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Author

Dowall, David E.

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**A Second Look at the
Bangkok Land and
Housing Market**

David E. Dowall

November 1990

**University of California at Berkeley
Institute of Urban and Regional Development**

A SECOND LOOK AT THE BANGKOK LAND AND HOUSING MARKET

A discussion paper prepared on the occasion of the twenty-fifth anniversary of the founding of the Planning and Development Collaborative in 1965.

November 20, 1990

David E. Dowall
Department of City and Regional Planning
University of California, Berkeley

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David E. Dowall

Department of City and Regional Planning

University of California, Berkeley

INTRODUCTION

This paper reports on the recently completed Bangkok Land Market Assessment Study completed for USAID and the National Economic and Social Development Board of the Kingdom of Thailand. The purpose of the study was to update the findings of the 1987 Bangkok Land Management Study [PADCO/National Housing Authority, 1987].

BRIEF BACKGROUND ON BANGKOK

Bangkok, with a population of nearly 9 million, 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. 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. 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 [Halcrow, Fox Associates, et al., 1990]. As a result, congestion has started to spawn the decentralization of development outside of the city, and there has been considerable urban development in the fringe of Bangkok, outside the boundaries of the BMA.

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.

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. Tables 1 and 2 provide a breakdown of the land conversion trends by distance from the city center. 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

TABLE 1

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

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	211,675	100.0%	184,344	100.0%

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

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.

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 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 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. Land located between 11 and 20 kilometers from the city center was no longer affordable for building single-family residences.

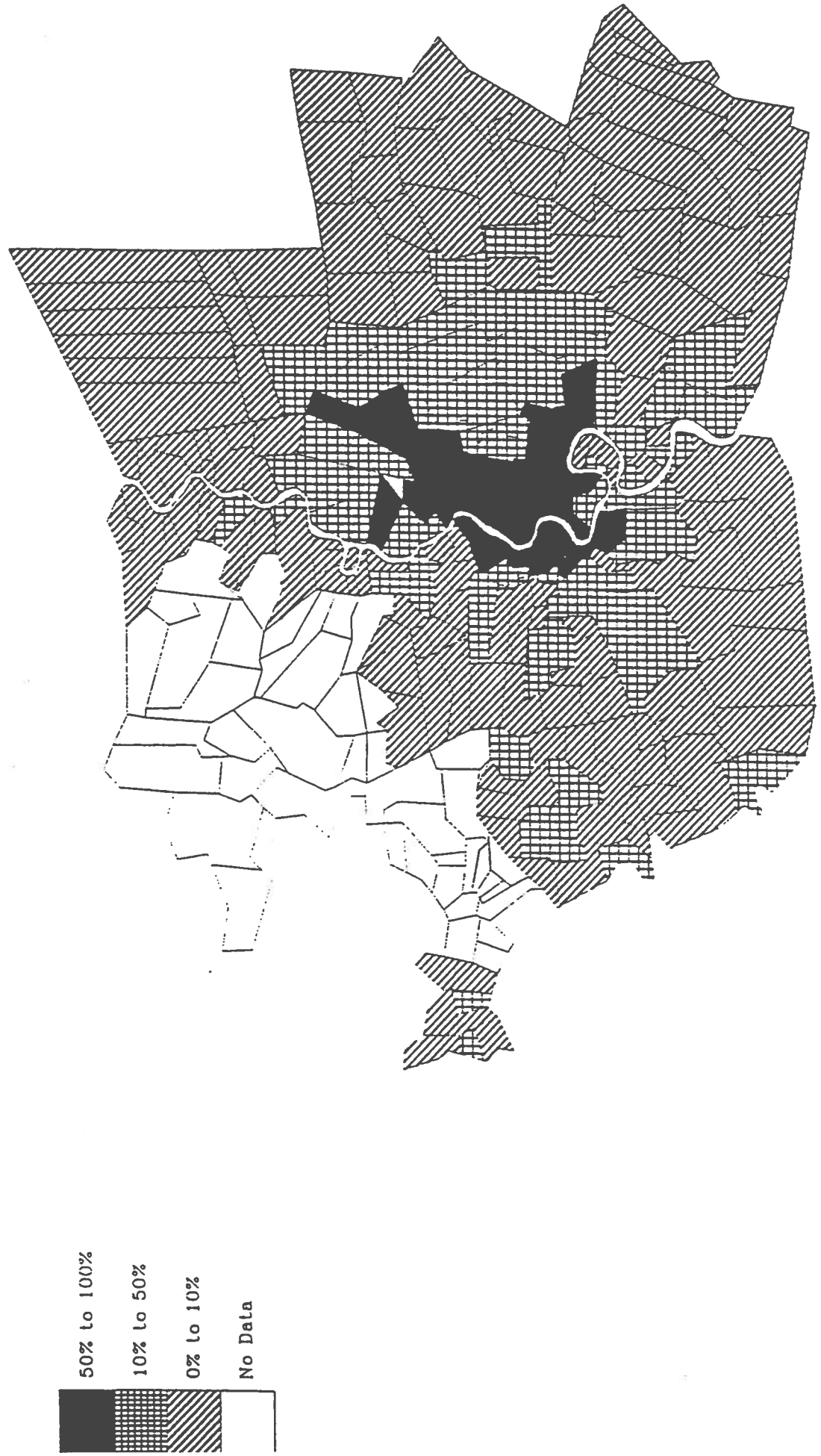
In the 1974-84 period, as well as more recently, the conversion of land has tended to concentrate in the suburban subdistricts since many of the older, more central subdistricts already have been largely built-up. This forces development to outer zones where land is plentiful and less expensive. Maps 1, 2, and 3 illustrate the percent of total subdistrict land area that was developed for 1974, 1984 and 1988 respectively. Maps 4 and 5 show the amount of land converted to urban uses for the 1974-84 and 1984-88 period respectively. The urban land conversion data clearly illustrate that urban development is occurring at an extremely rapid pace and that the land market is quite responsive to demand pressures.

