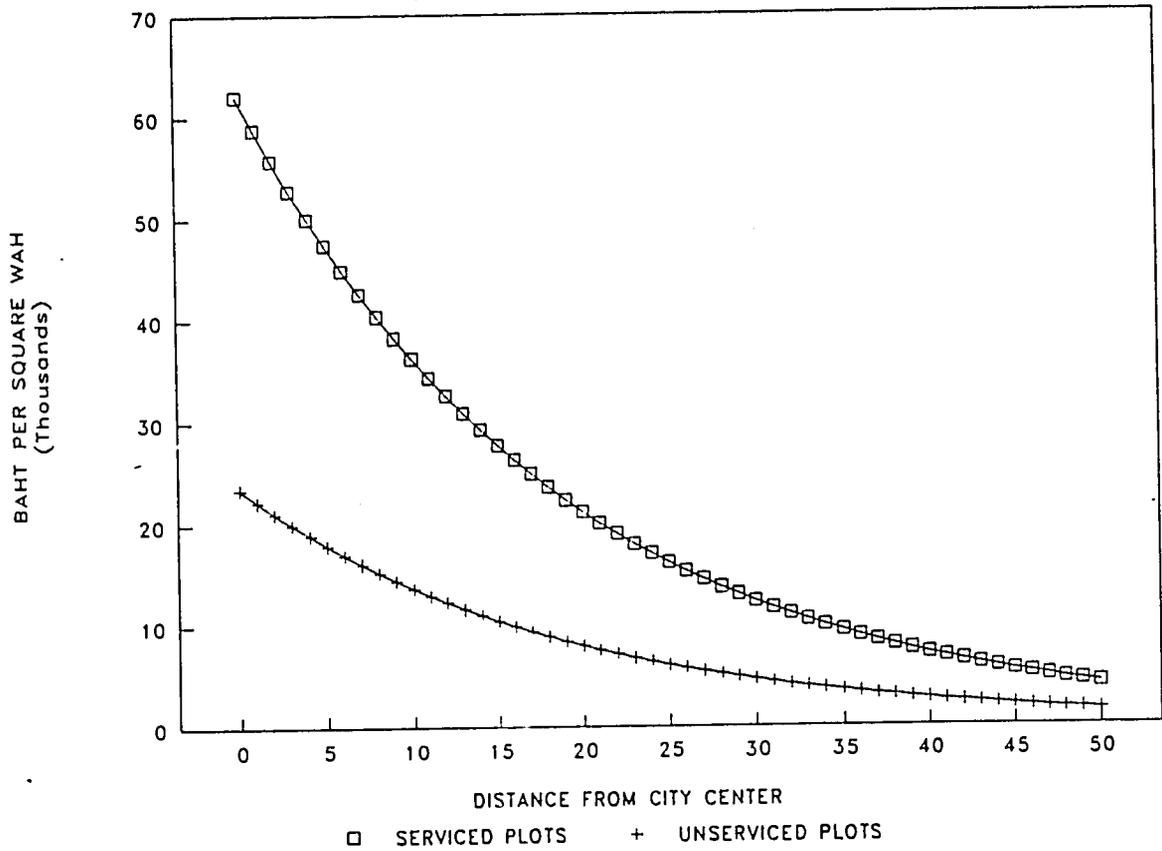


TABLE 3-5

PRICE TRENDS FOR SERVICED AND UNSERVICED RESIDENTIAL PLOTS  
1988, 1989, 1990 BY DISTANCE FROM CITY CENTER,  
IN CONSTANT 1990 BAHT/SQUARE WAH

DISTANCE FROM CITY CENTER, KM	SERVICED PLOTS			ANNUAL COMPOUND INCREASE 1988-90	UNSERVICED PLOTS			ANNUAL COMPOUND INCREASE 1988-90
	1988	1989	1990		1988	1989	1990	
0-5	63,930	67,313	74,812	8.2%	*	*	*	*
6-10	32,209	37,201	43,898	16.7	15,712	17,038	20,393	13.9%
11-20	14,633	17,465	21,684	21.7	5,416	6,634	9,419	31.9
21-30	9,553	13,083	15,356	26.8	3,123	4,235	5,920	37.7
OVER 30	4,081	5,464	7,582	36.3	1,553	2,103	3,342	46.7
OVERALL	23,348	27,566	34,129	20.9%	4,898	5,822	9,191	37.0%

\* less than 10 cases

Source: PADCO-Land Institute Foundation Land Price Survey, 1990.

37 percent, about 50 percent faster than for serviced plots. The fastest rate of increase for unserviced land was on the fringe, where plot prices increased by nearly 50 percent per year. As Table 3-5 illustrates, unserviced lands are appreciating at much faster rates than comparably located serviced plots.

As reflected in Table 1-1, the growth of the Thai economy has been substantial, with GDP and incomes rising at 10 and 8 percent per year respectively over the past several years. In most cases urban land prices tend to increase at about the same rate as the productivity of the land increases. However, in the case of Bangkok, the rate of increase of land prices far exceeds the growth in incomes or economic productivity.

The run-up in real estate prices is largely due to the strong demand for land for residential, commercial and industrial projects over the past several years. As illustrated in Table 2-8 in the previous chapter, a total of 184,344 rai of rural land was converted to urban use between 1984 and 1988. This amount was almost the same as the amount of land converted during the previous ten years (1974-1984). Cross-tabulations of land conversion trends with land prices reveal that there is a clear relationship between the rate of land price increase and land conversion pressure. This pattern is presented in Table 3-6 for both serviced and unserviced lands.

To gauge land conversion pressure, a statistic, the percent of a subdistrict's land area that was converted to urban uses between 1984 and 1988 was tabulated. In Table 3-6, three categories of the percentage of land conversion are used: 0 to 5 percent, 6 to 10 percent and over 10 percent. Based on these tabulations, land price changes between 1988 and 1990 are then calculated for each category. The results are striking and highly significant. For both serviced and unserviced plots, price increases were greater in areas under high land conversion pressure. This pattern of land price increases suggests that land prices are demand driven and that market forces are largely responsible for the upward rise in land values. As the pace of land development continues, land prices can be expected to rise, although perhaps not at the same rate as in 1989 and 1990.

#### COMPARISON OF CURRENT LAND PRICE DATA WITH 1987 BLMS DATA

Because of the totally different basis for gathering land price information used by the present and previous study it is not valid to make direct comparisons of the two land value data sets. The land value data gathered in the previous study was based on assessments published by the Land Department in 1986. The current data collected from Government Housing Bank appraisers, professional real estate brokers, and Land Department officials is based on current and retrospective assessments of market prices for prototypical residential plots. As such the data more

TABLE 3-6  
 LAND PRICE TRENDS ACCORDING TO URBAN LAND CONVERSION  
 PRESSURE, 1988-90 METROPOLITAN BANGKOK

URBAN LAND CONVERSION PRESSURE	ANNUAL COMPOUND INCREASE IN RESIDENTIAL PLOT PRICES 1988-1990	
	SERVICED PLOTS	UNSERVICED PLOTS
LOW (a)	11.6%	26.9%
MEDIUM (b)	23.6	29.2
HIGH (c)	28.7	34.8

(a) Low = Subdistricts where less than 5 percent of the total land area was converted between 1984-88.

(b) Medium = Subdistricts where between 5 and 10 percent of the total land area was converted between 1984-88.

(c) High = Subdistricts where over 10 percent of total land area was converted between 1984-1988.

Source: PADCO-Land Institute Foundation Land Price Survey, 1990

closely track actual market conditions than the Land Department's published data. While the lack of comparability is unfortunate, the current approach can be replicated at relatively low cost to gauge land price trends in the future.

## CONCLUSIONS

Our land price survey has provided several key conclusions. First, land price increases in the metropolitan area have been substantial, with the overall prices of serviced plots increasing at 21 percent per year. The rate of increase has been greater for unserviced plots--37 percent per year. Spatially, land prices have risen more rapidly in outlying areas. Beyond the BMA, prices of unserviced plots increased at an annual compound rate of 41.8 percent between 1988 and 1990. Serviced plots increased half as fast--21.1 percent. Cross-tabulations between land price increases and urban land conversion pressure reveal that rising land prices are associated with strong urban land conversion pressure. This pattern indicates that land price increases are demand generated and that prices are rising due to massive land requirements.

The second major conclusion of the analysis of land price data is the estimation of the effects of infrastructure service provision on plot prices. Holding constant the effects of location, the availability of urban services increases the 1990 value of residential plots by an additional 1.7 times (see Table 3-4). Over the past several years, the multiplicative effect of infrastructure provision has diminished from 2.2 times in 1988. This is due to the rapid escalation of unserviced land prices in the metropolitan area. The increase in property value accorded by the provision of infrastructure clearly suggests a possible opportunity for the government or the private sector to recapture infrastructure investment costs. For example, a 200 square wah plot located 20 kilometers from Bangkok is estimated to have a value of 1,600,000 baht without services and 2,640,000 baht with services, a difference of 1,040,000 baht. In all likelihood, urban services can be extended to this typical plot for less than the value differential. Thus, it is feasible to develop and implement a tax assessment or betterment levy to recapture infrastructure investment costs.

The final conclusion of the analysis is that Bangkok's land price gradient is "flattening out" as suburban land prices increase faster than those in the central city. This suggests that the metropolitan area is expanding rapidly and that urban uses are spreading into the fringe area.

## CHAPTER 4

### THE IMPACT OF RISING COSTS ON HOUSING PRICES

#### INTRODUCTION

Overall land price trends in Bangkok indicate that land for housing has increased sharply over the past three years, increasing by an annual compound average of 21 percent for serviced land and 37 percent for unserviced land. The impacts of rising prices are significant. As the set of five case studies presented in this chapter suggest, the overall effect of cost increases is profound-- the average increase in housing costs is 31 percent per year. As a result, the probable selling prices of units in these five projects would increase an average of 103.6 percent over the 1987 price.

To explore exactly why housing prices have increased so much, we conducted a comparative cost study of five actual housing projects. Each of the five housing projects were built in 1987. The names of these projects are withheld to preserve the confidentiality of the survey. The analysis calculates the actual development costs of these projects for 1987 and also reports on the actual selling prices of the project's units. Then for each of the five projects, we estimate the probable development costs of each project if it were built in 1990. Based on the costs and current market conditions, the probable selling price of each project's units is estimated as well.

Thus this analysis provides a measure of the effects of rising land and construction costs on housing prices. It is based on the assumption that the developer would build exactly the same type of unit now as in 1987. However, there is much evidence that developers are rapidly altering their products to keep prices competitive. As will be described in the next chapter, developers are rapidly altering their housing production strategies to economize on the use of land. As a result, the actual housing prices have not increased as rapidly as the five case study examples suggest. Nevertheless, the five cases presented below vividly illustrate the cost push aspects of housing price increases. The next chapter will take up the question of how developers are responding to rising land and construction costs.

To validate the cost and price estimates for both 1987 and 1990, three focus group meetings were held to discuss the estimates. Each group was made up of private housing developers specializing in high-, middle- and low-income housing development in Bangkok. The developers participating in the groups are listed in the front of the report. The participants reviewed the figures and offered their opinions about the what was driving up costs. The remainder of this chapter is divided into three parts. The next section presents a description of the five projects. The following section compares the costs of housing development between 1987 and 1990. The final section presents developer's comments on land and housing costs.

## DESCRIPTION OF THE HOUSING PROJECTS

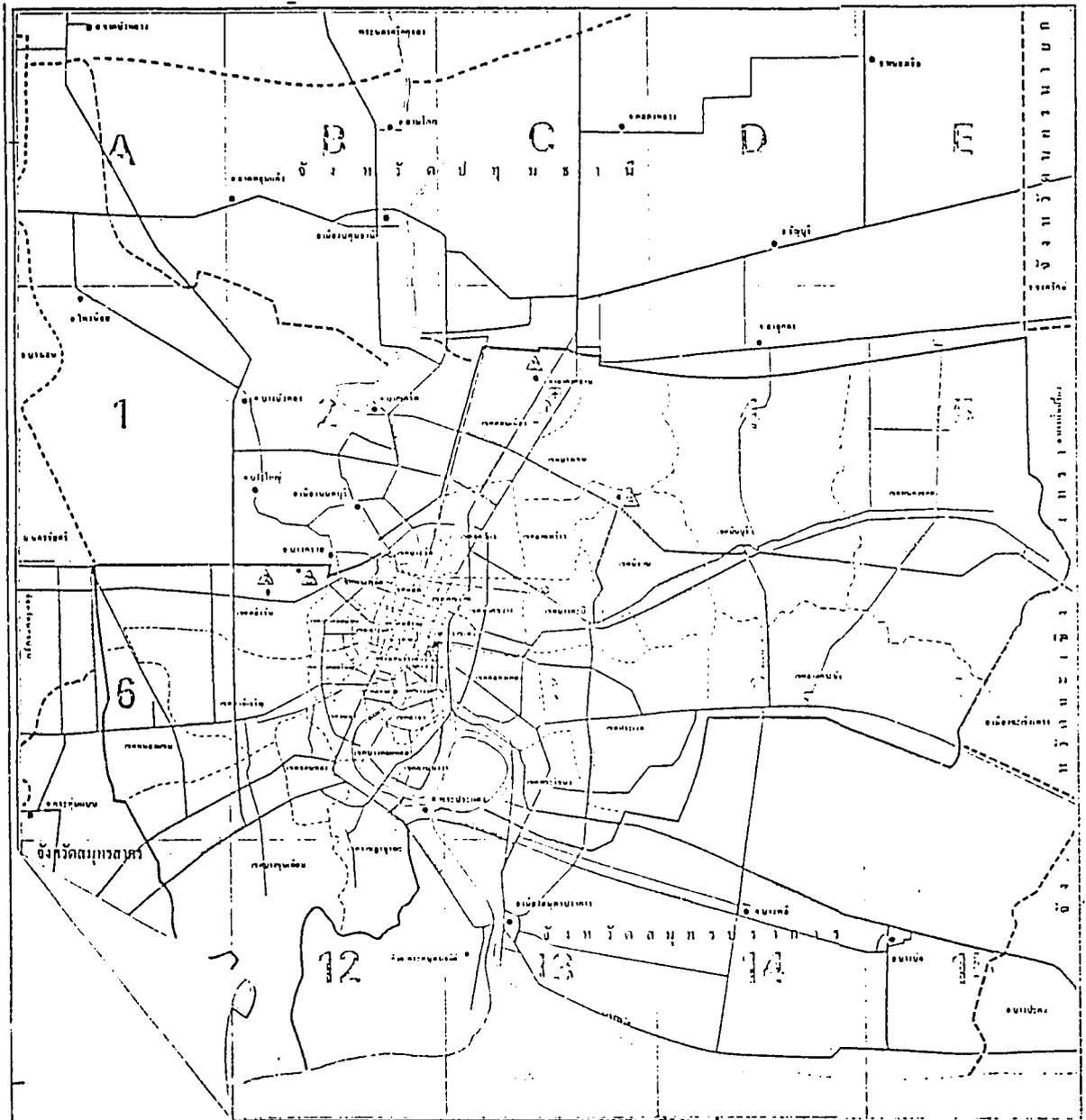
Between July 1 and July 31, 1990 surveys of private sector housing projects located in Talingchan, Bangkaen and Patumwan were conducted. The projects were divided into three types: single-family units, townhouses and condominiums. They included:

1. a high-income single-family housing project located in Talingchan;
  2. a middle-income single-family housing project located in Talingchan;
  3. a low-income townhouse project located in Bang Kaen;
  4. a middle-income townhouse project located in Bang Kaen;
- and
5. a high-income condominium project located in Patumwan.

Tables 4-1 through 4-5 present a description of each surveyed project. Map 4-1 shows their location. Together, these five projects cover most of the current range of housing types produced and marketed by land and housing developers in Bangkok, with the exception of the recently introduced low-cost condominium projects. As Chapter 2 indicated, land and housing developers produced nearly 50 percent of the total increase in housing stock in the metropolitan area between 1984 and 1988.

The projects discussed in this chapter range in size from 29 to 121 housing units. In terms of project site area, they cover from 1.9 to over 42 rai. All projects are relatively well located compared with their competitors and do not suffer from any marketing disadvantages.

Table 4-6 summarizes the prices of the five projects in terms of the average selling price per unit and per square meter of usable area for 1987 and 1990. In terms of real 1990 baht, price of housing units increased by 26.4 percent per year between 1987 and 1990, ranging between 22 and 34 percent per year. Per



MAP 4-1  
HOUSING PROJECT LOCATIONS

1. HIGH INCOME CONDOMINIUM
2. HIGH INCOME HOUSING
3. MIDDLE INCOME HOUSING
4. MIDDLE INCOME TOWNHOUSE
5. LOW INCOME TOWNHOUSE

TABLE 4-1  
HIGH-INCOME  
SINGLE-FAMILY PROJECT  
DESCRIPTION

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PHYSICAL FEATURES

Location:	Talingchan
Distance to city center:	11 km
Site area:	42-3-17 (Rai-Ngan-Sq.Wah)
Marketable area:	31-2-0
Circulation:	6-3-88
Non-marketable area:	3-3-79
Facilities:	0-1-50
Housing Units:	56 Units
Date of Development:	1987

CONSTRUCTION

Structure:	Reinforced concrete
Roof:	Structural steel, tiles
Walls:	Brick with wall plastering
Floors:	Reinforced concrete, marble, ceramic tiles, wood.
Partition:	Brick with wall plastering
Ceiling:	Gypsum board
Windows:	Wood Frame with glass
Doors:	Wood frame
Facilities:	None

SERVICES

Electricity:	Metropolitan Electricity Authority
Water Supply:	Water Works Authority
Sewage:	Discharged to septic tank
Drainage:	Connected to project water treatment plant
Telecommunications:	None
Transportation:	Good access on Pinklao-Nakhonchaisri Road.

BUILDING AREA (Sq. Meters)

Usable Area:	256.0
Terrace-Corridor:	39.0
Open Washing Area:	0.0
Driveway:	36.0
Fence:	31.5
Garden:	488.4

---

Source: PADCO-LIF Comparative Cost Study, 1990.

