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Author

Dowall, David E.

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**The Karachi
Development Authority:
Failing to Get the
Price Right**

David E. Dowall

**Professor of City &
Regional Planning**

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University of California

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Introduction

This paper, like other studies of land development agencies, describes the problems of pricing and cost-recovery, allocation, and targeting (Van Meurs, Baker, Cohen, 1983; Dowall, 1989b). It focuses on the Karachi Development Authority (Dowall, 1989a), but it could have just as easily been written about another similar authority.

Karachi is one of the fastest-growing cities in the world. At its current compound annual growth rate of 4.7 percent per year, Karachi will grow to 13.5 million persons by the year 2000, making it one of the world's 35 largest metropolitan areas in the world (see Table 1).

The pressures on Karachi's housing and land markets have been enormous, and fewer and fewer households can afford housing. As this paper illustrates, the formal sector (particularly the Karachi Development Authority), has failed to meet the housing needs of its growing population. Karachi's housing shortage is caused by an inadequate land development and disposal system and a lack of finance capital to support house purchases. Despite the fact that over 90 percent of the land in Karachi is publicly owned, the Karachi Development Authority, by pursuing inappropriate policies, is failing to provide sufficient quantities of serviced residential plots.

By vastly underpricing residential plots it offers for sale, the KDA is chronically short of finance capital for infrastructure development. The very low prices for initially allocated plots also generates tremendous speculative demand for plots by the middle and upper classes. Unless the KDA improves its performance and expands production of affordable, fully-serviced residential

Table 1

Karachi's Population Growth, 1838-1987

<u>Year</u>	<u>Population</u>
1838	14,000
1870	56,000
1890	98,000
1911	152,000
1921	217,000
1931	301,000
1941	436,000
1951	1,290,000
1961	2,140,000
1972	3,302,820
1981	4,726,647
1987	7,443,663

SOURCES: Salim Chishti and Shakila Rehman, "Population Dynamics of Karachi," Draft Working Paper, Master Plan and Environmental Control Department, KDA, 1988; Karachi Metropolitan Transportation Study, 1988.

plots, shelter and urban service conditions will continue to deteriorate, as more and more residents seek shelter in the katchi abadis.

PUBLIC OWNERSHIP OF LAND IN KARACHI

Karachi's land and housing market is dominated by the overwhelming public ownership of land. Nearly 400,000 of the 425,000 acres of the Karachi Metropolitan Area (KMA), accounting for 94 percent, are in some form of public ownership. The largest landowner, the Government of Sind, controls 32 percent of the KMA. The second largest landowner, and for purposes of land and housing development the most important, is the Karachi Development Authority, which controls nearly 125,000 acres, accounting for 29 percent of the KMA. In the area where most of Karachi's future residential development will take place over the next twenty years (between 10 and 15 kilometers from the center of the city), the KDA controls 68 percent of the land. Clearly, the KDA is the dominant player in Karachi's formal land and housing market.

BRIEF HISTORY OF THE KDA

The KDA was created in 1957 by the merger of the Joint Water Board and the Karachi Improvement Trust. The KDA was given explicit planning and development powers, including: drafting of a master plan for the region, continuing the development of settlements for the housing of refugees, control of building, development of necessary infrastructure, and the design, development, and marketing of land and housing schemes (subdivisions).

KDA schemes are contiguous assemblies of land for which it has developed a land subdivision plan. Over the years, the Government of Sind has routinely conveyed land to the KDA for the development of such schemes. Title is transferred for a nominal fee (usually between 1 to 5 rupees per square yard, an amount far below the actual market value). After the parcel's transfer to the

KDA, its Urban Design and Engineering Departments prepare a detailed site plan and plot layout. Table 2 lists the principal schemes under the control of the KDA. Map 1 shows their location. A total of 22 schemes have been established between 1957 and 1983. Together with the earlier schemes transferred to the KDA from the Karachi Improvement Trust, and a number of colonies, townships, and metrovilles established to accommodate displaced persons, these areas account for a total of 112,953 acres. Currently, three new schemes, Halkani Town, Lyari River Development Scheme, and Taiser Town, covering 59,037 acres, are being planned. Ultimately, the KDA will control approximately 172,000 acres, or 269 square miles--40 percent of the KMA.