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 (see Table 3). The total housing stock is estimated to have increased from 585,163 in 1974 to 1,315,022 in 1988, an absolute increase of 729,859 dwelling units. This translates into an annual increase of 5.9 percent. About 44 percent of the increase took place in the past four years--that translates into an annual compound growth rate of 7.1 percent.

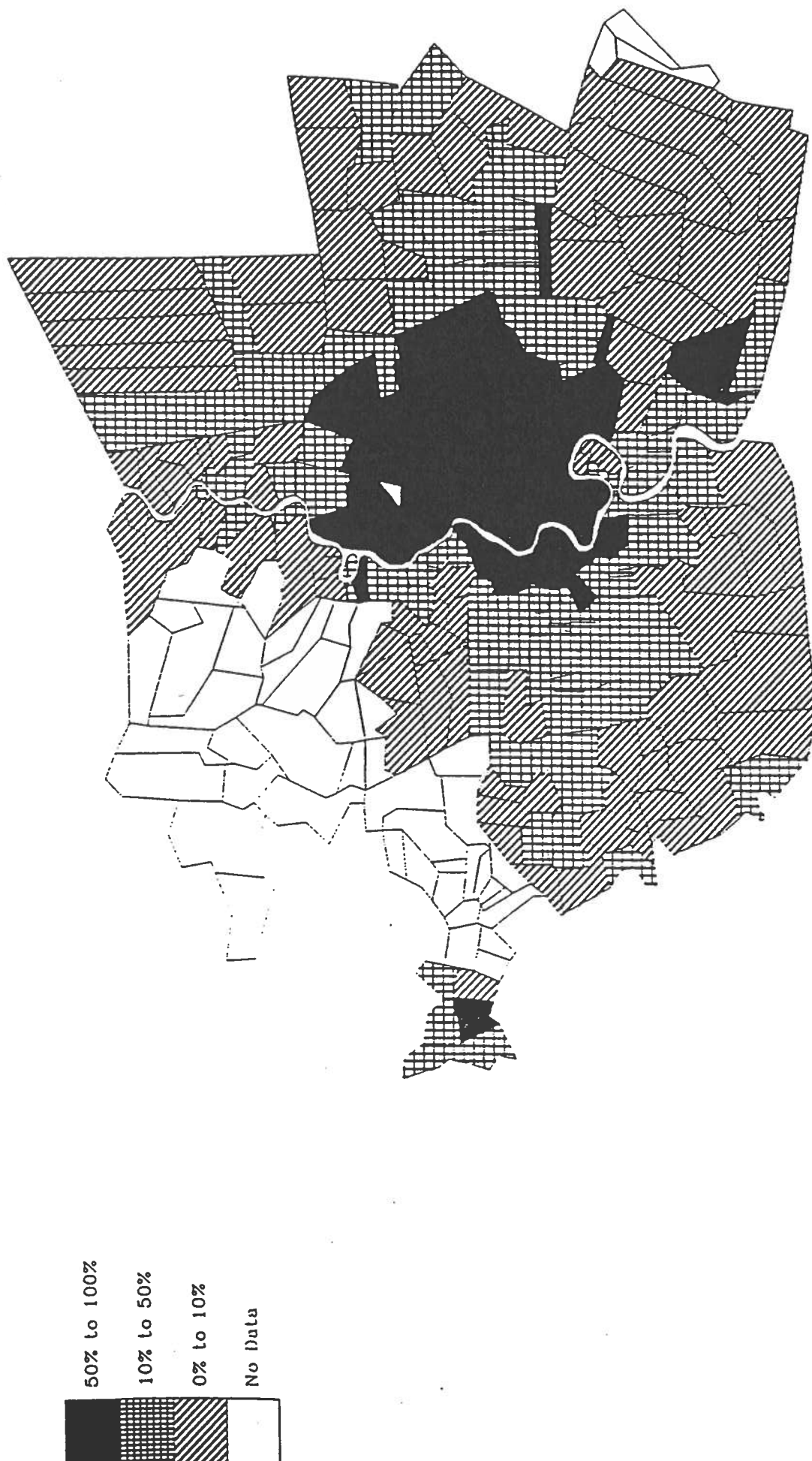
During the 1974 and 1984 period, developer-built housing accounted for one-fourth of the total housing stock increase. Between 1984 and 1988, developer housing production increased by 138 percent, accounting for nearly 50