TABLE 4-2

MIDDLE-INCOME  
SINGLE-FAMILY PROJECT

## DESCRIPTION

## PHYSICAL FEATURES

Location:	Talingchan
Distance to city center:	11 km
Site area:	13-2-66 (Rai-Ngan-Sq. Wah)
Marketable area:	9-1-30
Circulation:	4-0-36
Non-Marketable Area:	0-0-50
Facilities:	0-0-50
Housing Units:	71 Units
Date of Development:	1987

## CONSTRUCTION

Structure:	Reinforced concrete
Roof:	Structural steel with momia tiles
Floors:	Reinforced concret with terrazzo, ceramic tiles and wood.
Partition:	Brick with wall plastering
Ceiling:	Gypsum Board
Windows:	Wood frame with glass
Doors:	Wood frame with glass and wood
Facilities:	None

## SERVICES

Electricity:	Metropolitan Electricity Authority.
Water Supply:	Water Works Authority.
Sewage:	Discharged into a septic tank.
Drainage:	Connected to a project water treatment plant.
Telecommunications:	No telecommunications system on site.
Transportation:	Two public transport serviced from the site to Pinklao-Nakhonchaisri Road.

## BUILDING AREA (Sq. Meters)

	Type 1	Type 2	Type 3
Usable Area	74.5	89.2	100.0
Terrace-Corridor	4.5	18.9	12.0
Open Washing Area	6.0	5.3	6.0
Driveway	24.0	25.5	26.0
Fence	14.2	14.2	14.2
Garden	51.6	15.0	60.0

Source: PADCO-LIF Comparative Cost Study, 1990.

TABLE 4-3  
MIDDLE-INCOME  
TOWNHOUSE PROJECT  
DESCRIPTION

PHYSICAL FEATURES

Location:	Bang Kaen
Distance to City center:	19 km
Site area:	3-2-40 (Rai-Ngan-Sq. Wah)
Marketable area:	2-2-56
Circulation:	0-2-52
Non-Marketable area:	0-1-32
Facilities:	None
Housing Units:	63 dwelling units
Date of Development:	1987

CONSTRUCTION

Structure:	Reinforced concrete
Roof:	Structural steel, roman tiles, monia tiles
Walls:	Brick with wall plastering
Floors:	Reinforced concrete, ceramic tiles, wood
Partition:	Brick with wall plastering
Ceiling:	Gypsum board
Windows:	Wood frame with glass
Doors:	Wood frame with glass, wood
Facilities:	None

SERVICES

Electricity:	Metropolitan Electricity Authority
Water Supply:	Water Works Authority
Sewage:	Discharged to septic tank
Drainage:	Metropolitan Drainage system
Telecommunications:	None on site
Transportation:	Access to public transportation

BUILDING AREA (Sq. Meters)

	Type 1	Type 2
Usable Area:	66.0	96.0
Terrace-Corridor:	5.5	13.5
Open Washing Area:	8.0	15.0
Driveway:	16.5	16.5
Fence:	15.3	14.8
Garden:	4.0	12.0

Source: PADCO-LIF Comparative Cost Study, 1990.

TABLE 4-4  
 LOW-INCOME  
 TOWNHOUSE PROJECT  
 DESCRIPTION

PHYSICAL FEATURES

Location:	Bang Kaen
Distance to city center:	22 km
Site area:	8-2-52 (Rai-Ngan-Sq. Wah)
Marketable area:	6-2-1
Road:	2-0-52
Non-Marketable area:	None
Facilities:	None
Housing Units:	121 dwelling units
Date of Development:	1987

CONSTRUCTION

Structure:	Reinforced concrete
Roof:	Structural steel, roman tiles
Walls:	Hollow concrete block, wall plastering
Floors:	Reinforced concrete
Partition:	Hollow concrete block, wall plastering
Ceiling:	Gypsum board
Windows:	Wood frame with glass
Doors:	Wood frame
Facilities:	None

SERVICES

Electricity:	Metropolitan Electricity Authority
Water Supply:	Water Works Authority
Sewage:	Discharge to septic tank
Drainage:	Metropolitan drainage system
Telecommunications:	None on site
Transportation:	Public transportation is available

BUILDING AREA (Sq. Meters)

Usable area:	38.0
Terrace-corridor:	5.0
Open washing area:	4.5
Driveway:	6.0
Fence:	6.0

Source: PADCO-LIF Comparative Cost Study, 1990.

TABLE 4-5  
HIGH-INCOME  
CONDOMINIUM PROJECT

DESCRIPTION

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PHYSICAL FEATURES

Location:	Patumwan
Distance to City Center:	3 km
Land Area:	3,050.40 Sq. M
Site coverage:	591.57 Sq. M
Gross Floor Area:	14,928.82 Sq. M
Floor Area Ratio:	4.9:1
Net marketable area:	10,218 Sq. M
Circulation:	2,083 Sq. M
Housing Units:	29
Date of Development:	1987

CONSTRUCTION

Structure:	Reinforced Concrete
Roofs:	Reinforced Concrete
Walls:	Brick with wall plastering, marble
Floors:	Reinforced concrete with ceramic tiles, parquet and marble (WC)
Partition:	Brick with wall plastering
Ceiling:	Gypsum board
Windows:	Aluminum frame with glass
Doors:	Aluminum frame with glass
Facilities:	None

SERVICES

Electricity:	Metropolitan Electricity Authority
Water Supply:	Water Works Authority
Sewage:	Discharged to septic tank
Drainage:	Connected to project treatment plant
Telecommunications:	Available on site
Transportation:	No public transportation on Chidlom Road. Easy walk to Phetburi Road for connections.

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Source: PADCO-LIF Comparative Cost Study, 1990.

TABLE 4-6

AVERAGE HOUSING PRICES 1987 AND 1990  
(in constant 1990 baht)

PROJECT	1987	1990	Annual Compound Increase 1987-90
High-Income Single Family	7,042,254	15,000,000	28.3%
Middle-Income Single Family	734,808	1,354,225	22.4
Middle-Income Townhouse	372,047	778,571	27.6
Low-Income Townhouse	204,672	500,000	34.3
High-Income Condominium	8,082,402	15,131,034	23.0
<b>WEIGHTED AVERAGE</b>	<b>2,144,504</b>	<b>4,366,276</b>	<b>26.4</b>

AVERAGE HOUSING PRICE PER SQUARE METER OF USABLE AREA  
1987 AND 1990  
(in constant 1990 baht)

PROJECT	1987	1990	Annual Compound Increase 1987-90
High-Income Single Family	27,509	58,594	28.3%
Middle-Income Single Family	8,238	15,182	22.4
Middle-Income Townhouse	4,593	9,612	27.6
Low-Income Townhouse	5,386	13,158	34.3
High-Income Condominium	22,961	42,986	23.0
<b>WEIGHTED AVERAGE</b>	<b>10,977</b>	<b>22,951</b>	<b>27.6</b>

Source: PADCO-LIF Comparative Cost Study, 1990.

square meter prices are projected to increase from an average of 10,977 to 22,951 baht between 1987 and 1990. As will be illustrated below, the price increases that could be expected given current market conditions are closely in line with increases in land and construction cost escalations. The next section assesses the costs of developing these projects for 1987 and 1990 and considers what components were most responsible for increasing costs.

## **COSTS OF DEVELOPMENT**

Tables 4-7 through 4-11 and Figures 4-1 through 4-5 present construction cost estimates for the projects for both 1987 and 1990. Tables 4-12, 4-13, and 4-14 summarize key costs for the five projects. On a per unit basis, 1987 total development costs (in 1990 baht) range from 184,107 baht for the low-cost townhouse to 6,017,241 baht for the high income condominium project. If built in 1990 the costs of all housing projects would be substantially higher ranging from 459,008 baht for the low-cost townhouse project to 13,227,931 baht for the condo project. As illustrated in Table 4-12, overall costs, weighted by the number of housing units in each project, would increase by 127 percent in real inflation-adjusted terms, an annual compound increase of 31.4 percent.

The lower portion of Table 4-12 presents overall housing development costs in terms of the average usable area of a dwelling unit. The costs range widely reflecting the different market segments on which the projects are targeted. What is quite clear is that housing costs and prices have increased in response to demand pressures.

The major cause of the increase in housing development costs is rising land costs. As Table 4-13 illustrates, real, inflation-adjusted land costs increased by 375 percent between 1987 and 1990, an annual compound increase of 67 percent. Rising land costs make it the key determinant of overall housing costs. Land costs in 1987 ranged from 1,173 baht per square wah for the low-cost townhouse project to 44,980 for the high-income condominium project. The increase for land prices depends on the location of the project. For example, projects located on Bangkok's suburban fringe had the greatest increases because this is where land prices increased the most. As Table 4-13 reveals, the portion of total housing costs represented by land costs as increased from an overall average of 26 percent in 1987 to nearly 46 percent in 1990. These rising costs are forcing developers to shift to sites located on the fringe of Bangkok. Many developers have stopped building for the low and middle-income market, because margins are too tight. Some developers have stated that it is impossible to build detached middle-income housing-- the price of land is simply too high.

TABLE 4-7

HIGH-INCOME SINGLE FAMILY PROJECT  
COST AND PRICE ANALYSIS, 1987, 1990  
(in millions of baht)

COST ITEM	1987	1987 Costs in 1990 baht	1990	Real Increase %	Share of Real Cost Increase
RAW LAND	85.59	100.46	342.34	240.8%	57.4%
LAND FILL	6.42	7.54	9.41	24.9	0.4
ROAD	5.58	6.55	11.15	70.2	1.1
ELECTRIC	4.80	5.63	24.31	331.5	4.4
WATER	4.80	5.63	24.31	331.5	4.4
BUILDING	42.38	49.74	84.00	68.9	8.1
TAXES	16.80	19.72	42.00	113.0	5.3
OPERATING COSTS	22.43	26.33	96.53	266.7	16.7
ADVERTISING	6.72	7.89	16.80	113.0	2.1
TOTAL COSTS	195.52	229.48	650.85	183.6%	100.0%
PROFIT	140.48	164.88	189.15	14.7%	
TOTAL REVENUE	336.00	394.37	840.00	113.0%	
AVERAGE COST PER UNIT	3,491,429	4,097,921	11,622,321	183.6%	
AVERAGE PRICE PER UNIT	6,000,000	7,042,254	15,000,000	113.0%	

Source: PADCC-LIF Comparative Cost Study, 1990.

TABLE 4-8

MIDDLE-INCOME SINGLE FAMILY PROJECT  
 COST AND PRICE ANALYSIS, 1987, 1990  
 (in millions of baht)

COST ITEM	1987	1987 Costs in 1990 baht	1990	Real Increase %	Share of Real Cost Increase
RAW LAND	12.61	14.80	42.04	184.1%	72.4%
LAND FILL	2.10	2.46	3.08	25.0	1.6
ROAD	2.94	3.45	4.25	23.2	2.1
ELECTRIC	1.33	1.56	2.46	57.7	2.4
WATER	1.33	1.56	2.46	57.7	2.4
BUILDING	13.67	16.04	20.35	26.9	11.4
TAXES	1.78	2.09	3.85	84.2	4.7
OPERATING COSTS	1.93	2.27	2.95	30.0	1.8
ADVERTISING	0.44	0.52	0.96	84.6	1.2
TOTAL COSTS	38.13	44.75	82.40	84.1%	100.0%
PROFIT	6.31	7.42	13.75	85.3%	
TOTAL REVENUE	44.45	52.17	96.15	84.3%	
AVERAGE COST PER UNIT	537,042	630,331	1,160,563	85.7%	
AVERAGE PRICE PER UNIT	626,056	734,808	1,354,225	84.3%	

Source: PADCO-LIF Comparative Cost Study, 1990.

TABLE 4-9

MIDDLE INCOME TOWNHOUSE PROJECT  
 COST AND PRICE ANALYSIS, 1987, 1990  
 (in millions of baht)

COST ITEM	1987	1987 Costs in 1990 baht	1990	Real Increase %	Share of Real Cost Increase
RAW LAND	2.34	2.75	16.20	489.8%	65.1%
LAND FILL	0.43	0.50	0.79	56.5	1.4
ROAD	0.25	0.29	0.60	104.5	1.5
ELECTRIC	0.84	0.99	1.37	39.0	1.9
WATER	0.84	0.99	1.37	39.0	1.9
BUILDING	10.22	12.00	16.44	37.1	21.5
TAXES	1.21	1.42	1.99	40.1	2.8
OPERATING COSTS	1.21	1.42	1.99	40.1	2.8
ADVERTISING	0.20	0.23	0.49	108.7	1.2
TOTAL COSTS	17.54	20.59	41.24	100.3%	100.0%
PROFIT	2.43	2.85	7.81	173.8%	
TOTAL REVENUE	19.97	23.44	49.05	109.3%	
AVERAGE COST PER UNIT	278,413	326,775	654,603	100.3%	
AVERAGE PRICE PER UNIT	316,984	372,047	778,571	109.3%	

Source: PADCO-LIF Comparative Cost Study, 1990.

TABLE 4-10

LOW INCOME TOWNHOUSE PROJECT  
COST AND PRICE ANALYSIS, 1987, 1990  
(in millions of baht)

COST ITEM	1987	1987 Costs in 1990 baht	1990	Real Increase %	Share of Real Cost Increase
RAW LAND	4.05	4.75	32.36	580.8%	83.0%
LAND FILL	0.97	1.14	1.78	56.3	1.9
ROAD	0.54	0.63	0.87	37.3	0.7
ELECTRIC	0.81	0.95	1.15	21.0	0.6
WATER	0.81	0.95	1.15	21.0	0.6
BUILDING	9.57	11.23	13.53	20.5	6.9
TAXES	0.85	1.00	2.42	142.6	4.3
OPERATING COST	1.17	1.37	1.67	21.6	0.9
ADVERTISING	0.21	0.25	0.61	147.5	1.1
TOTAL COSTS	18.98	22.28	55.54	149.3%	100.0%
PROFIT	2.12	2.49	4.96	99.3%	
TOTAL REVENUE	21.10	24.77	60.50	144.3%	
AVERAGE COST PER UNIT	156,860	184,107	459,008	149.3%	
AVERAGE PRICE PER UNIT	174,380	204,672	500,000	144.3%	

Source: PADCO-LIF Comparative Cost Study, 1990.

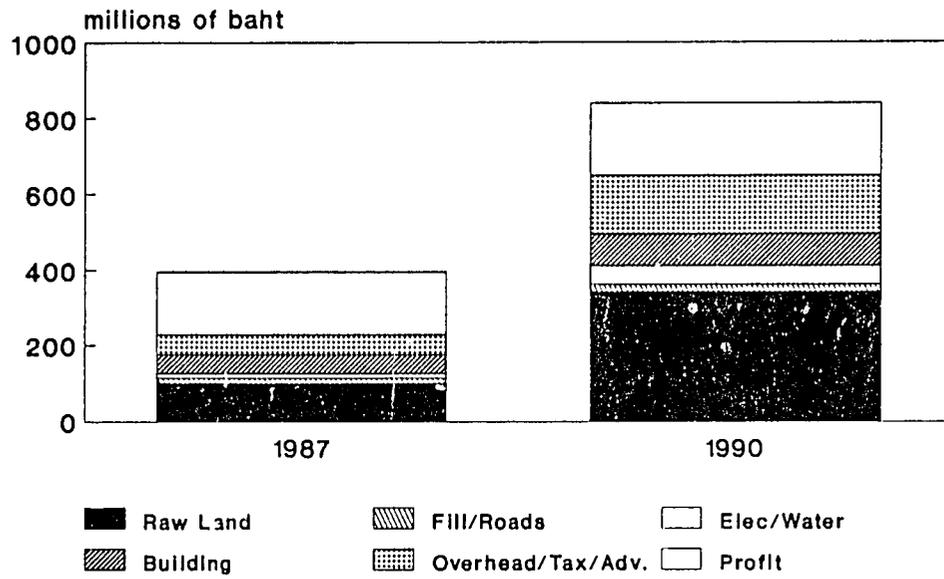
TABLE 4-11

HIGH INCOME CONDOMINIUM PROJECT  
 COST AND PRICE ANALYSIS, 1987, 1990  
 (ir. millions of baht)

COST ITEM	1987	1987 Costs in 1990 baht	1990	Real Increase %	Share of Real Cost Increase
RAW LAND	34.32	40.28	137.27	240.8%	54.2%
LAND FILL	0.29	0.34	0.42	23.4%	0.0%
ROAD	1.04	1.22	2.08	70.4%	0.5%
ELECTRIC	5.28	6.20	9.06	46.2%	1.6%
WATER	5.28	6.20	9.06	46.2%	1.6%
BUILDING	104.50	122.65	179.15	46.1%	31.6%
TAXES	7.89	9.26	17.55	89.5%	4.6%
OPERATING COSTS	11.91	13.98	20.24	44.8%	3.5%
ADVERTISING	3.99	4.68	8.78	87.5%	2.3%
TOTAL COSTS	174.50	204.81	383.61	87.3%	100.0%
PROFIT	25.20	29.58	55.19	86.6%	
TOTAL REVENUE	199.70	234.39	438.80	87.2%	
AVERAGE COST PER UNIT	6,017,241	7,062,490	13,227,931	87.3%	
AVERAGE PRICE PER UNIT	6,886,207	8,082,402	15,131,034	87.2%	

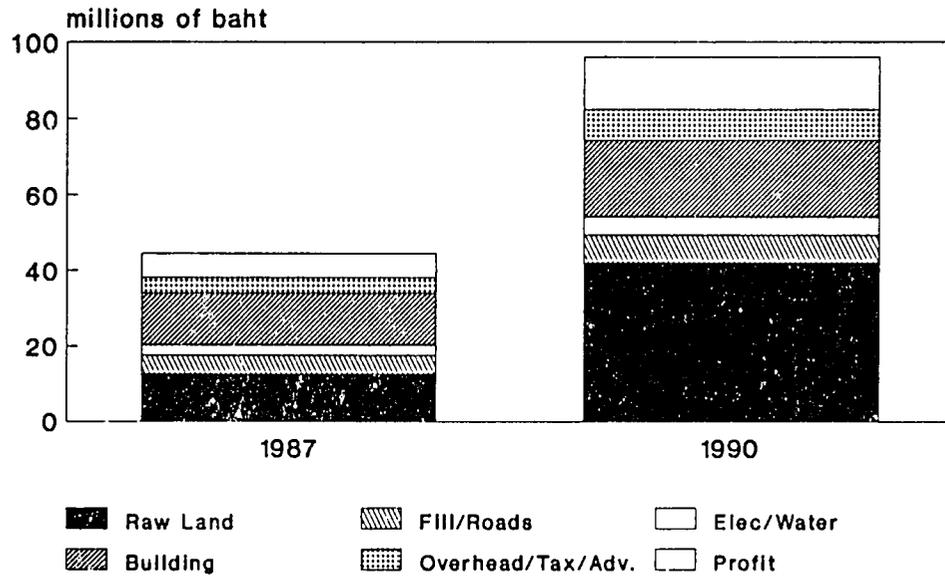
Source: PADCO-LIF Comparative Cost Study, 1990.