DESCRIPTION OF KDA'S LAND DEVELOPMENT PROGRAM

The KDA receives no direct appropriations from the Government of Sind or the Central Government. Accordingly, plot sales play a pivotal role in financing land development operations. The Government of Sind regulates the allocation of residential plots, in the following manner:

- (1) plots of less than 120 square yards are reserved for "jhuggie" (temporary reed huts) dwellers;
- (2) plots of between 121-400 square yards:
 - (a) 15 percent are reserved for Sind government employees;
 - (b) 5 percent are reserved for central government employees;
 - (c) 10 are reserved for defense personnel;
 - (d) 35 percent are reserved for construction companies and trusts;
 - (e) 35 percent are reserved for the general public.
- (3) plots of above 400 square yards:
 - (a) 15 percent are reserved for Sind government employees;
 - (b) 5 percent are reserved for employees of the central government;

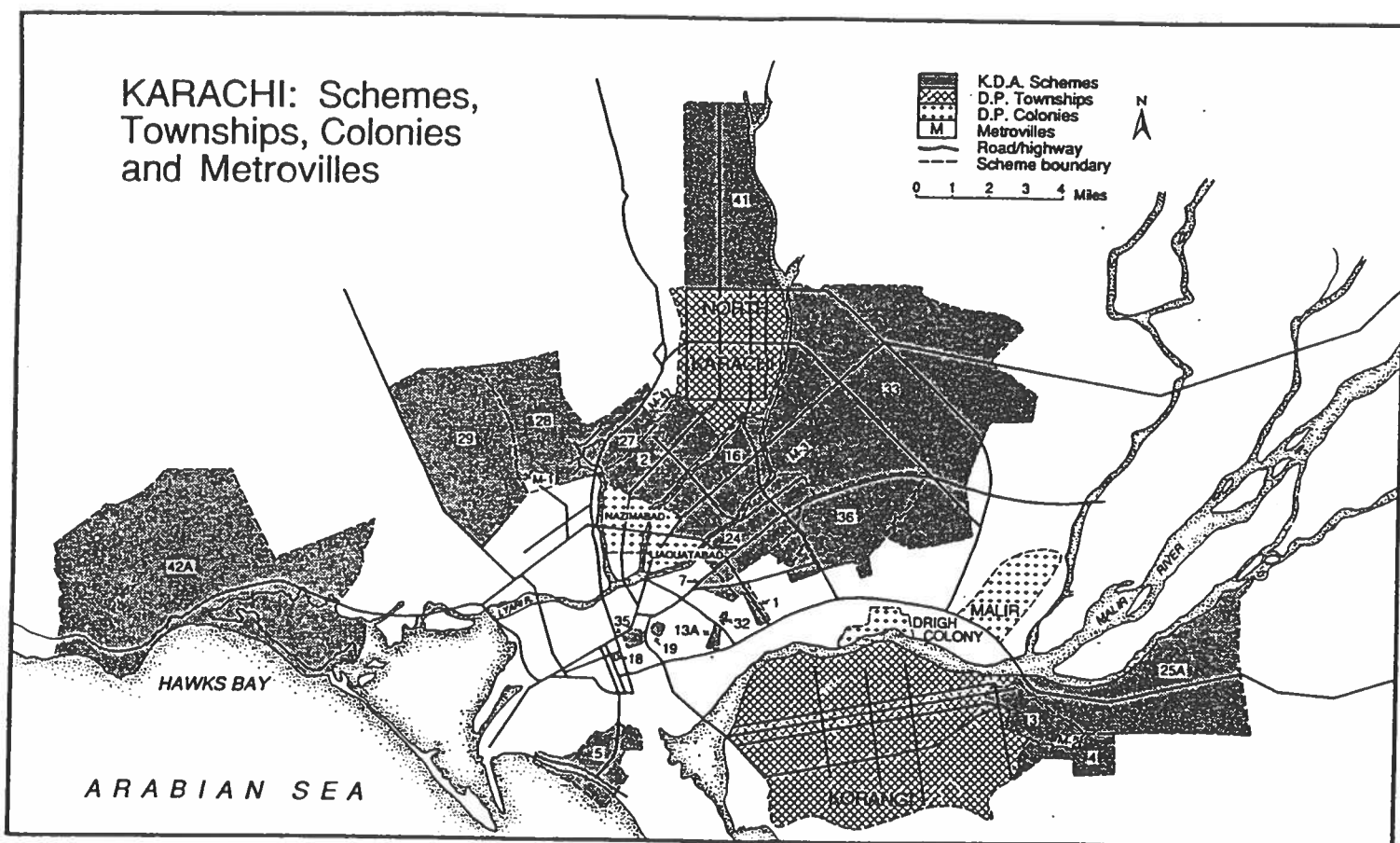
Table 2

K.D.A. Schemes

<u>Scheme No.</u>	<u>Name</u>	<u>Area in Acres</u>	<u>Date of Notification</u>
1 and 1-A	Dilkusha (Drigh Road)	317	1952
2	Taimuria (North Nazimabad)	3,500	1953
3	Sanatnagar (Landhi Industrial Area	890	1958
4	Zone 2-B (Landhi Industrial- cum-Residential Area)	1,440	1958
5	Kehkashan (Clifton)	1,950	1964
7	Jail Drigh Road, Block IV-V	360	1954
11	Chandni Chowk	13	1955
13-A	Kohsar (Hill Park)	56	1974
16	Mansoorah (Federal 'B' Area)	2,950	1960
18	Bohri Bazar	7	1960
19	Khudadad Colony	40	1956
24	Gulshan-E-Iqbal	2,662	1964
25-A	Shah Lateef Town	7,500	1980
27	Qasba	396	1965
28	Auranghi	4,900	1969
29	Baldia	7,200	1965
32	Ahmed Ali Park	62	1966
33	Gulzar-e-Hijri (Northeast Karachi)	26,026	1967
35	Lines Area (Jacob Lines)	700	1973
36	Gulistan-E-Jauhar	3,700	1978
41	Surjani Town	6,600	1983
42-A	Hawkesbay	11,450	1983
TOTAL		82,719	

SOURCE: "An Overview of KDA'S Housing in Karachi," Urban Design Unit,
Master Plan and Environmental Control Unit, KDA, 1984.

KARACHI: Schemes, Townships, Colonies and Metrovilles



MAP 1

- (c) 10 percent are reserved for defense personnel; and
- (d) the remaining plots are reserved for public auction.

As will be outlined in detail below, allotment prices are well below the comparable market rates. Plots are allotted according to applications. In cases where the number of applications per category exceeds the supply of available plots per scheme, a balloting process is employed. The prices of plots are set by the KDA and are adjusted periodically.