PERCENT OF URBANIZED LAND, 1974



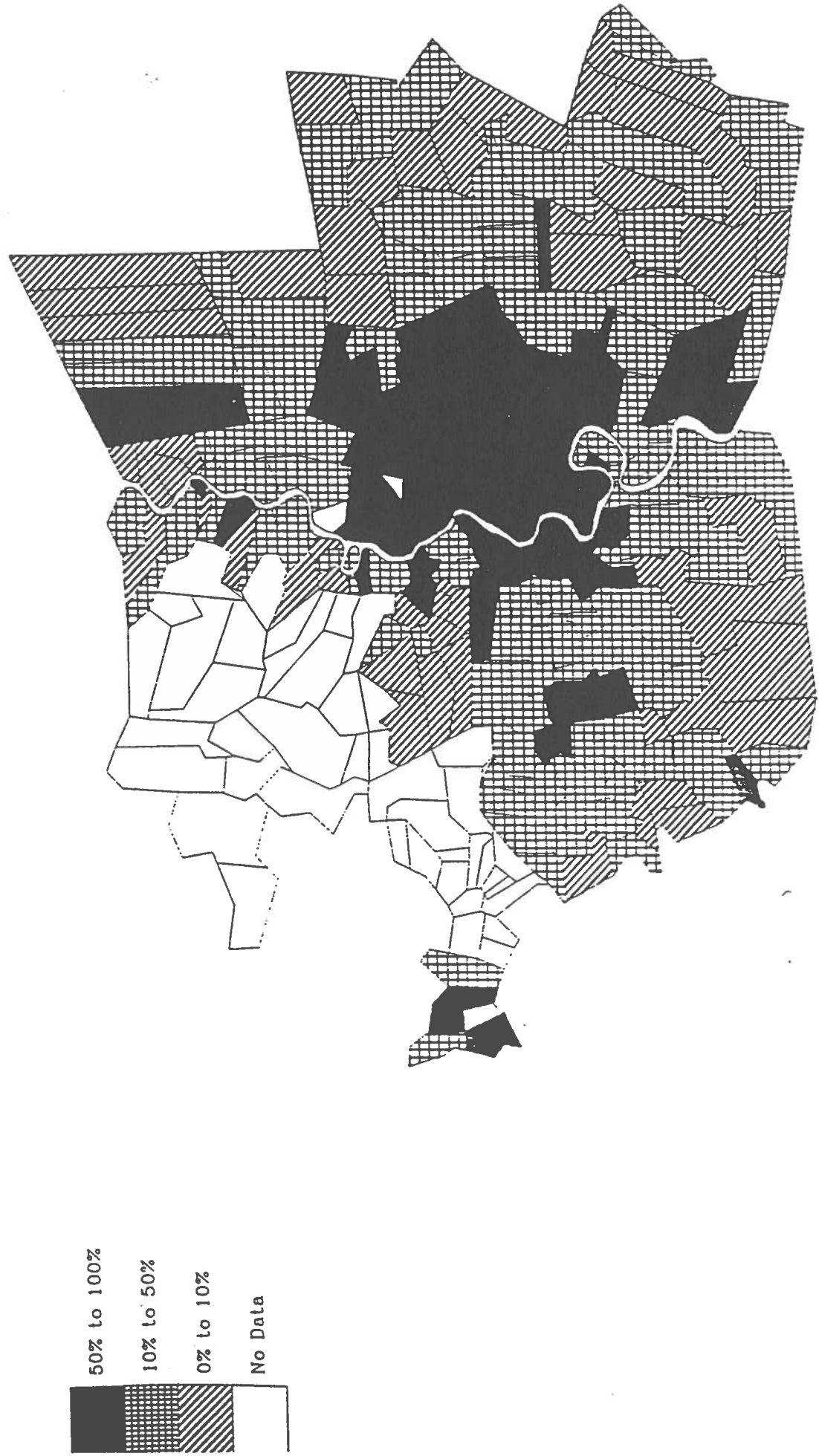
MAP 1

PERCENT OF URBANIZED LAND, 1984

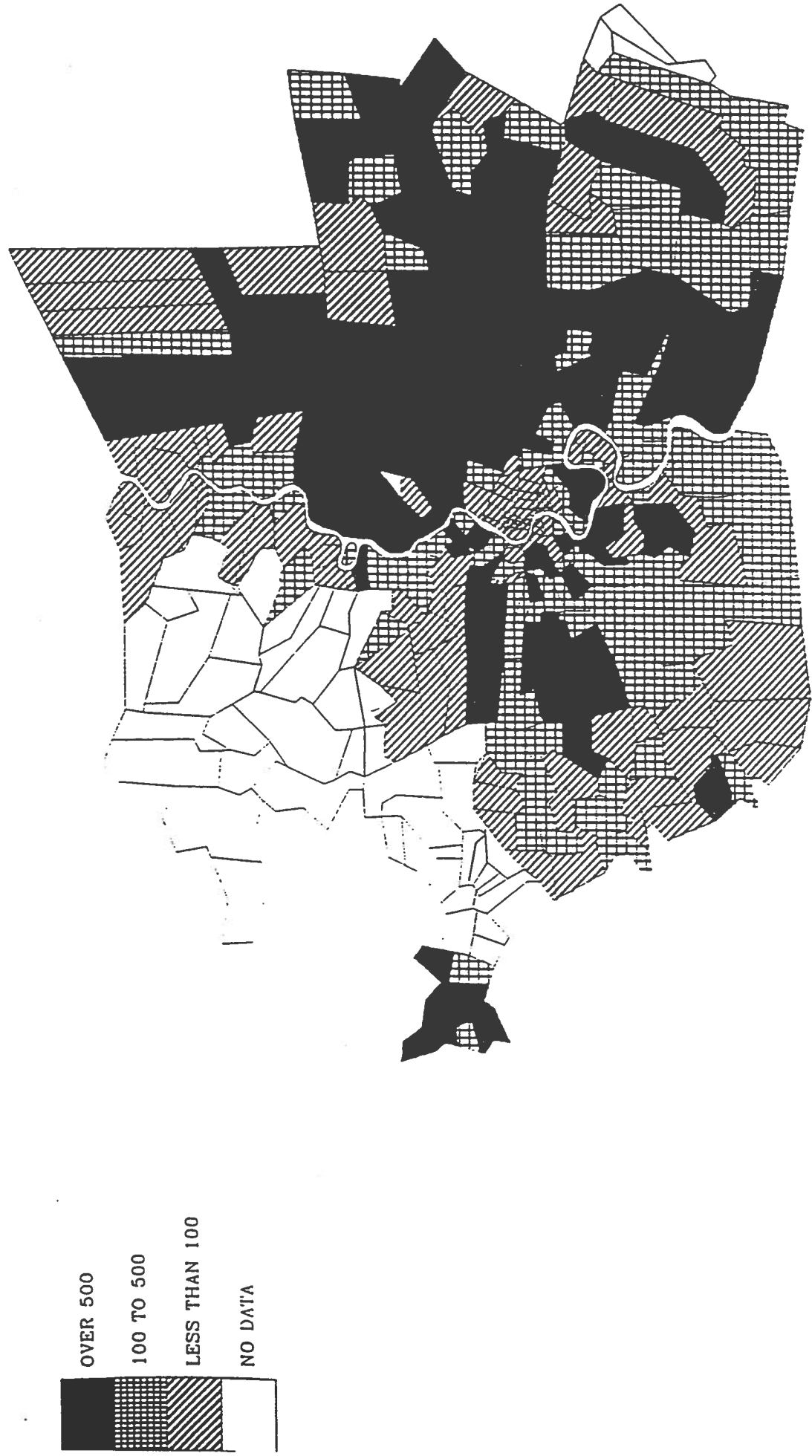


MAP 2

PERCENT OF URBANIZED LAND, 1988



RAI CONVERTED TO URBAN USE, 1974-84