Figure 4-1  
 HIGH INCOME SINGLE FAMILY  
 COST AND PRICE ANALYSIS



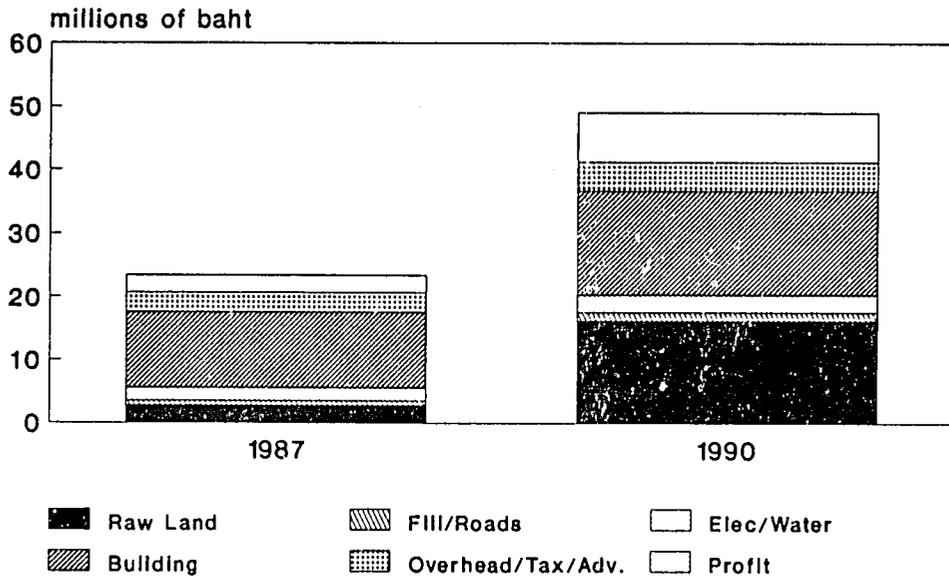
PADCO-LIF LAND MARKET ASSESSMENT, 1990

Figure 4-2  
MIDDLE INCOME SINGLE FAMILY  
COST AND PRICE ANALYSIS



PADCO-LIF LAND MARKET ASSESSMENT, 1990

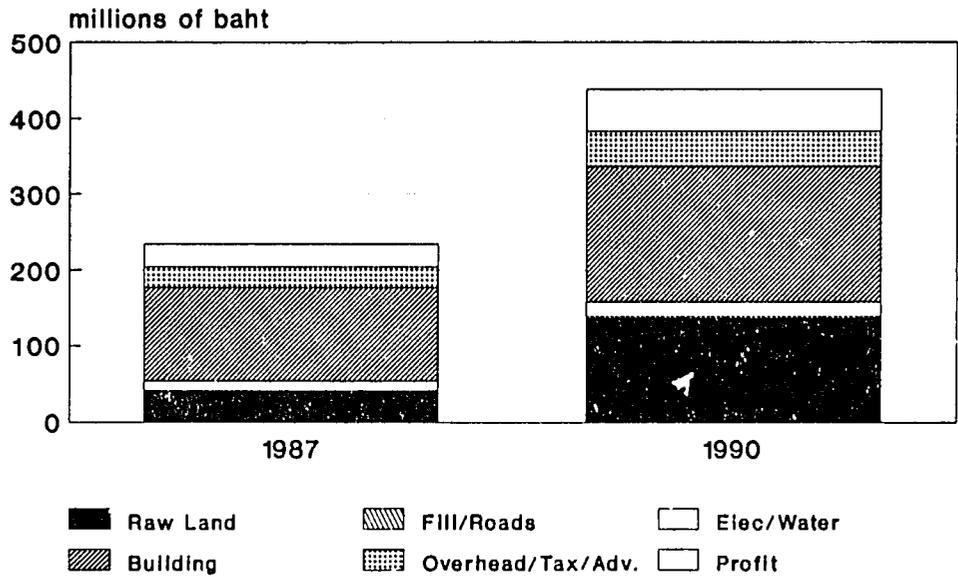
**FIGURE 4-3  
MIDDLE INCOME TOWNHOUSE  
COST AND PRICE ANALYSIS**



PADCO-LIF LAND MARKET ASSESSMENT, 1990



**FIGURE 4-5  
HIGH INCOME CONDOMINIUM  
COST AND PRICE ANALYSIS**



PADCO-LIF LAND MARKET ASSESSMENT, 1990

TABLE 4-12

HOUSING PROJECT TOTAL DEVELOPMENT COSTS, 1987 1990  
(in millions of baht)

Project Name	Housing Type	1987 Total Cost	1987 Total Cost in 1990 baht	1990 Total Cost	Percent increase in Real 1990 baht
High Income	SF	195.52	229.48	650.85	183.6%
Middle Income	SF	38.13	44.75	82.40	84.1
Middle Income	TH	17.54	20.59	41.24	100.3
Low Income	TH	18.98	22.28	55.54	149.3
High Income	Condo	174.50	204.81	383.61	87.3
Weighted Average					127.0%

COSTS PER SQUARE METER OF USABLE AREA

Project Name	Housing Type	1987 Total Cost in 1990 baht	1990 Total Cost	Percent increase in Real 1990 baht
High Income	SF	16,008	45,400	183.6%
Middle Income	SF	7,066	13,010	84.1
Middle Income	TH	4,034	8,082	100.3
Low Income	TH	4,845	12,079	149.3
High Income	Condo	20,064	37,579	87.3
Weighted Average				127.0%

Source: PADCO-LIF Comparative Cost Study, 1990.

TABLE 4-13

## SUMMARY OF PROJECT LAND COSTS

Project Name	1987 Land Cost B/Wah	1990 Land Cost B/wah	1987 Land cost as % of Total cost	1987-90 Percent Increase in land Cost*	1990 Land cost as % of Total cost
High Income SF	5,000	20,000	44.8%	240.8%	57.1%
Middle Income SF	2,307	7,680	33.1	183.8	34.9
Middle Income TH	1,625	11,250	13.3	489.1	39.3
Low Income TH	1,173	9,370	21.3	581.3	58.3
High Income CON	44,980	48,850	19.7	-7.5	9.7
Weighted Average	5,860	14,486	26.0%	374.9%	45.6%

\* in constant 1990 baht.

Source: PADCO-LIF Comparative Cost Study, 1990.

While construction costs in the Kingdom have risen substantially over the past five years, increasing by 35 percent between 1987 and 1990, their impacts on overall housing costs are not as significant as rising land cost. For the five projects, actual building construction, presented in Table 4-14, increased by 26.3 percent over the period.

Overall, the pattern of cost increases does not reveal any sharp surprises: construction costs and land prices account for most of the upward pressure on housing costs. In terms of housing prices, demand pressures have been captured in the form of higher land prices, and developers are not reaping large windfall profits unless they have been land banking parcels for the past five years. In fact a recent study of housing developers in Bangkok found that banked land was a critical strategy for building low- and middle-income housing [Foo, 1990].

#### **DEVELOPERS FOCUS GROUP RESPONSE TO CASE STUDIES**

The developers agreed with the findings of the five case studies. All indicated that rising land cost was the most significant factor pushing up housing prices over the past three years. The developers viewed high land prices as the most important factor affecting the cost of housing development in the low-income sector. Most developers indicated that low- and middle-income households were being priced out of the market.

Several developers suggested that speculation in vacant land and housing units is an important factor behind land and housing inflation. In some housing projects up to 50 percent of the buyers are investors and speculators, not end users. Due to greater access to financing mechanisms, speculators are able to continue to invest in land and housing, maintaining inflationary price levels in the land market. Some developers called for stricter lending rules to curb speculative investments in housing and land.

Apart from known factors such as increased cost of building materials and increased financing costs, delays in the approval, land titling and registration processes on the part of various government authorities was cited as creating additional housing development costs. Some developers mentioned the necessity of making informal payments to facilitate timely governmental approvals.

Nearly all developers mentioned the need for more road and infrastructure services to help expand the supply of land for residential development. Most developers mentioned that they would not oppose measures to implement property taxes to help finance infrastructure investments.

TABLE 4-14

## SUMMARY OF PROJECT BUILDING COSTS

Project Name	Housing Type	1987		1987-90	
		1987 Building Cost	Building Cost in 1990 Baht	1990 Building Cost	Increase Real Building Cost
High-Income	SF	42.38	49.74	57.54	15.7%
Middle-Income	SF	13.67	16.04	20.35	26.9
Middle-Income	TH	10.22	12.00	16.44	37.0
Low-Income	TH	9.57	11.23	13.53	20.5
High-Income	CONDO	104.50	122.65	179.15	46.1
Weighted Average					26.3%

\* in constant 1990 baht.

Source: PADCO-LIF Comparative Cost Study, 1990.

## OVERALL CONCLUSIONS

As the five cases illustrate, the cost of housing construction in the Bangkok metropolitan area has increased dramatically over the past three years. Both land and building materials costs have moved up sharply. There is a critical shortage of skilled construction workers, engineers and supervisors, creating serious problems for high-rise projects.

With the costs of projects increasing by about 100 percent between 1987 and 1990, financial strains are squeezing smaller developers. In a recent survey of Bangkok housing developers, 53 percent stated that it was more difficult to get into the development business than in the past [Foo. 1990]. Access to capital to finance projects was mentioned by 44 percent as being the biggest hurdle. Higher land costs also make it more difficult to finance projects. Many developers are building smaller projects to cut financing requirements.

Rising land and housing costs and prices, rising interest rates and a growing supply of units are likely to dampen housing demand in the future. As indicated in Chapter 2, housing stock increases over the past three years have been substantial, and are currently increasing at an annual rate of 90,000 units. Based on population and household data, the actual increase in households averages 40,000 to 50,000 per year. While there is still a considerable backlog of unmet housing demand, the level of housing production over the past five years has surely worked some of this down. It is quite likely that inventories of housing stocks will start increasing, especially in the upper-middle- and high-income price ranges. The slowing down of Bangkok's housing market should relieve demand-pull pressures on the prices of construction materials, labor and land.

The next chapter examines the overall housing supply situation and explores how developers have adjusted production to moderate housing prices. The chapter also draws out the implications of changing housing supply conditions for overall housing affordability.

## CHAPTER 5

### BUILDING HOUSING IN A CHANGING ENVIRONMENT: A PROFILE OF PRIVATE DEVELOPER HOUSING

#### INTRODUCTION

The private-sector housing industry expanded rapidly during the 1970s and 1980s, outpacing the growth of Bangkok's slums and other informal land and housing providers. The vitality of the private, formal sector, housing producers has been recognized as the principal reason why overall housing affordability in Bangkok improved during the 1980s and why the relative growth of slum areas slowed. This trend was largely the result of low-cost housing developments pioneered by the private real estate developers. In fact, low-cost private sector housing developments are priced below many housing units provided by the National Housing Authority. The 1987 Bangkok Land Management Study documented these trends and suggested that the National Housing Authority not attempt to compete with these projects but to go "down-market" and produce either low-priced rental units or low-cost housing selling below 150,000 baht.

As illustrated by the five case studies in the previous chapter, during the past three years, land and construction costs have risen dramatically pushing up housing prices by an annual average of 26.4 percent. If the lid cannot be kept on housing prices, the private sector's production of affordable housing will be throttled. To help assess current housing supply conditions and identify how developers are coping with rising land and construction costs, this chapter examines patterns of private sector housing production over the decade.

The private housing developer has emerged as the dominant player in the Bangkok residential property market. As was reported in the 1987 Bangkok Land Management Study, private housing development projects first started in the late 1960s when developers began building multi-unit housing projects for the upper- and middle-income households. Prior to that time, housing was built on an individual basis on plots. By 1973, 33 companies were operating in Bangkok. These firms had land holdings of approximately 5,000 rai and had sold nearly 8,000 units [Nathalang, 1974]. This type of housing was one of the fastest growing segments in the Bangkok housing market between 1974 and 1984, increasing by over 400 percent and adding over 90,000 units to the stock of housing. Because of the strong performance of this segment of the market, the Sixth Plan of the National Economic

and Social Development Board stresses private sector housing production. Based on the adjusted housing stock tabulations presented in Appendix C, large-scale developer-built housing projects added nearly 160,000 units between 1984 and 1988, accounting for nearly 50 percent of the total housing stock increase.

The purpose of this chapter is to assess patterns of housing development in the metropolitan area and to compare current activity with that of past years. The data for this chapter come from a survey of 60 housing development projects located across Bangkok. (A copy of the questionnaire is contained in Appendix B.) The 60 projects were randomly selected from a roster of 250 projects marketing housing units during April, 1990. Together these projects account for 24,918 planned dwelling units. In 1986 a similar survey of developer-built housing projects was conducted. A total of 52 developer-built residential projects were surveyed, accounting for 28,183 planned dwelling units. Where consistent, the results of both surveys are presented to illustrate changes in the private sector housing delivery system. Additional material is presented on a survey of 50 housing developers operating in metropolitan Bangkok [Foo, 1990].

#### OVERALL CHARACTERISTICS OF THE PROJECTS

Responding to rising land and construction costs, the housing delivery system has dramatically changed over the past four years. Table 5-1 presents the general characteristics of the housing projects surveyed in 1990 and 1986. As the table illustrates, housing projects have moved farther into the suburbs (20.3 versus 16.7 kilometers from the city center), are comprised of less land (43 versus 95 rai), and have fewer units (380 versus 530). The average density of housing development is now much greater, despite the fact that projects are now even farther from the city center (8.9 versus 5.6 units per rai). The higher densities are the result of considerable condominium development now taking place in the region as developers seek ways of cutting the impacts of rising land prices. In 1986, nearly 50 percent of the housing production was in single-family housing units. Almost all the remainder, 49 percent, was comprised of townhouses and duplexes. The rest were condos-- less than 2 percent. By 1990, the market had shifted dramatically and condominiums now comprise 43 percent of the market. Single-family housing has fallen to 36 percent of production and townhouses now stand at 21 percent.

Despite the fact that housing projects are shifting to the fringes of the metropolitan area, they are better provided with services now than in 1986. As Table 5-1 shows, today's projects more likely to be provided with some form of public or private transportation, piped water, electricity and telephones.

TABLE 5-1  
SUMMARY CHARACTERISTICS OF PRIVATE DEVELOPER-BUILT  
HOUSING PROJECTS 1986 AND 1990

CHARACTERISTICS	1990 PROJECTS	1986 PROJECTS
Average Distance to City Center	20.3	16.7
Average Land Area Rai	42.8	95.4
Average Dwelling Units	380.4	530.2
Average Density (Units/Rai)	8.9	5.6
Percent with Public Transport Access	89.8%	81.1%
Average Distance To Main Road (meters)	558.0	NA
Percent with MWWA Water	88.1%	67.9%
Percent Using Tubewells	11.9%	38.0%
Percent With Electricity	98.3%	98.1%
Percent With Telephones	74.6%	39.6%
Total housing covered by the Surveys	28,183	24,918

Source: PADCO-Land Institute Foundation,  
Housing Projects Survey, 1990.

Table 5-2 provides a breakdown of the distribution of housing prices for the 1990 and 1986 surveys. It also includes tabulations from the National Housing Authority's 1980 survey of land and housing projects [1980]. The table shows that in real, 1990 inflation-adjusted prices, the distribution of housing in 1990 still reflects the bi-modal pattern found in 1986. Between 1980 and 1990 the percentage of housing production taking place at prices below 300,000 baht has increased steadily. In the middle-income range of housing priced between 300,000 and 700,000 production has steadily declined from 60 percent of the total in 1980 to 35 percent in 1990. The upper end of the production, houses priced over 700,000 baht, production has increased, rising from 34 percent in 1980 to 48 percent in 1990.

Table 5-3 outlines the distribution of planned housing by sales price per square meter. As the table illustrates, by 1990 over 70 percent of the units on the market were priced above 6,300 baht. This dramatic rise in price per meter is a clear result of rising land and construction costs in the metropolitan area, as described in Chapter 4. It is encouraging that the low-cost end of the market is still strong despite rising land and building materials costs.

Financial characteristics are presented in Table 5-4 for the 1990 and 1986 projects. One key change is the gradual increase in the typical term of a mortgage, from 148 months to 180 in 1990. This lengthening reduces monthly mortgage payments and assists affordability. On the other hand interest rates have increased, partially offsetting the boost from longer loan duration. Much of the housing market in 1986 was characterized by first-time buyers (89 percent). In contrast, such buyers only accounted for 41 percent of purchases in 1990. (It should be stated that the 1990 statistic is based on summary information provided by housing project managers and does not come from interviews with individual buyers. Thus, these two statistics are not directly comparable.) An important finding is that 13 percent of the current purchasers are buying for investment reasons, and 16 percent were purchasing more than one unit in a project. This suggests that investment demand is now a factor in the residential market.

Table 5-5 profiles condominium, single-family and townhouse units. The average distance from the city center of all three types of units increased dramatically between 1986 and 1990. The living area of the units increased as well, more than doubling for the condos--reflecting the luxury segment of the market. In the suburban areas, plot sizes increased for single-family and townhouse units.

The overall price of housing substantially increased, rising 518.9 percent for condo units: 138.3 percent for single-family units and 111.6 percent for townhouses. The increases reflect higher land and construction costs and also the fact that units are larger. In terms of sales price per square meter, the prices of condos increased by 87.7 percent; single-family units, 82.1

TABLE 5-2

DISTRIBUTION OF HOUSING PRICES IN METROPOLITAN BANGKOK  
1980, 1986 AND 1990 IN CONSTANT 1990 BAHT

PRICE RANGE	PERCENT OF PLANNED HOUSING		
	1980	1986	1990
LESS THAN 300,000	5.6%	9.7%	16.6%
300,001 to 500,000	26.1	39.4	26.0
500,001 to 700,000	33.8	9.1	9.0
700,001 to 900,000	13.3	10.2	18.0
OVER 900,000	20.6	31.6	29.6
TOTAL	100.0%	100.0%	100.0%

Sources: 1980: National Housing Authority, 1980.  
 1986: Bangkok Land Management Study, 1987.  
 1990: PADCO-Land Institute Foundation Housing  
 Projects Survey, 1990.

TABLE 5-3

DISTRIBUTION OF PLANNED HOUSING UNITS BY SALES PRICE  
PER SQUARE METER OF USABLE AREA, 1980, 1986, 1990  
IN CONSTANT 1990 BAHT

PRICE PER SQ. METER RANGE	PERCENT OF PLANNED UNITS		
	1980	1986	1990
Under 3,900	14.4	51.4	8.0
3,901 - 4,700	25.4	6.4	5.6
4,701 - 5,500	23.3	30.2	5.8
5,501 - 6,300	25.7	8.8	10.2
Over 6,300	11.2	3.2	70.4
TOTAL	100.0	100.0	100.0

Sources: 1980: National Housing Authority, 1980.  
1986: Bangkok Land Management Study, 1987.  
1990: PADCO-Land Institute Foundation  
Housing Projects Survey, 1990.

TABLE 5-4  
 FINANCING CHARACTERISTICS OF  
 PRIVATE DEVELOPER-BUILT HOUSING PROJECTS  
 1986, 1990

CHARACTERISTICS	1990	1986*
Average Age of Buyer	36.1	37.2*
Average Downpayment (Percent)	31.8%	30.0
Average Mortgage Term (months)	179.6	147.6*
Average Interest Rate	13.9%	13.1%
Percent Buying 1st House	40.6%	89.0%
Percent Buying more than one unit	16.0%	N.A.
Percent Buying for Investment	13.9%	N.A.

\* From 1986 Bangkok Land Management Study,  
 1986 Household Survey of 650 households.

Source: PADCO-Land Institute Foundation,  
 Housing Projects Survey, 1990.

**TABLE 5-5**  
**SUMMARY CHARACTERISTICS OF PRIVATE DEVELOPER-BUILT**  
**HOUSING PROJECTS, 1986 AND 1990, BY TYPE OF UNIT**

CHARACTERISTICS	CONDOMINIUMS		SINGLE FAMILY		TOWNHOUSES	
	1986	1990	1986	1990	1986	1990
Distance From City Center, Km	3.5	15.5	18.4	28.0	17.7	24.7
House Size M2	72.5	180.9	97.2	149.0	93.1	118.5
Plot size Wah2	N.A.	N.A.	50.9	73.5	22.9	27.0
Price (1990 Constant Baht)	888,893	5,501,179	774,320	1,845,549	479,020	1,013,794
Price/Sq. Mt. Of Housing	14,960	28,072	8,300	15,111	5,311	8,954
Sales/Per Month	1.8	20.1	2.9	6.4	3.7	12.9
Percent of Units Sold	N.A.	60.1%	N.A.	64.4%	N.A.	81.8%
Total Number of Units	398	12,156	13,975	10,089	13,310	5,938
Total Number Sold	N.A.	7,311	N.A.	6,496	N.A.	4,859

Source: PADCO-Land Institute Foundation Housing Projects Survey, 1990; Bangkok Land Management Study 1986, Household Survey.

apartments, and townhouses, 68.6 percent. Despite the higher prices, the sales of housing units in April, 1990 was strong and outpaced monthly sales rates for projects surveyed in October and November, 1986. However, as will be described below, the production of low-cost condominiums was significant as well.

#### HOUSING PRODUCTION PATTERNS BY DISTANCE TO CITY CENTER

Table 5-6 provides comparative information about condominiums, single-family units and townhouses by distance from the city center for 1990. By 1990, the condominium market had broadened to include projects all across the city. This was in contrast to 1986, when condo projects were concentrated within 10 kilometers of the city. With the advent of the low-cost suburban condominium, prices dropped sharply with increasing distance from the city center. As can be seen from the table, the bulk of the planned condo units are located in the suburban areas where land is less expensive. Approximately two-thirds of the planned units are located more than 20 kilometers from the city center, and are targeted on the low- and middle-income buyer.

In the case of single-family units, more distant projects tend to have larger houses and plots. The single-family prices patterns do not reveal a typical price gradient. They first rise, then fall with increasing distance from the city center. This is due to the inclusion of a very large moderately-priced housing project located 7 kilometers from the city center.

Townhouse units are located in suburban areas. As Table 5-6 reveals, the price and size of units is higher in the 11-20 kilometer band than in the outlying one. Most townhouse production is targeted to take place in the outlying areas.

#### LOW-COST HOUSING DEVELOPMENT IN THE FACE OF RISING COSTS

Despite the rapid increase in housing development inputs, many developers operating in the metropolitan area continue to build and sell housing priced below 250,000 baht. To ascertain the characteristics of these developers and their projects, Foo conducted an in-depth survey of 50 of these developers [1990]. This section draws from his findings.

According to the survey, 7.3 percent of all developers build low-cost housing. Of these, only a small portion (1 percent) exclusively build low-cost housing. Instead, most build a variety of types of units, extending from low- to medium-cost units. On average, the typical project has about 44 percent of its units for sale at prices below 300,000 baht. These developers produced 12,379 housing units, accounting for about 21.5 percent of all units built by the surveyed development companies. Of these units, about half (6,546) were priced below 300,000 baht. Table 5-7 illustrates the supply of housing in the Bangkok metropolitan

TABLE 5-6

## CHARACTERISTICS OF HOUSING UNITS

1990 BY DISTANCE FROM

CITY CENTER

## CONDOMINIUMS

DISTANCE FROM CITY CENTER, KM	SIZE OF UNIT SQ./MT.	PRICE OF UNIT	PRICE OF UNIT SQ./MT.	NUMBER OF UNITS PLANNED	NUMBER OF UNITS SOLD	PERCENT OF UNITS SOLD IN	PERCENT PLANNED UNITS
0-10	245.7	8,119,958	31,180	1,397	1,283	318	91.8%
11-20	153.8	4,661,694	38,403	2,814	1,843	286	65.5
OVER 20	62.9	407,678	7,465	7,945	4,185	488	52.7
OVERALL	180.9	5,501,179	28,072	12,156	7,311	1,092	60.1%

## SINGLE-FAMILY UNITS

DISTANCE FROM CITY CENTER, KM	SIZE OF UNIT SQ./MT.	SIZE OF PLOT WAH2	PRICE/ UNIT	PRICE SQ./MT.	NUMBER OF UNITS PLANNED	NUMBER OF UNITS SOLD	PERCENT PLANNED UNITS SOLD
0-10	102.0	65.0	1,400,000	13,085	5,000	3,000	60.0%
11-20	107.8	65.0	2,417,500	18,975	126	114	90.5
OVER 20	154.7	74.7	1,814,511	14,857	4,963	3,382	68.1
OVERALL	149.0	73.5	1,845,549	15,111	10,089	6,496	64.4%

## TOWNHOUSES

DISTANCE FROM CITY CENTER, KM	SIZE OF UNIT SQ./MT.	SIZE OF PLOT WAH2	PRICE/ UNIT	PRICE SQ./MT.	NUMBER OF UNITS PLANNED	NUMBER OF UNITS SOLD	PERCENT PLANNED UNITS SOLD
0-10	-	-	-	-	-	-	-
11-20	129.6	23.2	1,616,737	12,035	2,417	1,694	70.1%
OVER 20	113.7	28.6	753,432	7,623	3,521	3,165	89.9
OVERALL	118.5	27.0	1,013,794	8,954	5,938	4,859	81.8%

Source: PADCO-Land Institute Foundation Housing Projects Survey, 1990; Bangkok Land Management Study 1986, Housing Projects Survey.

TABLE 5-7  
 SURVEY OF LOW-COST HOUSING UNITS  
 FOR SALE IN BANGKOK, 1989

PRICE RANGE	UNITS	PERCENT OF TOTAL
100,000- 150,000	485	0.8
150,001- 200,000	1,108	1.9
200,001- 250,000	2,238	3.9
250,001- 300,000	2,715	4.7
300,001- 400,000	8,428	14.6
400,001- 500,000	10,027	17.4
500,001- 600,000	6,744	11.7
600,001- 700,000	4,560	7.9
700,001- 800,000	3,145	5.5
800,001- 900,000	3,530	6.1
900,001-1,000,000	1,154	2.0
1,000,001-1,500,000	5,383	9.3
1,500,001-2,000,000	2,499	4.3
OVER 2,000,000	5,605	9.7

SOURCE: National Housing Authority, Marketing Department,  
 unpublished tabulations, 1989.

area by price range for 1989. Approximately 6,500 dwellings, accounting for 11.3 percent of total housing supply were priced below 300,000 baht.

Virtually all low-cost townhouse projects are located in the suburbs, where land is less expensive. Most are located north of the city center. The average distance from the city center was 22.8 kilometers and the projects are well-located relative to employment centers (see Map 5-1). As new industry expands into these suburban areas, low- and moderate-cost housing will undoubtedly follow.

The outlying low-cost projects were larger on average than those covered in Table 5-1, averaging 71 rai, and containing 247 housing units on average. Most of the projects contained a mixture of low- and moderate-cost housing, averaging 44.1 percent low-cost housing.

Plot sizes for low-cost housing units are typically kept at a bare minimum. All low-cost units surveyed were townhouses with plot sizes averaging 18 to 20 square wah for one- and two-story units respectively. This is very close to the statutory minimum plot size of 16 square wah. Floor areas ranged from 40 to 60 square meters, averaging 51 square meters.

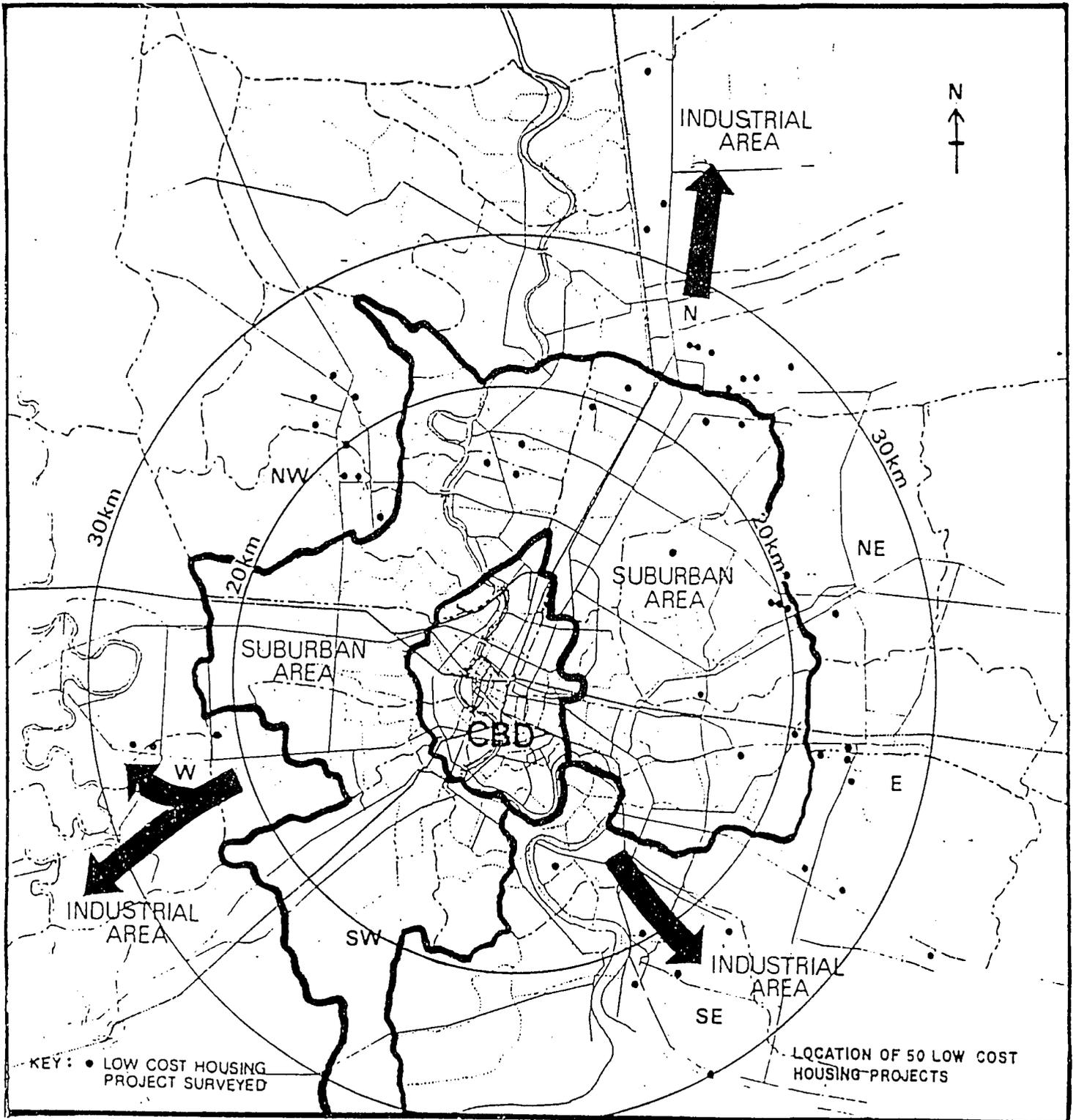
To economize on land costs, the projects tended to be located some distance from main roads. Only in 32 percent of the cases were the projects within walking distance of a bus route.

The average selling price of these low-cost dwelling units was 215,711 baht. The plot price averaged 3,719 baht per square wah (930 baht/square meter). The price of the average unit was 2,942 per square meter. Land costs accounted for 30 percent of the total purchase price of the typical low-cost dwelling.

Analyses of these low-cost townhouse projects reveals that 500,000 baht per rai (1,250 baht/square wah) is the critical "breaking point" beyond which low-cost townhouse projects cannot be feasibly constructed. As illustrated in Chapter 3 in Table 3-5, neither serviced nor unserviced residential land is available within 30 kilometers of the city center. Thus, it is no surprise that condominiums have replaced dense townhomes as the dominant form of low-cost housing production.

#### **AN EXAMPLE OF A LOW-COST CONDOMINIUM PROJECT**

In 1988, in response to rising land and construction costs, developers started building low-cost condominiums (prices range from 140,000 to 300,000 baht). They are small-- 24 to 30 square meters. Figure 5-1 illustrates a typical low-cost condominium project.



MAP 5-1

LOCATION OF LOW INCOME HOUSING PROJECTS



Tables 5-8 and 5-9 and Figure 5-2 outline the costs of a typical low-cost condominium project. The project is located in an industrial area in Samut Prakan and is about 15 kilometers from the Silom Road business district. The project is on a one rai site with a total of 160 dwelling units. Each unit's floor area averages 22.2 square meters. The density of the project is high--an FAR of 2.8:1. The building structure is reinforced concrete, with hollow concrete block walls and partitions. The building has electrical and water service. There is no telephone service or public transportation services available at the site. The average selling price was set at 295,188 baht-- 13,321 baht per square meter. Thus, the project provides an affordable alternative to the small townhouse product, and provides the developer with an adequate profit (13 percent).

The condominium project's one rai site is estimated to have cost the developer 12,000,000 baht (30,000 baht per square wah), illustrating that it is quite possible to build high-density projects close to the city and emerging employment centers. These types of condominium projects are a viable option for delivering low-cost housing.

There is however, some concern about the proliferation of these low-cost projects. Some people have called them, "high-rise slums" claiming that they are a blight. In many countries serious management and maintenance problems have arisen making it difficult to ensure that these types of projects are well-maintained. Experience has shown that it is far easier to maintain buildings if buyers are required to sign an agreement to make monthly payments for maintenance before obtaining possession [Barton and Silverman, 1987].

## CONCLUSIONS ABOUT HOUSING PRODUCTION

The data presented in this chapter illustrate that private housing developers have shifted to higher density condominium projects located at greater distances from the city center. The overall size of projects is declining as development costs escalate. The overall price of housing has increased tremendously reflecting rising land and construction costs.

In response to these rising costs, many private developers have started building low-cost condominium projects, with small units selling below 300,000 baht. As the example outlined in this chapter illustrates, these units can be feasibly built on land costing up to 12,000,000 baht per rai. Thus these projects can be built throughout the suburban areas of Bangkok. On lower cost sites, units are for sale between 140,000 and 250,000 baht. Assuming a 25 percent downpayment and a 20 year mortgage at 12.5 percent interest rate, the monthly payments would range between 1,193 to 2,130 baht per month.

TABLE 5-8  
 LOW-INCOME  
 CONDOMINIUM PROJECT

DESCRIPTION

PHYSICAL FEATURES

Location:	Samut Prakan
Distance to City Center:	18 km
Land Area:	1648.08 Sq. M
Site coverage:	974.48 Sq. M
Gross Floor Area:	4607.75 Sq. M
Floor Area Ratio:	2.8:1
Net marketable area:	3976 Sq. M
Housing Units:	160
Date of Development:	1990

CONSTRUCTION

Structure:	Reinforced Concrete
Roofs:	Reinforced Concrete
Walls:	Hollow concrete block, wall plastering
Floors:	Reinforced concrete with ceramic tiles, vinyl tile (WC)
Partition:	Hollow concrete block, wall plastering
Ceiling:	Gypsum board
Windows:	Wood frame with glass
Doors:	Wood frame with glass
Facilities:	None

SERVICES

Electricity:	Metropolitan Electricity Authority
Water Supply:	Water Works Authority
Sewage:	Discharged to septic tank
Drainage:	Metropolitan Drainage System
Telecommunications:	None to site
Transportation:	No public transportation

BUILDING AREA

Usable area/unit:	19.53 sq. M.
W.C.:	2.63
Corridor:	2.78

Source: PADCO-LIF Comparative Cost Study, 1990.