RAI CONVERTED TO URBAN USE, 1984-88

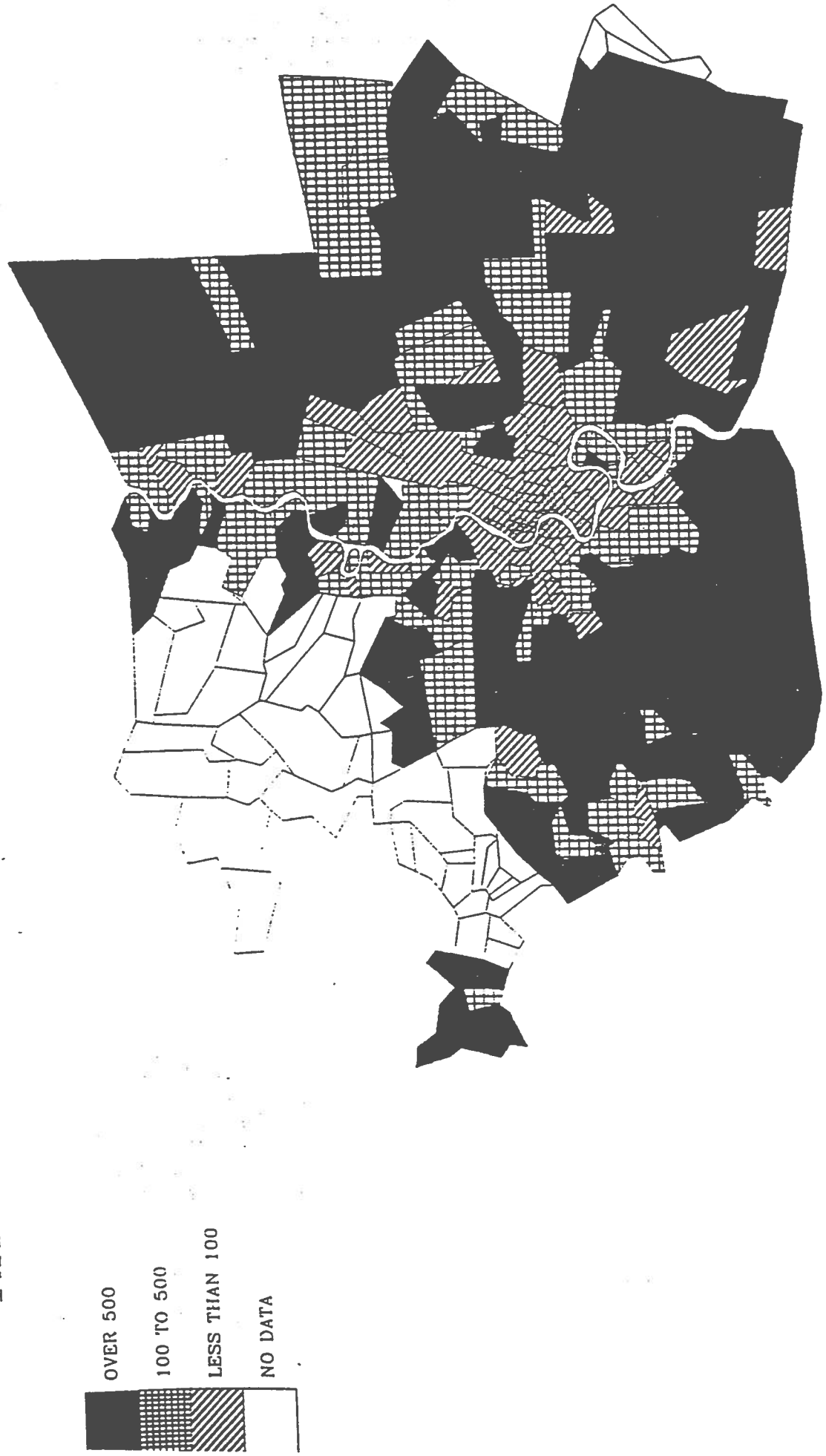


TABLE 3

HOUSING STOCK IN METROPOLITAN BANGKOK

1974, 1984 AND 1988

BY TYPE OF 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
TOTAL	585,163	998,436	1,315,022***	316,586	100.0%	7.1%