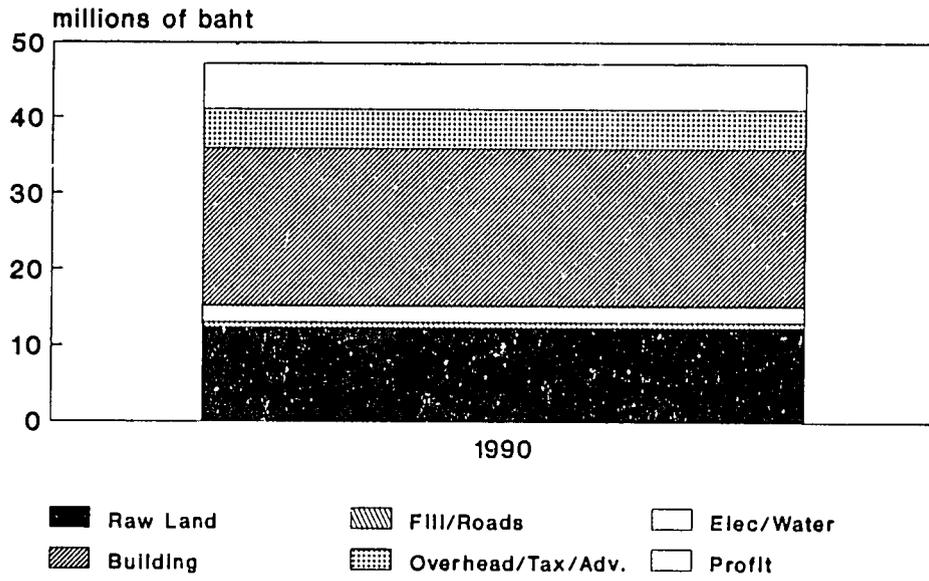
TABLE 5-9

LOW-INCOME CONDOMINIUM PROJECT  
 COST AND PRICE ANALYSIS, 1990  
 (in millions of baht)

COST ITEM	1990	Percent of Total Price
RAW LAND	12.36	26.2%
LAND FILL	.23	0.5
ROAD	.53	1.1
ELECTRIC	1.06	2.2
WATER	1.06	2.2
BUILDING	20.73	43.9
TAXES	2.36	5.0
OPERATING COSTS	2.34	5.0
ADVERTISING	.47	1.0
TOTAL COSTS	41.14	87.1%
PROFIT	6.09	12.9%
TOTAL REVENUE	47.23	100.0%
AVERAGE COST PER UNIT	257,125	
AVERAGE PRICE PER UNIT	295,188	

Source: PADCO-LIF Comparative Cost Study, 1990.

**FIGURE 5-2  
LOW INCOME CONDOMINIUM  
COST AND PRICE ANALYSIS**



PADCO-LIF LAND MARKET ASSESSMENT, 1990

To assess the affordability of these units Table 5-10 presents estimates of household income in the BMR by income quintile. The estimate is based on the 1986 distribution of income statistics compiled in the Bangkok Land Management Study [1987], increased by 8 percent per year for income growth. The table also provides estimates of the maximum affordable housing purchase price, assuming a 25 percent downpayment, a 20 year loan at 12.5 percent interest, and 25 percent of monthly household income going to service the mortgage.

As Table 5-10 illustrates, low-cost housing units, priced under 200,000 baht, are affordable to households earning between the 20th and 40th income percentile. As is clear from Table 5-7, in 1989, there were nearly 1,600 units for sale that were affordable to those earning at or below the 40th percentile of the Bangkok household income distribution. Over 6,500 dwelling units, 11.3 percent of the private sector housing supply, were sold at prices below 300,000 in 1989 and were affordable to those earning at or below the 60th percentile of the household income distribution.

This pattern is remarkable, given the rapid escalation of land and housing construction costs in the metropolitan area over the past four years. That such a substantial supply of low-cost housing can be produced is largely due to the production of low-cost condominium units (of the 6,546 low-cost units produced, two-thirds--4,432 were condos). Continued production of low and moderate cost condominium units is essential if Bangkok's private sector housing industry is to meet the housing needs of its residents.

TABLE 5-10

## HOUSEHOLD INCOME AND HOUSING AFFORDABILITY

INCOME QUINTILE	ESTIMATED 1990* HOUSEHOLD INCOME BAHT/MONTH	MAXIMUM AFFORDABLE HOUSING PRICE**
0-20%	0 - 4,755	0 - 139,507
21-40%	4,756 - 7,328	139,508 - 215,026
41-60%	7,329 -10,355	215,027 - 303,806
61-80%	10,356 -16,081	303,806 - 471,802
OVER 80%	OVER 16,081	OVER - 471,802
MEDIAN	8,842	259,416

\* Estimated household incomes are based on 1986 estimates prepared by the Bangkok Land Management Study and increased at 8% per year to 1990.

\*\* The maximum affordable housing price is based on the following assumptions: downpayment is 25 percent of purchase price, 25 percent of income goes to mortgage payment, mortgage is 20 years at 12.5 percent interest.

Source: PADCO-Land Institute Foundation Bangkok Land Market Assessment, 1990.

## CHAPTER 6

### HOUSING AND URBAN DEVELOPMENT ISSUES IN BANGKOK

#### INTRODUCTION

This chapter examines Bangkok's housing and urban development problems. Any large metropolitan area, growing at 3 to four percent per year, is under strain, but Bangkok's problems are far more serious; unless they are effectively addressed in the next five years, there will be enormous irreversible adverse consequences. At the risk of over-simplifying, the major problems are: declining housing affordability and slum eviction, traffic congestion and decreasing mobility, unplanned "leapfrog development" and inadequate infrastructure provision.

#### HOUSING AFFORDABILITY AND SLUM EVICTIONS

During the past three years, land and housing prices have increased dramatically, rising at over 25 percent per year. As reported in Chapter 4, rising land costs are largely responsible for pushing up housing prices. However, as illustrated in Chapter 5, housing developers have increased residential densities and shifted production to low- and moderate-cost condominium units. These units are gradually taking the place of single-family and townhouse units as the principal form of affordable housing.

This form of housing needs to be encouraged. However, there are growing concerns about condominiums, and some government officials believe that their production should be curtailed. Limiting their development would be a grave mistake-- it would essentially eliminate the production of low-cost private sector housing development in most of the BMR. With serviced residential land prices now exceeding 7,500 baht per square wah in much of Bangkok metropolitan area, the land costs for small townhouse plots (20 square wah) start at 150,000 baht. If we add to this the costs of land fill, site preparation, and circulation requirements, the net plot costs can easily exceed 225,000 baht per plot. By the time the cost of the unit is added, the minimum price of a townhouse would easily reach 350,000 baht.

Because of their high densities (100-200 units per rai) condominium units have significantly lower land costs. As the example presented in the previous chapter illustrates, at such

densities, low-cost units can be produced even when land costs exceed 25,000 baht per wah (10,000,000 baht per rai).

Condominium projects pose several potential problems: they place considerable burdens on local public services, they create adverse neighborhood environmental impacts, and they pose potential long-term maintenance and management problems. None of these problems pose serious threats to Bangkok's welfare-- all can be avoided with proper planning and legislation.

The development of high density residential environments requires that neighborhood areas be well-planned. That is areas where condominium projects will be located should be planned so that roads are wide-enough to carry traffic and that there is adequate water and drainage capacity to support high levels of demand. Another important requirement is that parks, playgrounds and open space should be provided for the residents of nearby high-rise projects. This will require a system of land use planning controls and land dedication and acquisition powers.

The environmental impacts of high density development in existing low-density neighborhoods poses a significant challenge. If possible, neighborhood and district-level land use and development controls should be drafted and implemented to protect the environmental quality of neighborhoods. In outlying areas, the siting of high density condominium projects should be planned to avoid conflicts with nearby industrial areas.

To ensure that large condominium projects are well maintained after completion, legislation should require the establishment of on-site management. Owners should be required to pay monthly maintenance and management fees and it should be reasonably easy to periodically increase them to cover rising costs [Barton and Silverman, 1987].

Another manifestation of rapidly rising land values is the increase in slum evictions. As Table 6-1 illustrates, between 1984 and 1988, slum housing declined by 11,376 housing units in the area within 10 kilometers of the city center. Because demolished slum units are not being replaced by low cost public housing, slum dwellers are forced to seek other locations. As Table 6-1 illustrates, considerable slum housing has expanded in the suburban areas beyond 11 kilometers from the city center. Thus, slum development has suburbanized like other forms of housing as well.

As the Thailand economy continues to expand, there will be more pressure to evict the remaining slums. It is appropriate for public agencies to assist slum dwellers with their housing requirements. This role can be filled by the BMA and the NHA, as well as the numerous state agencies with land containing squatter settlements.

Table 6-1

## SLUM HOUSING STOCK, 1974, 1984 AND 1988

Distance from City Center, Km	Slum Housing Units			Change in Units	
	1988	1984	1974	1984-88	1974-84
0-5	63,907	69,906	69,738	-5,999	168
6-10	40,654	46,031	42,296	-5,377	3,735
11-20	47,718	36,581	23,091	11,137	13,490
21-30	15,398	6,370	4,015	9,028	2,355
OVER 30	2,961	1,257	186	1,704	1,071
<b>TOTAL</b>	<b>170,638</b>	<b>160,145</b>	<b>139,326</b>	<b>10,493</b>	<b>20,819</b>

Source: PADCO-LIF Bangkok Land Market Assessment, 1990.

## TRANSPORTATION PROBLEMS AND LAND SUPPLY CONSTRAINTS

Consistently, since 1980, traffic congestion has been identified as a major problem in Bangkok. The problem is due primarily to the fact that the development of the roadway system has failed to provide distributor roads to handle the flow of traffic from small access streets (sois). Instead, virtually all trips require traveling on Bangkok's limited system of major roads. A side-effect of the lack of distributor roads is the inefficient utilization of land for housing and commercial development. This deficiency in the roadway system requires comment.

In large metropolitan areas an efficient road network requires a hierarchy of road types: small access roads (sois), medium-sized distributors, and main roads and expressways. To promote cross-town traffic at high speeds, main roads should have controlled access. Limited connection of small access streets to main roads is essential if travel speeds are to be maintained. Therefore another type of road, the distributor road, is needed to collect traffic from small collector streets and distribute it to the main roads at limited intersections. Distributor roads serve two functions: to provide access to main roads and to offer through-movement between the main roads. They also help to open up parcels for residential development. Figure 6-1 illustrates such a roadway hierarchy.

In large metropolises, main roads divide the urban area into blocks. The size of these blocks depends on the density of development. Typically they range from one to ten square kilometers. In Bangkok, the size of these blocks is so large that they are referred to as "superblocks." The pattern of main roads is very coarse and some of the superblocks exceed 50 square kilometers. The paramount defect of these very large superblocks is their lack of distributor roads. As a result, small access roads (sois) have been built directly from the main road into the superblock. Rarely does the soi go all the way through the superblock, so it can't operate as a distributor. What develops is an array of dead-end sois which fail to contribute to a road network system. Figure 6-2 illustrates some examples of superblocks in Bangkok.

Between 1984 and 1988, almost 185,000 rai of land has been urbanized, most of it located in the suburban areas. These areas are developing in this same pattern. As a result, traffic congestion will continue in these areas unless there is some advance planning and programming of a system of roads.

Given their substantial benefits, why haven't distributor roads been developed in Bangkok? First, like Venice, Bangkok developed around a network of canals which were initially linked with footpaths. As the paths were widened into roads, the high costs of bridges limited their construction to all but the most important roads. For example, along Sukhumvit Road to the north, many of the sois do not link to Petchburi Road because of Klong San Sap.

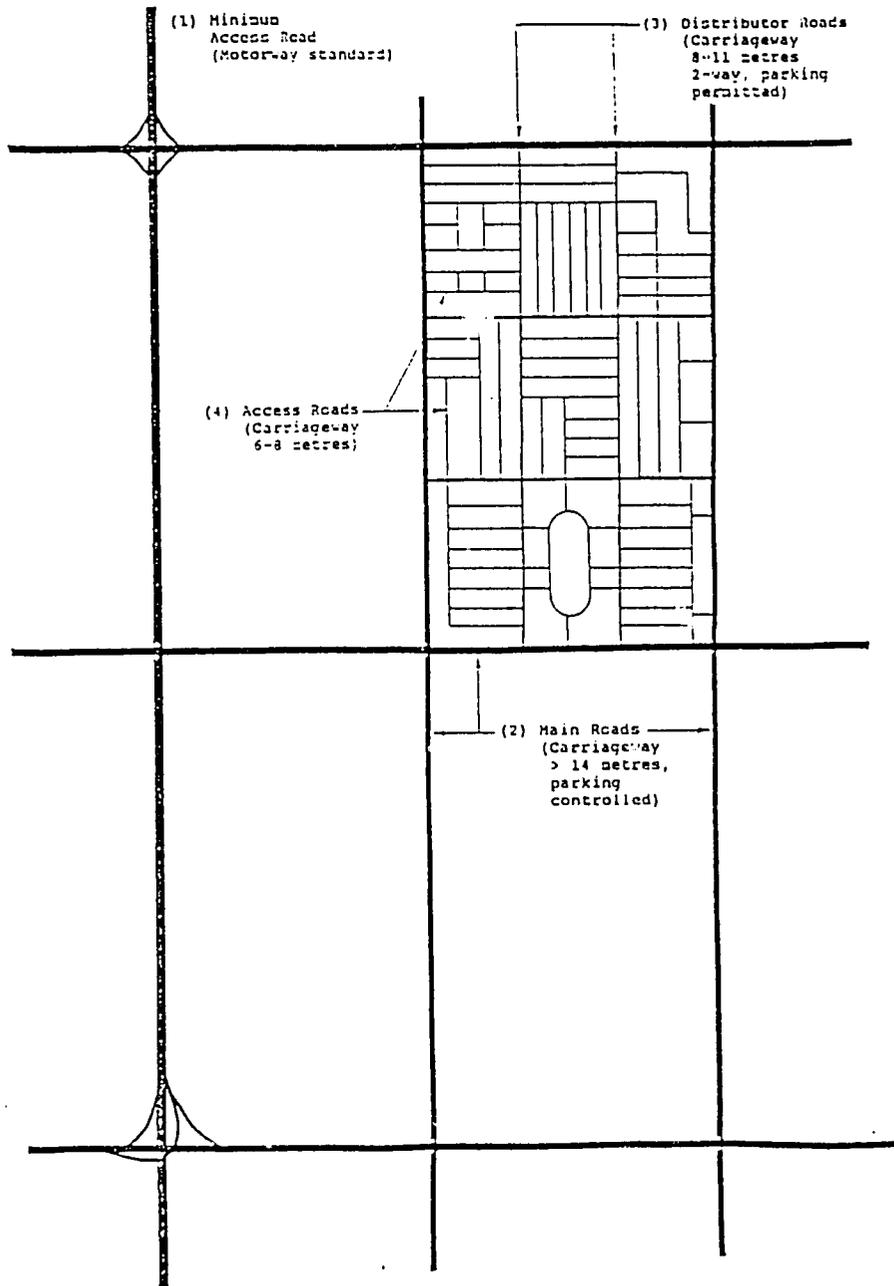


FIGURE 6-1  
ROAD HIERARCHY

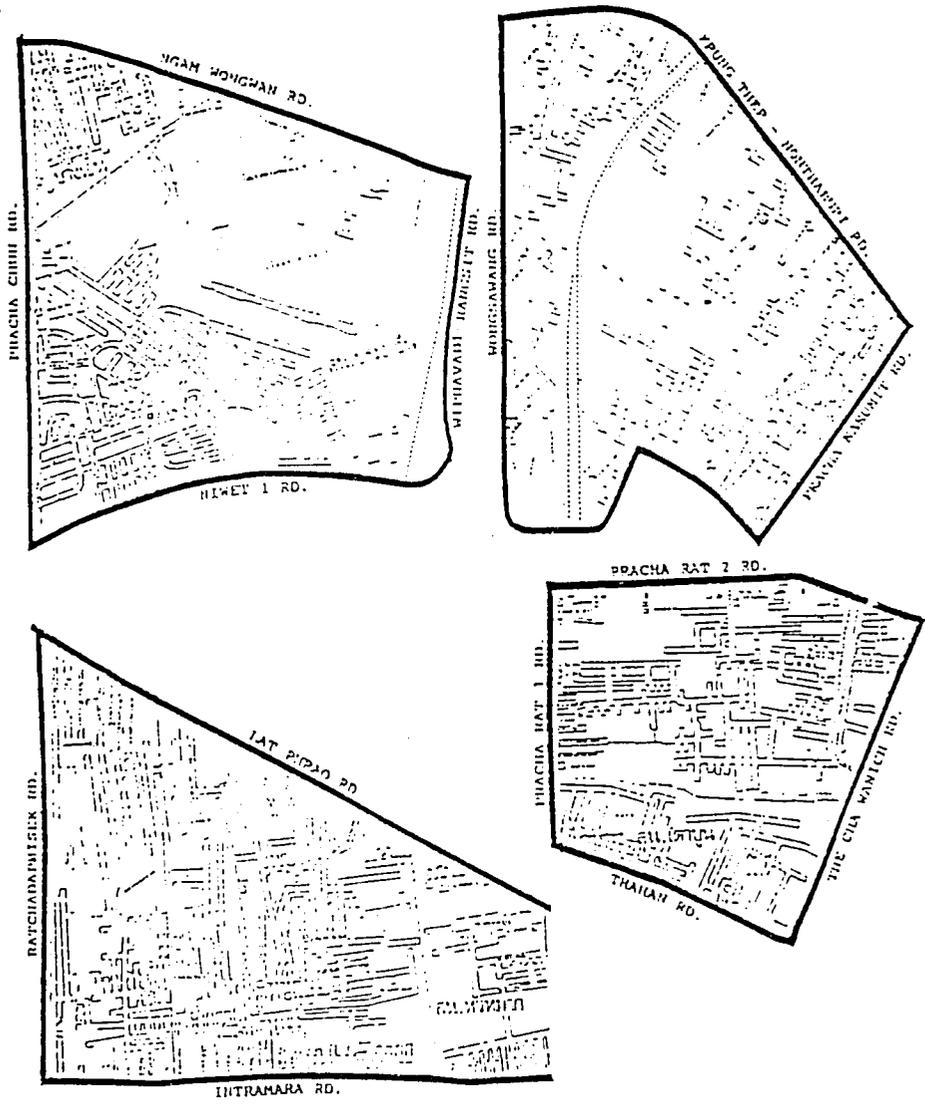


FIGURE 6-2

SUPERBLOCKS WITHOUT DISTRIBUTOR ROADS

A second reason is that in Thailand, local governments leave the construction of minor roads to the private sector. In Bangkok, developers have been largely responsible for building roads within the superblocks. Thus the pattern of streets as been designed with the objective of providing access to parcels owned by the initiating builder: privately constructed roads almost routinely fail to generate opportunities for the further development of residential parcels which are not under the control of the builder. As a result, many parcels remain "land-locked". Unless the roadway system is corrected, valuable land will remain vacant, traffic congestion will persist, and rapidly expanding leapfrog development will plague the region.

### **STRIP DEVELOPMENT**

A major consequence of the lack of distributor roads is the pattern of commercial development taking place along the major highways. In the rapidly developing suburban areas, considerable commercial, industrial and residential development fronts these roads. Aside from causing massive traffic congestion, it effectively blocks land off the main roads from being developed. This indirectly encourages leap-frog development. Another contributing factor to strip development is the total lack of effective planning controls to limit commercial development along major highways.

In 1984, approximately 52 percent of the land located between 6 and 10 kilometers of the city center was developed. In absolute terms this means that about 60,000 rai of land remained potentially developable. However, between 1984 and 1988, despite massive urban development pressures, only 9,500 rai of land in this area were converted to urban uses. This land could have been used for the construction of over 50,000 dwelling units. Instead, urban development jumped out to the fringes of Bangkok. While high land prices obviously accounted for some of this leapfrogging, the fact that much of the land located in Bangkok's many superblocks is without road access is a critical factor forcing development to the outer edges of the region.

The effects of strip development are considerable. Beyond the obvious impacts on road congestion, it barricades land from potential housing development, and increases the cost of infrastructure. Telecommunications, electric and water systems, as well as public transportation are more expensive to provide if development is spread over a large array of strips. It can also make it more difficult to check flood control and to provide flood protection.

## **SPATIAL DEVELOPMENT PROBLEMS**

Lacking any form of effective planning controls, Bangkok's urban development is market driven. Industrial and commercial centers are located haphazardly and are not integrated to develop subregional activity centers. As described in Chapter 2, over the past four years, the development of the Bangkok metropolitan area rapidly decentralized. Most of the development has taken place in the area beyond 20 kilometers from the city center.

In the rapidly growing suburban areas, urban land development has quickly transformed once rural areas. The emerging roadway system has followed a radial pattern, and the physical development follows a "ribbon-pattern" with buildings located adjacent to these radial roads. As discussed above, this pattern of development creates vast superblocks.

Ribbon development is inefficient. As Table 2-6 illustrates, in 1984 the area located between 11 and 20 kilometers from the city center was 52 percent urbanized. Between 1984 and 1988, despite massive urban development pressures, the level of urbanization in this area increased to only 60 percent. In fact, urban land conversion in this zone accounted for only 26 percent of the land converted between 1984 and 1988. Apparently, urban development pressure shifted out to more distant locations, where land acquisition and road access is easier. As Table 2-8 shows, nearly 70 percent of all land conversion occurring between 1984 and 1988 took place beyond 20 kilometers from the city center. Ribbon-development has made it difficult to provide urban services and residential development has out-paced the provision of piped water. This has led to the continued over-reliance on pumped ground-water, causing subsidence. The provision of public transportation has been difficult as well.

## **LACK OF ADEQUATE INFRASTRUCTURE**

As is well-documented, there is a severe shortage of most urban infrastructure. The roadway system lacks distributor roads, there is a shortage of buses, flood control is limited, water supply and wastewater treatment sorely lags behind urban expansion, and the provision of telecommunication services is far behind as well. The main reason for the shortage of services is the lack of finances for expanding infrastructure services. In response to these deficiencies, the private sector has stepped in to provide them. As was described in the previous Bangkok Land Management Study, considerable roadway expansion took place in the outlying areas between 1974 and 1984. While the private provision of services is desirable and helps to reduce the backlog of development, it often takes place in a disorganized manner.

The chaotic pattern of Bangkok's road system is a vivid example of the adverse impacts of this lack of organization. What is needed is a system for organizing the deployment of infrastructure, built by the private sector. While better coordination of infrastructure is desperately needed, it alone will not solve the problems.

Thailand and its local governments need to reform the way infrastructure is financed. As in most developing countries, little effort is made to recover the costs of infrastructure. Instead, precious central government funds, either by direct funding of projects or through intergovernmental transfers of funds to local governments, are used to finance infrastructure projects.

The net result is that there is a lack of funds for infrastructure investment. If funds could be mobilized to support development, infrastructure bottlenecks could be removed. The most straightforward method for financing infrastructure development is to make benefiting property owners pay. As the present study has illustrated, the impacts of infrastructure provision are considerable, adding an average of 165 percent to the value of a typical residential plot. Using the regression model presented in Table 3-4 above, the impact of infrastructure development on a 25 square wah plot can be assessed for various locations. This is illustrated in Table 6-2. At a distance of 10 kilometers from the city center, the addition of infrastructure boosts the value of a 25 square wah plot by 564,331 baht. Even in distant areas out 30 kilometers from the city center, the increase is substantial-- approximately 200,000 baht per plot.

By developing an infrastructure cost recovery system which would tax these benefiting plots, the provision of roads, water and flood control could be financed. When added up across many properties, the increase in land values generated by infrastructure is substantial. For each rai provided with urban services, located 25 kilometers from the city center, the increase in property value is 1.7 million baht. This increase could form the basis for imposing a betterment charge or a special property tax assessment.

To implement such a cost recovery system, it would be necessary to radically alter both the property tax and planning systems. First, there needs to be a clear policy with full implementing powers to provide for the setting up of improvement districts. The powers needed include the ability to tax and acquire land for the installation of services. There needs to be an effective planning system for the regulation of land development. New development must be compelled to dedicate land for services and agree to align distributor road so as to allow for the construction of a coherent network. A system of planning and building control to ensure that the location and sizing of infrastructure matches the density and scale of urban development is necessary as well.

TABLE 6-2

IMPACT OF INFRASTRUCTURE PROVISION ON A 25 SQUARE WAH PLOT,  
1990, in baht

Distance From City Center, km	Unserviced	Plot Price Serviced	Difference
10	341,605	905,936	564,331
20	207,992	551,595	343,603
30	121,450	322,085	200,635

Source: PADCO-LIF Bangkok Land Market Assessment, 1990.

## DEVELOPMENT CONTROLS

High land prices mean that the density of urban development must increase. Housing developments will need to be multi-story, and in the 1.5 to 3.0 FAR range if housing is to be affordable. Such high-density development requires a more coordinated approach to planning and infrastructure provision. As it now stands, the Bangkok metropolitan area is ill-equipped to accommodate such patterns of urban development.

Bangkok's biggest problem is its over-extended infrastructure system. Although in the past the private provision of infrastructure has ensured that Bangkok's land and housing markets have expanded, the lack of coordination and the generation of significant off-site impacts now pose a serious threat to Bangkok's quality of life.

As part of the preparations for the Seventh Plan, a number of proposals are being discussed to strengthen the ability of planners and policy makers to control urban development in Bangkok. These controls include a proposal to limit development in specific areas of the BMA to conserve historically significant areas, control strip development along major roads, and mitigate potentially adverse environmental impacts.

Discussions about development controls are a positive sign that Thai policy-makers have come to recognize the important interrelations between urban development, traffic and environmental impacts. What is needed is a more precise and fully elaborated system of planning controls to guide and shape future development. Past plans and policies have been far too general to provide much needed direction for infrastructure planning and programming. Also, past planning policies were never implemented, so there has never been any effective control over urban development.

For Bangkok to grow in an orderly and efficient manner, government planners and the private sector should come together to prepare a fully elaborated regional structure plan for the BMR. This structure plan should provide the framework for the subsequent preparation of detailed urban and suburban district plans covering the developed and developing portions of the BMR. These plans should precisely identify the location of distributor as well as main roads and other urban services. A zoning and land development control system should be prepared for all areas. The overall zoning and development control system should provide for sufficient opportunities for urban expansion over the next twenty years and promote the economical use of land in appropriate areas. The current ad hoc approach to land use planning and control where policies for FAR, green belts and the like are discussed independently and without reference to overall urban development goals and infrastructure programs should be avoided.

Solving these problems will require a major coordinated effort-- including the full participation of the NESDB, the BMA, the National Housing Authority, Land Department, the various providers of infrastructure, and the private sector. The concluding chapter outlines some recommendations for public and private sector action.

## CHAPTER 7

### IMPROVING HOUSING AND LAND DEVELOPMENT

#### INTRODUCTION

This concluding chapter outlines a series of recommendations for improving the quality of housing and urban development in the Bangkok metropolitan area. In the Seventh Plan, government housing policies should center on making the land market operate more efficiently by cooling speculative demand for land, implementing planning and building controls appropriate for higher-density urban development, and increasing the supply of serviced land by improving the deployment of distributor roads and infrastructure. Despite rising land and building costs there seems to be little need for direct public sector production of housing. Any such housing should be deliberately targeted on low-income households, and it should be rental.

#### PROMOTING AFFORDABLE, HIGH DENSITY HOUSING DEVELOPMENT

As described previously, Bangkok's low- and moderate-cost housing delivery system is under considerable strain. Given high land costs, it is becoming virtually impossible for the private sector to produce single-family or townhouse units for under 300,000 baht in the Bangkok metropolitan area. In response to rising costs, developers have introduced high-density low-cost condominium projects which sell for under 300,000 baht. Because of their density, these projects require adequate infrastructure--water, road access, and recreational areas. Also since these projects are condominiums, effective management systems need to be provided to ensure that projects are well-maintained.

Given the rapid increase in land prices over the past three years, it is quite remarkable that the private sector has managed to provide over 6,500 dwelling units priced under 300,000 baht. This reflects the dynamism of the private sector, particularly its ability to change to adapting conditions. As a matter of public policy the Royal Thai Government should consider adopting public policies aimed at facilitating the private housing development sector.

Specific policies necessary for facilitating the private provision of higher-density affordable housing include:

1. banking regulations limiting the financing of land acquisition for speculative purposes;

2. property tax policies which increase the costs of holding land for speculative purposes;

3. taxes, user charges and betterment levies to finance the construction of roads and infrastructure;

4. programming of infrastructure (mainly distributor road) projects to increase the supply of land for residential development;

5. development and full implementation of planning and development controls to ensure that higher density development is compatible with existing land uses and causes minimal environmental impacts; and

6. development of standard laws and procedures for the establishment, financing and operation of condominium owners associations.

#### **INCREASING DEVELOPMENT POTENTIAL BY EXPANDING DISTRIBUTOR STREETS**

The intense pressure on rural and suburban land markets could be reduced if the pattern of residential development was made more efficient. This will require an entirely new approach to planning and development. Ideally, when new housing developments are proposed, the local government should regulate the layout of both main roads and distributor streets. The general plans for the outlying provinces and undeveloped areas of the BMA should have a circulation element specifying the alignment of these roads. All development should be based on these planned layouts and the provision of water, electric and other services should follow the circulation scheme. Even if each developer builds the roads, they can be designed so that they "add-up".

This would, of course, require that the government have the authority to regulate residential development, prohibiting construction unless an acceptable road system is first provided. With such a planning and regulatory system suburban Bangkok could be developed with an adequate road system. Thus, it is important for the NESDB and the Department of Town and Country Planning to coordinate the preparation of land use and circulation plans.

The NESDB, the Land Department, the Department of Town and Country Planning, the BMA and the outlying Provinces should consider the joint preparation of "Specific Plans" for these suburban areas. These plans should be enforceable.

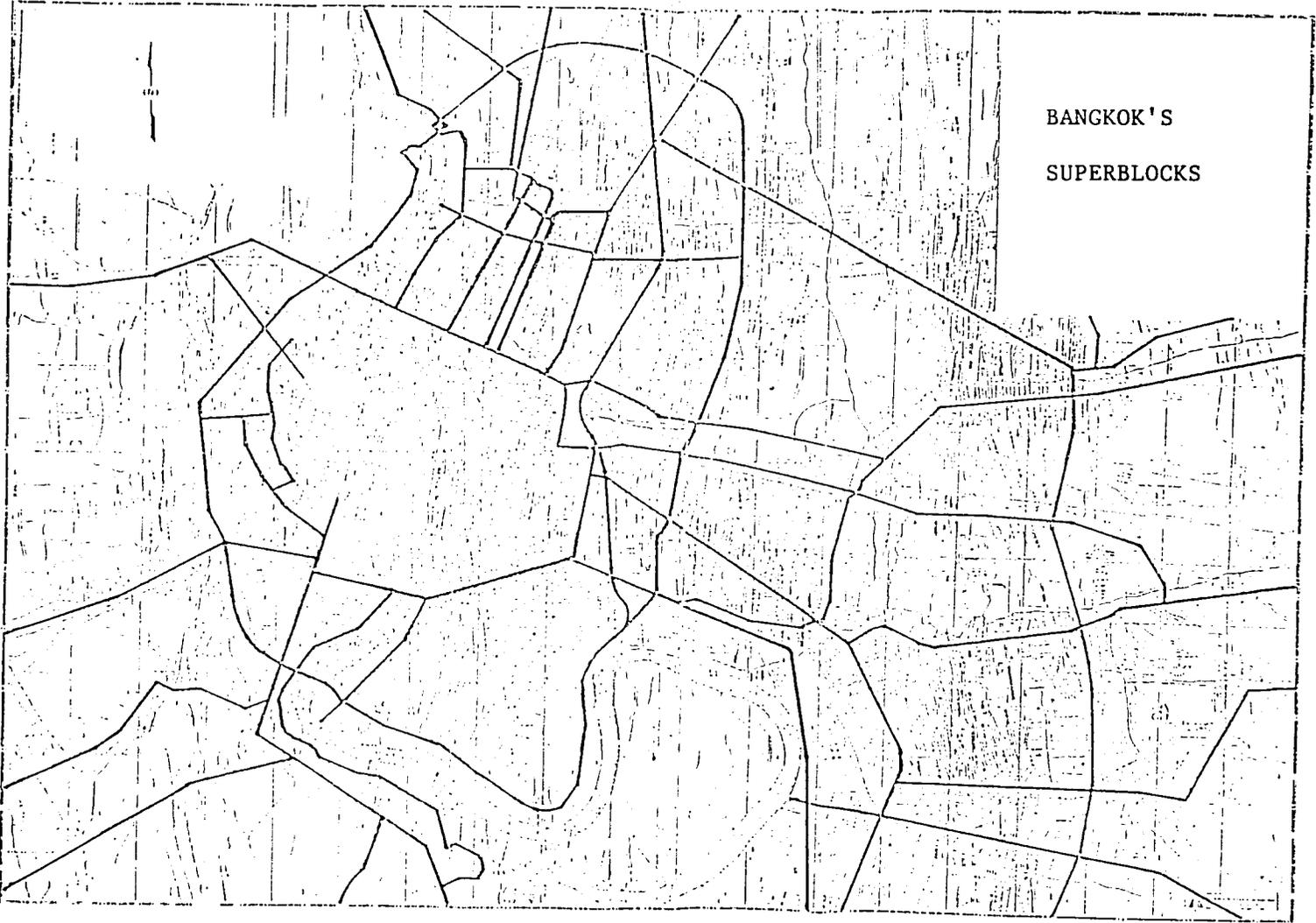
Improving the efficiency of land development in urban areas will be much more difficult and requires a different approach than outlined for undeveloped areas. The urbanized superblocks

need to be "retrofitted" by providing them with distributor roads. In most cases, at least two roads need to be developed so as to provide every parcel in the superblock with access to each "face" of the superblock. In some cases, existing soils may be widened and extended. In others, new rights-of-way will be necessary. In either case, it will be necessary for the local government to acquire land for widening or road development. This will require effective land acquisition powers for the local government. While such laws are available to the BMA, lack of funds and implementation procedures are not sufficient to spark widespread road widening.

The first step in the process is to conduct a reconnaissance of superblocks and determine a priority system for targeting retrofitting initiatives. Recently, the BMA conducted a series of studies of the superblock bounded by Ramkhamhaeng, Srinakarin, and Phattanakan, and have made proposals for new roads as well as some improvements. This effort should be expanded to cover all of the superblocks outlined in Map 7-1. Overall, retrofitting projects should be targeted on large and centrally located superblocks, with limited distributor systems. These areas will provide the most significant payoffs in terms of traffic volume reduction. On the other hand, projects should be feasible; that is it should be possible for the government to achieve its intended results within a limited amount of time and resources. Some examples of potential retrofitting are illustrated in Figure 7-1.