* 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.

percent of Bangkok's total housing stock increase. Reflecting vastly over-built conditions in 1984, the production of shophouses plummeted as excessive inventory was gradually sold off. The share of shophouse production between 1974-84 was 24.4 percent; in the 1984-88 period it was 3.1 percent.

Small-scale or independently-built housing expanded strongly between 1984 and 1988, adding 116,672 units to supply. These projects increased at an annual rate of nearly 7.2 percent per year, 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. However, there are signs of substantial slum eviction and demolition activity. This is undoubtedly a manifestation of rapidly rising land values. As Table 4 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. 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.

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 3.3 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.

Table 4

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
TOTAL	170,638	160,145	139,326	10,493	20,819

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

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.

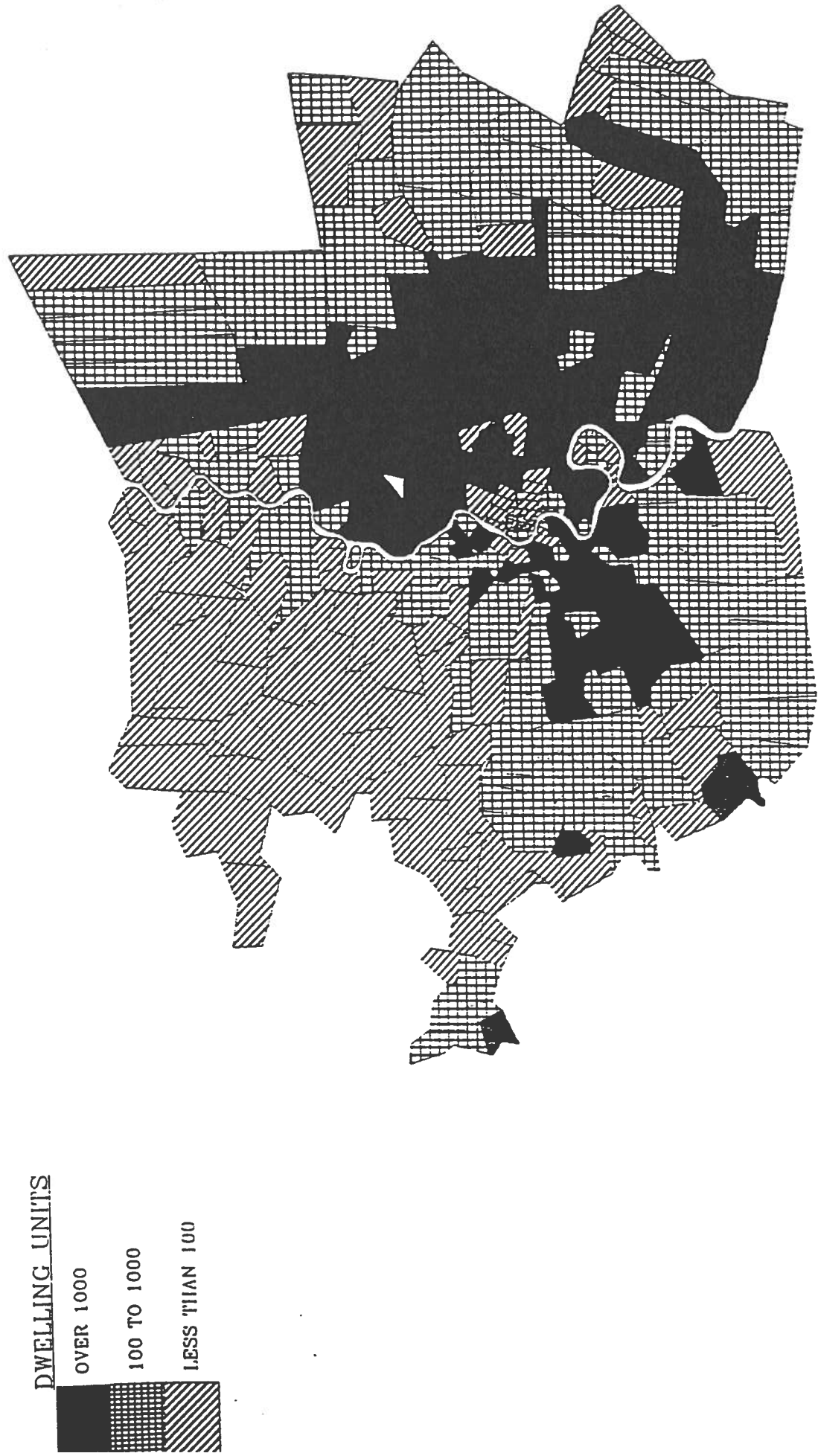
In contrast, the 1984-1988 period exhibited a shift in the location of housing development, with construction increasing proportionately in both the core and the fringe. Development in the 11- to 20-kilometer ring accounted for nearly 40 percent of total production. Maps 6 and 7 illustrate the location of housing production 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. 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. 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.