In densely occupied areas, the acquisition of rights-of-way will be expensive and time consuming. A tested and effective method for carrying out land acquisition is known as land readjustment [Doebale, 1982]. Land readjustment is a technique for reconfiguring the pattern of land ownership. In many urban areas the configuration of individual plots is inefficient and does not allow for the most efficient provision of roads and urban services. In its simplest form, it involves the pooling of land owned by the participants of a redevelopment scheme. Upon completion of the planning, replotting and deployment of urban services, the participants receive back a portion of their land. Not all of the land is returned to the participants because some of it is used for roads and infrastructure, and some of it is sold to generate funds to pay for the redevelopment of the area. Land readjustment as well as land sharing can be used voluntarily or compulsorily. Thailand lacks the laws necessary to implement land readjustment.

Land readjustment is frequently proposed as an alternative to compulsory acquisition of land. It is less contentious than compulsory acquisition since the owner gets to keep a part of the site. However, it can be extremely complex and difficult to manage [Acharya, 1989]. It is under discussion in several Asian nations including: Thailand, Indonesia, The Philippines, Sri Lanka and Malaysia [UNESCAP, 1985].



MAP 7-1

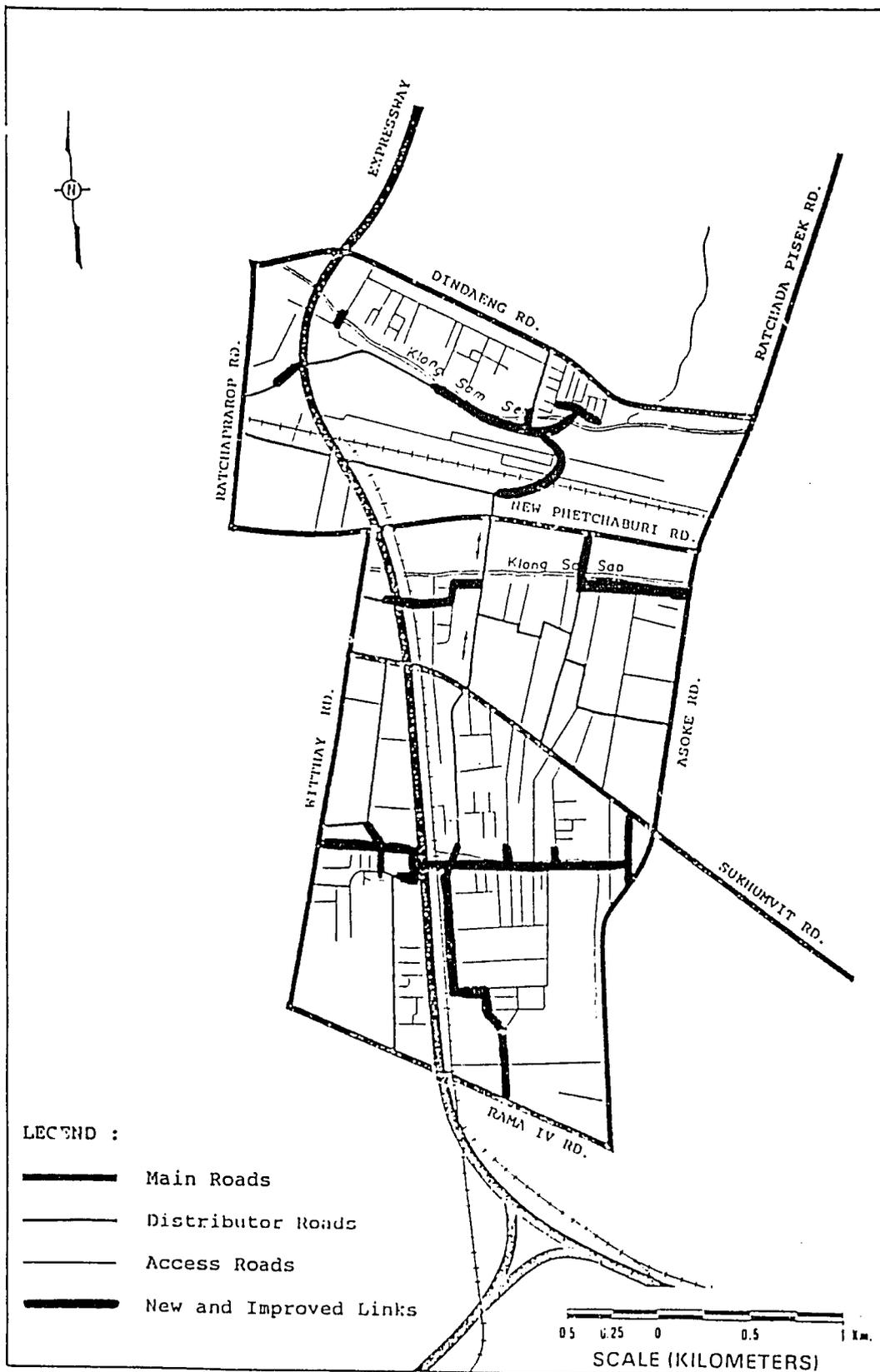


FIGURE 7-1

Other variations of land readjustment have been developed including land pooling and land sharing. These approaches have been promoted to address the problems of slum clearance [Angel, et. al., 1983]. In the case of land sharing, the squatters negotiate an agreement to share the site with the owner. In many central city locations squatter settlements are on very valuable land. Instead of forcing the squatters off the site, the owner agrees to share it with them. The squatters move on to a portion of the site (living at higher densities) and the remainder (usually that portion located on or near a major road) is developed for commercial use. The financial costs of the redevelopment are the subject of negotiation but it is frequently the case that the owner pays the costs for relocation, planning and redevelopment.

Specific policies to consider to increase development potential include:

7. preparation of "specific plans" for development in suburban areas;

8. adoption of effective zoning and development controls which compel developers to follow regulations in order to receive building permits; and

9. in urban areas, implementation of "retrofitting programs" expand roads and increase land supply, including the use of land readjustment, land pooling and land sharing.

#### INCREASING THE SUPPLY OF SERVICED LAND FOR HOUSING

The promotion of new urban settlements requires the deployment of infrastructure on a massive scale. The key services to be expanded include water supply, sanitation, waste disposal, transportation, communications and energy. The provision of these services must be coordinated and simultaneously delivered.

To ensure the adequate delivery of these services, the costs of delivery must be recovered. This means that the level of infrastructure standards must be affordable. All too often, standards are set too high and the resulting services are too expensive and not affordable. A fresh approach to infrastructure provision is needed, focusing on the incremental delivery of services. As recipient's incomes and ability to pay for services increase, standards of service can be raised [UNCHS, 1987].

In Bangkok, the system for financing urban development is less than satisfactory. Too much of the financial responsibility for urban infrastructure rests with the central government. The high level of centralization makes it difficult to create the proper financial system for supporting urban land development.

A first step in reform is to decentralize the financing of urban infrastructure, making local governments responsible for funding. Decentralization allows municipal governments to develop and implement their own programs and policies for deciding what types of infrastructure should be built and when. The biggest limitation over this decentralization is the lack of sufficiently trained professionals to staff municipal financial agencies.

Following a decentralization-oriented program, the following principles should be used for establishing stronger local government financial systems:

- \* the costs of services should be recovered to the fullest extent possible, from user charges, fees and developer exactions;

- \* service charges which cannot be recovered should be financed by general taxes-- property taxes, sales and business taxes levied in the local jurisdiction;

- \* if the benefits of urban infrastructure "spill-over" into other jurisdictions or generate significant national benefits, higher levels of governments should make grants to partially support the construction and maintenance of such services; and

- \* borrowing for capital projects is appropriate, but debt service streams should be matched with future revenues from user charges, general taxes and intergovernmental transfers.

Most often user charges fall into two categories: consumption related and benefit related. Current research by Bahl and Linn indicate that user charges account for about one-third of all locally raised revenues [World Development Report, 1988].

Consumption charges are levied on the users of services. Water, sanitation and electrical services are examples where such charges are routinely levied. The fees for charges should be based on a financial analysis of the cost of providing service to the customer. The fee can be based on actual usage and modified with increases in consumption. To relieve the burden on the poor lifeline rates can be set for low levels of consumption.

Benefit charges attempt to capture the value of the benefit bestowed on property owners receiving the urban service. For example, as illustrated for Bangkok, the availability of urban services can increase the value of residential plots by 165 percent. In addition to charging users for consuming water or electricity, a benefit charge should be levied to recover the capital costs of installing the distribution system. In the case of a water distribution system, a connection charge can be levied to cover the cost of extending the water pipes to the area and linking them to the house.

In other cases, such as the paving of a road, property owners abutting the improvement can be levied a charge for their pro rata share of the cost. In the case of major improvement projects, land readjustment programs are often used. As discussed above, an informal settlement may be redeveloped and the costs of the improvement recovered by having the government retain a portion of the improved property for commercial sale. Instead of paying a benefit charge, the property owner transfers a portion of his land to the government as payment [Doebele, 1982].

In Columbia, a valorization system is used to finance improvements in roads, water and sanitation systems and other services. A tax is levied on benefiting property owners in proportion to the benefit they receive from the project. The tax does not attempt to recover or capture all of the benefits expected to be conferred on the properties; it merely recovers the actual costs of constructing the improvements. The valorization system requires careful coordination between tax authorities, infrastructure planners and residents [Doebele, Grimes and Linn, 1979].

If user charges cannot be relied upon to fund all of the costs of infrastructure, then other sources are necessary. One potential source is the property tax. This tax is an annual levy on all properties in a local jurisdiction. The tax is based on the assessed value of the property (both land and buildings or possibly just the land). The tax rate is set to generate a revenue stream necessary to cover government spending not funded from user charges, other taxes and subventions.

The critical requirements of the property tax system include: 1) the fiscal cadastre, a precise listing of all properties in the jurisdiction by location; 2) an accurate assessment of all properties listed in the fiscal cadastre; and 3) an efficient administrative system for collecting property taxes. If all of these systems are in place and the assessment of properties carried out periodically, the property tax system will be quite buoyant, revenues will rise with urban development over time. The revenues from the system can be used to fund the development of urban infrastructure (along with user charges).

An extension of the valorization program, special assessment districts can be used to generate revenues for financing infrastructure [Hagman and Misczynski, 1978]. If the local jurisdiction has a functioning, efficient property tax system with an accurate fiscal cadastre, and efficient assessment and collection systems, special assessment districts can be highly effective methods for funding new urban services. For a specific urban development project, say an urban flood-control project, a district is defined which circumscribes all beneficiaries. Each property owner in the district is assessed an amount necessary to pay for the project. The payment is either a lump sum or a stream of payments to cover debt service payments. For lump-sum payments, it may be possible to offer deferred payment options to

low-income residents [Shoup, 1983]. Special assessment districts can be an important tool for financing infrastructure and land development in cities with an effective property tax system in place.

Without a well-functioning property tax system, municipalities may be able to use a system of fees and exactions to fund infrastructure development. For example, when a developer proposes a new to-be-built project, the local government could assess its off-site infrastructure requirements and as a condition of issuing a building permit, require that the developer pay a fee for the construction of the needed infrastructure.

This system of fees and developer exactions have become quite common in the U.S. as a means for infrastructure development [Alterman, 1989]. The actual fee that is paid is based on a careful assessment of the off-site impacts of the project. This assessment procedure actually follows the framework of the environmental impact assessment, whereby the infrastructure needs of a specific project are assessed and their costs determined.

Before implementing a developer fee and impact exactions system, a comprehensive planning system should be developed for the municipality so that infrastructure systems can be designed to support future development. The system should be based on a well-planned infrastructure program which determines all possible future infrastructure needs. These plans should be used to estimate the pro rata cost assessment attributable to any proposed new project. The process of assessing the fees and impacts should be fast and not overly complex [Johnson, 1989].

To implement a developer fee and impact exaction system local governments should have an effective and closely enforced development control system. The government should also have the administrative and technical capacity to assess impacts, set and collect fees and allocate them to fund infrastructure construction.

Another alternative to property tax based systems of cost recovery is to transfer the provision of urban services for land development to private companies [Roth, 1987]. In recent years, many local governments world-wide have shifted the delivery of urban services to the private sector.

In the urban infrastructure arena, it may be possible to transfer water and sanitation, electric and communications and transportation (even roads) to the private sector. The key element necessary for privatisation is the ability of the service provider to charge fees for services and exclude non-payers. Under such arrangements, local governments may be able to promote a more rapid deployment of infrastructure.

To accommodate future infrastructure needs fast-growing metropolitan areas need to develop integrated infrastructure programming procedures. Such procedures would include identifying the methods of financing such infrastructure, design of low-cost appropriate standards which can be upgraded, methods for cost recovery, and programs for maintenance and gradual upgrading.

Specific policies to consider to increase the funding of infrastructure include:

10. decentralize the financing of infrastructure to local governments and service districts;

11. build local capacity to design, program and finance infrastructure systems;

12. levy consumption and benefit charges for serviced provided, use income from fees to fund investments;

13. reform property tax system to fund infrastructure;

14. establish special assessment districts to recover costs of new services;

15. consider developer fees and exactions to pay for needed off-site services.

#### **SPATIAL DEVELOPMENT STRATEGIES**

As discussed in great length in Chapter 6, the unprecedented pace of urban development in the Bangkok metropolitan area has created numerous problems. One of the problems is the serious congestion centered on the urban core of the region. One method for reducing this congestion is to implement an array of spatial development policies for promoting the decentralization of economic activities. While this is starting to occur because of the high levels of congestion, it is now critical for planners to establish a series of activity centers for the subregional clustering of employment. Some centers are emerging and they should be reinforced, such as Rangsit, Bangkok, and Bang Phli. Others should be promoted as well. In all cases these areas should be provided with enough infrastructure so that they can grow quickly and efficiently, providing an alternative to urban areas in Bangkok's core.

In the course of preparing the Seventh Plan the NESDB should consider:

16. undertaking a special study to design and implement land use, zoning and infrastructure investment plans to encourage the growth of suburban activity centers.

## TAX POLICIES TO PROMOTE EFFICIENT LAND USE

While the present study did not gauge the extent to which the land market is being distorted by land speculation, there is sufficient evidence that extensive leapfrog development is taking place. One potential method for reducing the incidence of land hoarding is to tax land on the basis of its full market value, not just on its current use value. Vacant lands "ripe" for urban development would then be taxed at their market value which would be much higher than their value as vacant (agricultural uses). In Taiwan for example, a surtax of between 200 and 500 percent of the regular tax is assessed on parcels designated as building sites which remain vacant [Lent, 1976]. The system requires or presumes that an effective tax system is in place.

Taxes on speculative gains from short-term land transactions have been recently proposed for Thailand. These policies may help to limit the demand for real estate, particularly raw land if the after tax yield is reduced. The level of taxation on the gain normally declines with the length of time the parcel is held. In Taipei, a fiscal effort to clamp down on housing and land speculation had dramatic effects [Chin, 1988]. The system obviously requires an effective tax system capable of enforcing the regulations and making collections.

Specific policies should be drafted which:

17. tax income derived from short-term trading of land;
  18. increase taxes on properties withheld from development;
- and
19. lower income taxes for low-income housing projects.

## BETTER INTERGOVERNMENTAL COORDINATION IS NEEDED

In Bangkok, like other large Asian metropolitan areas, urban land policy objectives cannot be effectively met unless there is complete coordination of programs and actions. Better coordination is needed between the NESDB, the Department of Town and Country Planning, the BMA, the surrounding provinces and between the various line agencies providing basic urban infrastructure to the BMR region.

The following policy is needed:

20. the power of the BMR Coordinating Committee needs to be increased to allow it to set and coordinate zoning and land use decisions and to determine where and when infrastructure should be developed.

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Expropriation of Immoveable Property Act B.E. 2530

House and Land Tax Act B.E. 2475

Land Subdivision Control Act (Revolutionary Party No. 286 B.E.  
2515 (1972)

Stipulation Relating to Land Appropriation B.E. 2530

## APPENDIX A

### LAND PRICE SURVEY PROCEDURES

#### **SURVEY METHODS**

The purpose of the survey was to obtain price appraisals of hypothetical serviced and unserviced residential plots within the boundaries of the Bangkok metropolitan area. The survey was carried out by kwaeng, the lowest level governmental division within Bangkok and corresponds to a geographical division roughly comparable to a neighborhood. In all, the survey covered nearly 300 out of 353 kwaeng, and was carried out over an eleven-week period (from May to July, 1990), by 15 trained surveyors.

To develop a valid cross-sectional database on land prices a series of structured interviews was held with three sets of knowledgeable professionals: real estate brokers; appraisers at the Government Housing Bank; and Land Department officials.

Contacts between surveyors and brokers were made through a variety of informal channels: by asking housing developers to provide contacts with brokers they use, using rosters of real estate associations, and contacting Land Department officials and Village Headman to get recommendations of active brokers. Interviews were held throughout Bangkok.

A second set of interviews was held with appraisers of the Government Housing Bank. These staff were interviewed to tabulate appraisal information on a variety of hypothetical plots. All these interviews took place at the GHB headquarters.

The third set of interviews was held with officials of District Land Department offices. Within the BMA, district officers were interviewed to obtain estimates of probable selling prices of serviced and unserviced residential plots in each kwaeng covered by each District Office.

To maintain a consistent standard for qualifying our informants, each informant was required to have at least five years of continuous professional experience in land appraisal or land brokering, whether it was with the Government Housing Bank, the Land Department or in private practice as a land broker.

In the interviews, brokers were asked to appraise two types of typical residential plots: one plot was to be located on a paved soi with piped water and electricity, the other was to be located approximately 100 meters from a soi and not be currently provided water or electricity. The standard plots were defined as follows:

1. Plots are on purely residential streets.
2. Plots are located mid-block.
3. Plots are on small streets (3-5 meters in width).
4. There are no buildings existing on the plots.
5. Purchase of a plot is made in a single payment.

Overall, for the three survey years, there are a total of 991 observations, an average of about 330 cases per year. Of these cases, about 130 represent unserviced plots and 200 cover fully serviced plots. The number of unserviced plots is lower because there were no unserviced plots in the city center. Recognizing that the survey is for residential plots, not for all types of land for commercial and industrial uses, and that the survey is widely distributed and inclusive of about 50 percent of the total number of kwaeng in the in the study area (353), the data are sufficient for carrying out a broad analysis of land price trends within the city.