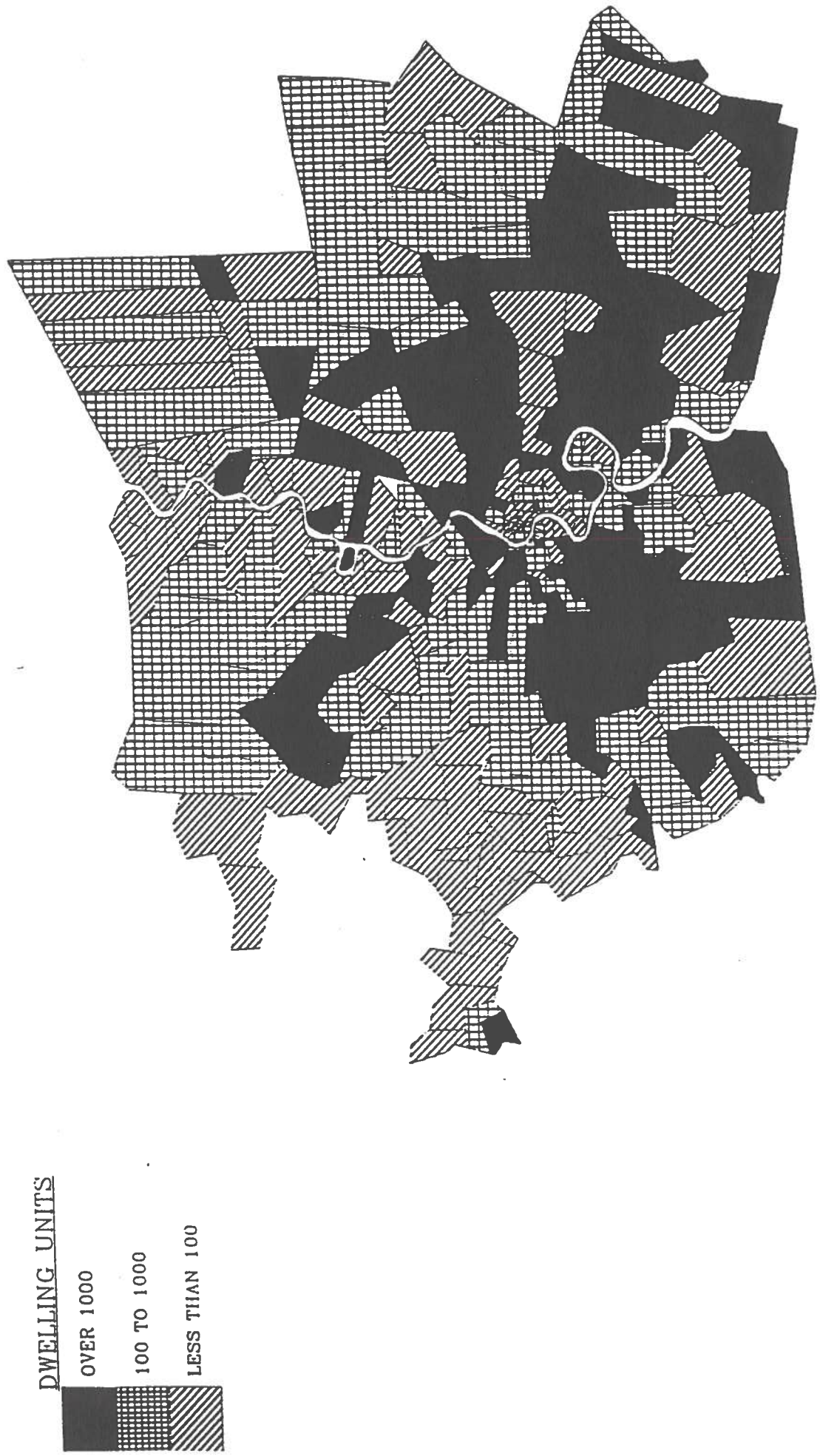
Given the strong demand existing for housing and commercial and industrial development, urbanization will clearly shift to the fringe areas. These are areas with limited infrastructure and support services. Housing development in these areas will also tend to consume more land as residential plot sizes 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 outlined below, there have been some interesting changes in project densities.

TOTAL HOUSING STOCK CHANGE 1974-84



TOTAL HOUSING STOCK CHANGE 1984-88



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

Bangkok is now both rapidly decentralizing and increasing its density. As the numerous tables and maps have illustrated, development has now spilled out into Nonthaburi, Pathum Thani, Samut Sakhon, and Nakhon Pathom. The obvious physical manifestation of the decentralization of population and employment is the conversion of rural, largely agricultural lands to urban uses. This rapid conversion of land in the region has contributed to unprecedented increases in land prices.

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 8 and 9 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.

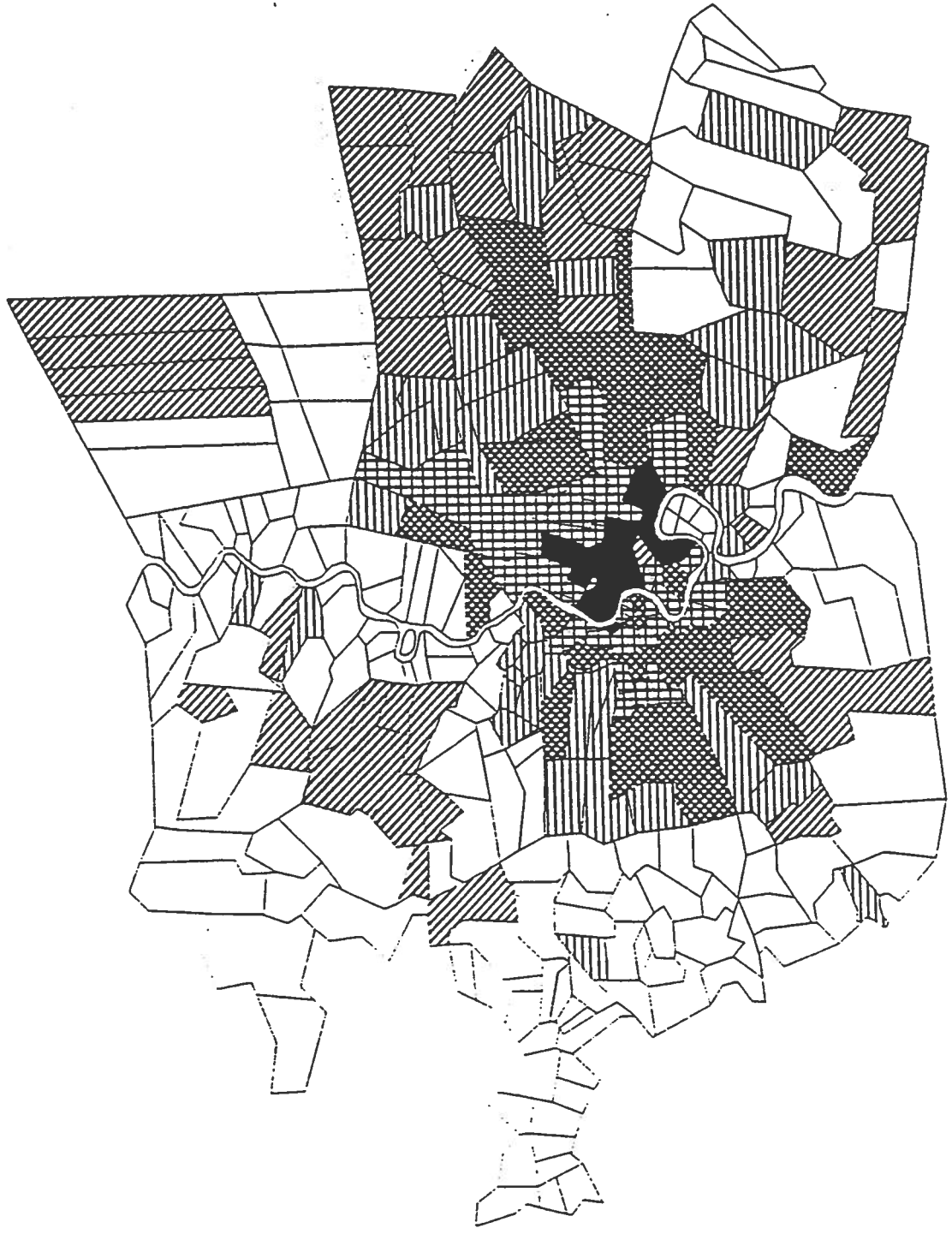
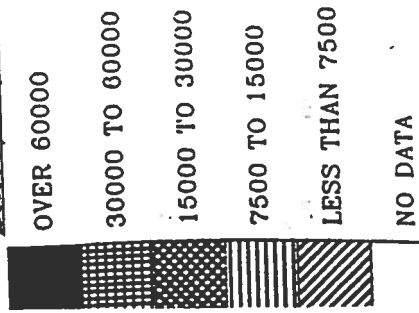
Table 5 presents land values for serviced and unserviced residential plots by distance from the city center for 1990. As it shows, serviced plots are priced between 2.15 and 2.59 times more than unserviced ones. The ratio rises as distance from the city center increases up to 30 kilometers, then it falls. The lower ratios in the more central locations reflect the fact that 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 6. 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.