Each interview focuses on getting the respondent to appraise the probable selling price of two types of residential plots: 1) a fully serviced (piped water and electric) plot located on a paved residential street, and 2) an unserviced plot located about 100 meters from a paved residential street. The appraisal is made for 1990 for typical plots in each and every kwaeng the respondent has experience with. The appraisal process is repeated for 1989 and 1988, asking the respondent to estimate the selling price for the plots in these years.

In cases where there was overlap between surveys of brokers, bank appraisers and Land Department officials, the median values were selected for inclusion in the data base. All of the data was reviewed by a panel of active private real estate valuers. Appraisal estimates which were considered to be too high or too low were adjusted by the panel.

The survey generated over 6000 cases. After selecting median values and dropping aberrant estimates a total of 991 cases covering three years was compiled into the land value database. The database is analyzed to assess trends in land values over time and across the metropolitan area. Several maps are generated and numerous tabulations of the data are presented in Chapter 3.

**BANGKOK BROKER LAND PRICE SURVEY**

**QUALIFYING QUESTIONS CONCERNING BROKER'S EXPERIENCE**

INTERVIEW DATE \_\_\_\_\_ NAME OF INTERVIEWER \_\_\_\_\_

NAME OF BROKER \_\_\_\_\_

TELEPHONE \_\_\_\_\_ FAX \_\_\_\_\_

NUMBER OF INTERVIEW \_\_\_\_\_

---

1. How long have you worked as a land broker?

-- more than three years?    yes\_\_    no\_\_

2. In terms of transactions, how active have you been as a land agent within Bangkok between May 1989 and April 1990?

-- Very Active 12 trans/yr	-- Active 6-12 trans/yr	-- Not Very Active < 6 trans/yr
-------------------------------	----------------------------	------------------------------------

3. In terms of transactions, how active have you been as a land agent within Bangkok between May 1988 and April 1989?

-- Very Active 12 trans/yr	-- Active 6-12 trans/yr	-- Not Very Active < 6 trans/yr
-------------------------------	----------------------------	------------------------------------

4. In terms of transactions, how active have you been as a land agent within Bangkok between May 1987 and April 1988?

-- Very Active 12 trans/yr	-- Active 6-12 trans/yr	-- Not Very Active < 6 trans/yr
-------------------------------	----------------------------	------------------------------------

5. Are the majority of lands you deal with empty plots or plots with buildings or houses? What percentage of the land sales you have been involved with are truly empty plots:

-- more than 50%                      yes\_\_    no\_\_

**Interviewer: If all the answers to the questions are "Very Active", "Active" or "yes", proceed with the interview. Otherwise do not continue with interview. Thank the broker for his or her time.**

Note to Interviewer:

After completing survey please answer this question yourself. "In your opinion how quickly did the broker answer questions regarding land prices". (This will provide an brief indication of brokers knowledge of land prices).

QUESTIONS FOR ASCERTAINING THE LOCATIONS OF BROKERS OPERATIONS

INTERVIEW DATE \_\_\_\_\_ NAME OF INTERVIEWER \_\_\_\_\_

NAME OF BROKER \_\_\_\_\_

NUMBER OF INTERVIEW \_\_\_\_\_

1. In which Kwaeng in Bangkok did you work as a land broker between May 1989 and April 1990? Please list on the spaces below.

Kwaeng \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

2. In which Kwaeng in Bangkok did you work as a land broker between May 1988 and April 1989? Please list on the spaces below.

Kwaeng \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

3. In which Kwaeng in Bangkok did you work as a land broker between May 1987 and April 1988? Please list on the spaces below.

Kwaeng \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

**Interviewer: Proceed with a set of appraisal questions for each kwaeng which is listed for all three years.**

## **BANGKOK BROKER LAND PRICE SURVEY**

### **INTRODUCTION AND EXPLANATION OF LAND PRICE SURVEY**

The purpose of the survey is to develop a set of consistent data on land prices in metropolitan Bangkok. Land prices are being collected for two types of land parcels: 50 square wah serviced and unserviced residential plots. In estimating probable property values, the parcels are assumed to be located in the middle of a soi, not on a thanon. Data are being collected for each kwaeng in every kaet in the metropolitan area for 1990, 1989 and 1988.

We are interested in your expert opinion regarding the probable selling prices of these plots. We are not asking you to provide information on specific transactions-- we want you to estimate what the average selling price of parcels as listing in the tables below.

As you go through the table you should estimate the probable selling price for the two types of parcels. Start filling in a table for 1990. Base your estimate on what the parcel would sell for at the present time. Fill in the table for 1990 for each level of infrastructure. When you have finished recording 1990 probable sales prices for a kwaeng, repeat the process for 1989 and 1988.

We are attempting to collect information for each kwaeng in the metropolitan area. Therefore we want to ask you about land prices for each type of parcel for all of the kwaengs you are familiar with. Please fill out one page for each kwaeng for each of the three years. If you don't know or aren't sure of the probable selling price leave it blank. Only fill in the boxes when you are sure of the price per square wah. Use the map of kaets and kwaengs to help the respondent identify the names of the areas in which they work. The map should be used to orient the brokers and appraisers

INTERVIEWER NAME: \_\_\_\_\_  
 INTERVIEW NUMBER: \_\_\_\_\_  
 DATE: \_\_\_\_\_  
 LOCATION: KAET: \_\_\_\_\_  
 KWAENG: \_\_\_\_\_

Year 1990

Price Baht per square wah

	Plot
Level of Infrastructure and distance to soi	Baht/Wah
1. Paved road piped water on soi	
2. Unpaved road, no piped water, within 100 meters of soi	

**INTERVIEWER NAME:** \_\_\_\_\_  
**INTERVIEW NUMBER:** \_\_\_\_\_  
**DATE:** \_\_\_\_\_  
**LOCATION: KAET:** \_\_\_\_\_  
**KWAENG:** \_\_\_\_\_

Year 1989

Price Baht per square wah

Level of Infrastructure and distance to soi	Plot
	Baht/Wah
1. Paved road piped water on soi	
2. Unpaved road, no piped water, within 100 meters of soi	

INTERVIEWER NAME: \_\_\_\_\_  
 INTERVIEW NUMBER: \_\_\_\_\_  
 DATE: \_\_\_\_\_  
 LOCATION: KAET: \_\_\_\_\_  
 KWAENG: \_\_\_\_\_

Year 1988

Price Baht per square wah

Level of Infrastructure and distance to soi	Plot
	Baht/Wah
1. Paved road piped water on soi	
2. Unpaved road, no piped water, within 100 meters of soi	

APPENDIX B

PROJECT SURVEY QUESTIONNAIRE

1. NAME OF DEVELOPER \_\_\_\_\_
2. DATE OF INTERVIEW \_\_\_\_\_
3. PROJECT NAME \_\_\_\_\_
4. PROJECT ADDRESS (STREET NAME AND/OR INTERSECTION) \_\_\_\_\_  
\_\_\_\_\_
5. NAME OF PROJECT CONTACT PERSON \_\_\_\_\_
6. HOW MANY YEARS HAS INTERVIEWEE WORKED AT PROJECT? \_\_\_\_\_
7. TELEPHONE NUMBER OF PERSON INTERVIEWED: \_\_\_\_\_
8. LOCATION OF PROJECT (NAME OF DISTRICT AND KWAENG) \_\_\_\_\_  
\_\_\_\_\_
9. WHAT IS THE SIZE OF THE PROJECT IN RAI? \_\_\_\_\_
10. WHAT IS THE TOTAL NUMBER OF HOUSING UNITS TO BE BUILT IN THE PROJECT? \_\_\_\_\_
11. WILL THE PROJECT CONTAIN COMMERCIAL AND OFFICE USES? IF YES PLEASE DESCRIBE THEM IN TERMS OF USE AND CONSTRUCTED AREA (SQ. METERS) \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_
12. DESCRIBE THE FEATURES OF PROJECT, WHAT AMENITIES DOES THE PROJECT CONTAIN?: TENNIS COURTS, SWIMMING POOLS, OTHER SPORTS FACILITIES, PARKS, FISHPONDS, SCHOOLS, TEMPLES, SHOPPING AREAS, POST OFFICES, ETC. LIST EACH FEATURE \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_
13. WHAT IS THE SOURCE OF DRINKING WATER FOR THE PROJECT? DEEP TUBE WELLS FOR ENTIRE PROJECT? MUNICIPAL WATER? INDIVIDUAL WELLS FOR EACH HOUSE? \_\_\_\_\_  
\_\_\_\_\_
14. WHAT KINDS OF INFRASTRUCTURE ARE PROVIDED FOR THE PROJECT? IN TERMS OF ELECTRICITY, TELEPHONE, SEWERAGE TREATMENT (SEWER LINES TO MUNICIPAL SYSTEM OF SEPTIC/CESSPOOLS) \_\_\_\_\_  
\_\_\_\_\_

15. HOW FAR IS THE PROJECT FROM THE CENTER OF BANGKOK (HUA LAMPONG RAILROAD STATION) IN KILOMETERS \_\_\_\_\_

16. HOW FAR IS THE PROJECT FROM THE NEAREST MAJOR ROAD (THANON)? \_\_\_\_\_

17. IS THERE PUBLIC TRANSPORTATION FROM THE PROJECT TO MAJOR EMPLOYMENT AND INDUSTRIAL CENTERS IN BANGKOK? \_\_\_\_\_

18. IF THERE IS PUBLIC TRANSPORTATION, HOW FAR IS THE NEAREST BUS STOP FROM THE PROJECT \_\_\_\_\_

19. IN WHAT MONTH AND YEAR DID THE PROJECT START MARKETING HOUSING UNITS IN THE PROJECT? (USE WESTERN CALENDER ) \_\_\_\_\_

20. WHAT ARE THE SOURCES OF MORTGAGE FINANCING AVAILABLE TO BUYERS, LIST BANKS PROVIDING MORTGAGES TO PROJECT BUYERS \_\_\_\_\_

21. WHAT ARE THE TERMS OF MORTGAGE FINANCING?

A. MINIMUM DOWNPAYMENT PERCENTAGE \_\_\_\_\_

B. INTEREST RATE \_\_\_\_\_

C. LENGTH OF TIME FOR MORTGAGE TO BE REPAID IN MONTHS (FOR EXAMPLE 180) \_\_\_\_\_

22. PROVIDE A DETAILED BREAKDOWN OF THE TYPES OF HOUSING UNITS OFFERED FOR SALE IN THE PROJECT

TYPE 1      BEDROOMS/BATHS \_\_\_\_\_ / \_\_\_\_\_  
                  STORIES \_\_\_\_\_  
                  HOUSE SIZE SQMTRS \_\_\_\_\_  
                  PLOT SIZE SQ. WAH \_\_\_\_\_  
                  DETACHED/CONDO/TOWNHOUSE \_\_\_\_\_  
                  NUMBER OF UNITS IN TYPE \_\_\_\_\_  
                  SALES PRICE OF TYPE \_\_\_\_\_

TYPE 2      BEDROOMS/BATHS \_\_\_\_\_ / \_\_\_\_\_  
                  STORIES \_\_\_\_\_  
                  HOUSE SIZE SQMTRS \_\_\_\_\_  
                  PLOT SIZE SQ. WAH \_\_\_\_\_  
                  DETACHED/CONDO/TOWNHOUSE \_\_\_\_\_  
                  NUMBER OF UNITS IN TYPE \_\_\_\_\_  
                  SALES PRICE OF TYPE \_\_\_\_\_

**TYPE 3**      **BEDROOMS/BATHS** \_\_\_\_\_ / \_\_\_\_\_  
**STORIES** \_\_\_\_\_  
**HOUSE SIZE SQMTS** \_\_\_\_\_  
**PLOT SIZE SQ. WAH** \_\_\_\_\_  
**DETACHED/CONDO/TOWNHOUSE** \_\_\_\_\_  
**NUMBER OF UNITS IN TYPE** \_\_\_\_\_  
**SALES PRICE OF TYPE** \_\_\_\_\_

**TYPE 4**      **BEDROOMS/BATHS** \_\_\_\_\_ / \_\_\_\_\_  
**STORIES** \_\_\_\_\_  
**HOUSE SIZE SQMTS** \_\_\_\_\_  
**PLOT SIZE SQ. WAH** \_\_\_\_\_  
**DETACHED/CONDO/TOWNHOUSE** \_\_\_\_\_  
**NUMBER OF UNITS IN TYPE** \_\_\_\_\_  
**SALES PRICE OF TYPE** \_\_\_\_\_

**TYPE 5**      **BEDROOMS/BATHS** \_\_\_\_\_ / \_\_\_\_\_  
**STORIES** \_\_\_\_\_  
**HOUSE SIZE SQMTS** \_\_\_\_\_  
**PLOT SIZE SQ. WAH** \_\_\_\_\_  
**DETACHED/CONDO/TOWNHOUSE** \_\_\_\_\_  
**NUMBER OF UNITS IN TYPE** \_\_\_\_\_  
**SALES PRICE OF TYPE** \_\_\_\_\_

**TYPE 6**      **BEDROOMS/BATHS** \_\_\_\_\_ / \_\_\_\_\_  
**STORIES** \_\_\_\_\_  
**HOUSE SIZE SQMTS** \_\_\_\_\_  
**PLOT SIZE SQ. WAH** \_\_\_\_\_  
**DETACHED/CONDO/TOWNHOUSE** \_\_\_\_\_  
**NUMBER OF UNITS IN TYPE** \_\_\_\_\_  
**SALES PRICE OF TYPE** \_\_\_\_\_

**TYPE 7**      **BEDROOMS/BATHS** \_\_\_\_\_ / \_\_\_\_\_  
**STORIES** \_\_\_\_\_  
**HOUSE SIZE SQMTS** \_\_\_\_\_  
**PLOT SIZE SQ. WAH** \_\_\_\_\_  
**DETACHED/CONDO/TOWNHOUSE** \_\_\_\_\_  
**NUMBER OF UNITS IN TYPE** \_\_\_\_\_  
**SALES PRICE OF TYPE** \_\_\_\_\_

**TYPE 8**      **BEDROOMS/BATHS** \_\_\_\_\_ / \_\_\_\_\_  
**STORIES** \_\_\_\_\_  
**HOUSE SIZE SQMTS** \_\_\_\_\_  
**PLOT SIZE SQ. WAH** \_\_\_\_\_  
**DETACHED/CONDO/TOWNHOUSE** \_\_\_\_\_  
**NUMBER OF UNITS IN TYPE** \_\_\_\_\_  
**SALES PRICE OF TYPE** \_\_\_\_\_

23. SINCE THE START OF MARKETING, WHAT IS THE TOTAL NUMBER OF UNITS SOLD FOR EACH TYPE OF UNIT?

TYPE 1 \_\_\_\_\_  
TYPE 2 \_\_\_\_\_  
TYPE 3 \_\_\_\_\_  
TYPE 4 \_\_\_\_\_  
TYPE 5 \_\_\_\_\_  
TYPE 6 \_\_\_\_\_  
TYPE 7 \_\_\_\_\_  
TYPE 8 \_\_\_\_\_

24. DURING THE PAST MONTH HOW MANY UNITS OF EACH TYPE HAVE YOU SOLD IN THE PROJECT?

TYPE 1 \_\_\_\_\_  
TYPE 2 \_\_\_\_\_  
TYPE 3 \_\_\_\_\_  
TYPE 4 \_\_\_\_\_  
TYPE 5 \_\_\_\_\_  
TYPE 6 \_\_\_\_\_  
TYPE 7 \_\_\_\_\_  
TYPE 8 \_\_\_\_\_

25. BASED ON YOUR EXPERIENCE, WHAT IS THE AVERAGE AGE OF THE HEAD OF HOUSEHOLD BUYER? \_\_\_\_\_

26. BASED ON YOUR EXPERIENCE, WHAT PERCENTAGE OF THE BUYERS ARE BUYING THEIR FIRST HOUSE? \_\_\_\_\_

28. BASED ON YOUR EXPERIENCE, WHERE DO MOST OF THE HEADS OF HOUSEHOLD BUYERS WORK? \_\_\_\_\_

29. BASED ON YOUR EXPERIENCE, SINCE THE BEGINNING OF THE PROJECT WHAT PERCENTAGE OF BUYERS HAVE PURCHASED UNITS MORE THAN ONE UNIT? \_\_\_\_\_

30. IN YOUR OPINION, WHAT PERCENTAGE OF THE BUYERS HAVE PURCHASED UNITS FOR INVESTMENTS NOT FOR THEIR OWN PERSONAL OCCUPANCY? \_\_\_\_\_

APPENDIX C

REVISED TABLE 2-10

REVISED HOUSING STUDY TABULATIONS REFLECTING ADDITION  
OF CONDOMINIUMS AND RECLASSIFICATION OF  
LARGE-SCALE DEVELOPER-BUILT AND HOUSING

TYPE OF HOUSING	1974	1984	1988	ABSOLUTE INCREASE 1984-88	SHARE OF 1984-88 INCREASE	ANNUAL COMPOUND INCREASE 1984-88
Large-scale Developer-built	20,193	113,755	270,800*	157,045	49.6%	24.2%
Shophouses	134,766	247,552	257,266	9,714	3.1	1.0
Small-scale/ Independently-blt.	262,345	363,323	479,995	116,672	36.9	7.2
Slum Housing	139,326	160,145	170,638	10,493	3.3	1.6
Public Housing	28,533	74,708	85,000	10,292	3.3	3.3
Other Housing	N.A.	38,951	51,323**	12,372	3.9	7.1
<b>TOTAL</b>	<b>585,163</b>	<b>998,436</b>	<b>1,315,022***</b>	<b>316,586</b>	<b>100.0%</b>	<b>7.1%</b>

\* Based on estimates from building permits information tabulated by the Government Housing Bank including condominium units.

\*\* Assumes other housing grew at 7.1% per year 1984-88.

\*\*\* Revised total is increased to account for 58,640 condominium units tabulated by the NHA in 1988.

Source: Tabulations of National Housing Authority Aerial Photographic Surveys 1987 and 1990; Government Housing Bank building permit tabulations, 1987-90.