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

SERVICED PLOT PRICES, 1990

BAHT/SQ. WAH



UNSERVICED PLOT PRICES, 1990

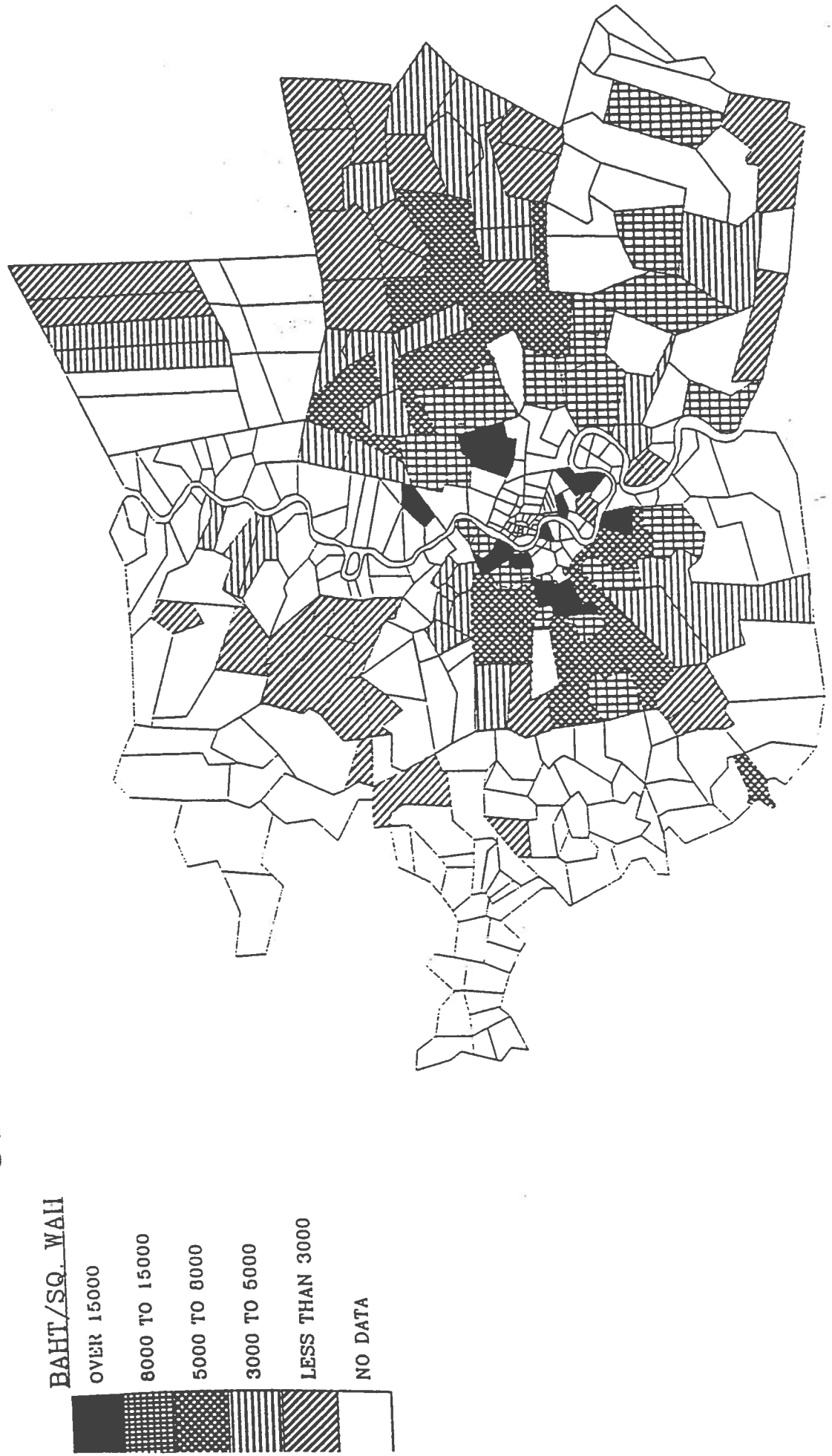


TABLE 5

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.

TABLE 6
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.

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.

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. Unserviced plots are over 100 meters from a soi 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.

The land price data were fitted to a non-linear logarithmic function which including a dummy variable signifying serviced plots. The equation takes the following log form, and the results are presented in Table 7, for 1988, 1989, and 1990:

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

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; dl 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

TABLE 7

BANGKOK LAND PRICE MODEL 1988, 1989, 1990

YEAR	CONSTANT (a)	SERVICED (b)	DISTANCE GRADIENT(c)	R ²
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.

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 values for the three years.

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.

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.

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 sois. As such it does not report on the much higher prices of commercial properties location along major streets.

Table 8 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.

TABLE 8

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.

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 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. Unserved lands are appreciating at much faster rates than comparably located serviced plots.

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, 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 9 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 9, 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

TABLE 9

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

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.

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. 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.

HOUSING DEVELOPMENTS PAST AND PRESENT

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.

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.

Responding to rising land and construction costs, the housing delivery system has dramatically changed over the past four years. Table 10 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

TABLE 10

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.

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 10 shows, today's projects more likely to be provided with some form of public or private transportation, piped water, electricity, and telephones.

Table 11 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.

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].

TABLE 11

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.

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 12 illustrates the supply of housing in the Bangkok metropolitan 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. 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 10, 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.

TABLE 12
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
TOTAL	57,621	100.0

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

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 Table 8, 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.

In response to these rising costs, many private developers have started building low-cost condominium projects, with small units selling below 300,000 baht. 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. These units could be affordable to households earning between the 20th and 50th income percentile of the income distribution.

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 12, 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.

LAND MARKET PROBLEMS

Despite the robust performance of the housing market, grave problems are emerging. During the past three years, land and housing prices have increased dramatically, rising at over 25 percent per year. However, as illustrated above, 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. 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. 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 insure 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].

LACK OF COORDINATION OF PRIVATE LAND DEVELOPMENT

Without 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. 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. Ribbon development is inefficient.

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. 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.

Thailand and its local governments need to reform the way infrastructure is financed. 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. 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.

CONCLUSIONS

This paper has outlined the current patterns of urban land development in the Bangkok metropolitan area. While the land and housing market is still operating efficiently, quickly responding to intense demand pressures, it is under considerable stress. Land prices have been rising rapidly, housing prices are escalating, and traffic congestion is worsening. As the housing and land market respond to demand signals and build higher-density projects, a planning and infrastructure development program to support development is necessary.

This second assessment of the Bangkok land and housing market has provided important insights to policymakers. It has illustrated how rapidly the pattern of land development has shifted in Bangkok and illustrated the critical need for new government initiatives. Land market assessments such as the one reported on here are absolutely essential for facilitating urban development.

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