For plots allocated to construction companies, plot prices are also administratively set by the KDA. The construction companies, in their application to the KDA, specify the selling prices of the units they intend to build on the plots. Thus, at least theoretically, the KDA indirectly controls the prices of housing units constructed by the private construction firms. The allocation of flat sites to developers follows the same manner as for plots, but construction companies can also bid at KDA auctions for flat sites and for plots over 400 square yards. In such cases there are no restrictions on housing prices.

In most cases, plots are allotted before the schemes are developed to generate cash flow to finance the infrastructure construction. The time-lag between plot allotment and development is considerable, ranging from two to five years.

The Size of Residential Plots

Over the years, the KDA has planned a range of residential plots varying in size from 60 to over 4,000 square yards. Table 3 illustrates the pattern of planned and allotted plots by size for KDA schemes, townships, and colonies. A total of 489,282 plots have been planned for the 29 schemes, townships, and

Table 3

Distribution of Plots by Scheme, Township, and Colony

Scheme No.	Year	Name	Square Yards			Total
			Less than 120	121-400	Over 400	
1	52	Dilkusha	0	0	672	672
2	53	North Nazimabad	442	9,128	2,268	11,838
3&4	58	Landhi	2,527	0	2,614	5,141
5	64	Clifton	1,193	139	1,503	2,835
7	54	Jail Drigh Road	0	110	393	503
		Chandni Chowk	0	0	15	15
16	60	Federal B	20,336	3,529	1,566	25,431
24	64	Gulshan-e-Iqbal	1,353	7,325	1,829	10,507
25-A	80	Shah Latif Town	43,891	0	0	43,891
27	65	Qasba	816	1,974	0	2,790
28	69	Orangi Town	18,964	670	0	19,634
29	65	Baldia Town	16,470	0	0	16,470
	50	Nazimabad	0	7,388	150	7,538
	50	Aurangabad	3,000	0	0	3,000
	50	Liaquatabad	11,774	0	0	11,774
	53	Shah Faisal Colony	7,920	561	1	8,482
	55	Malir Colony	9,311	145	93	9,549
	57	Malir Extension	9,878	0	0	9,878
	59	North Karachi	24,883	37,865	332	63,080
	59	Karangi	56,369	23,510	1,448	81,327
33	67	Gulzar-e-Hijri	21,557	35,019	4,535	61,111
35	73	Jacob Lines	11,000	0	0	11,000
36	78	Gulistan-e-Jauhar	1,318	6,808	1,238	9,364
37	74	Metroville 1	3,871	262	0	4,133
	77	Metroville 2	4,257	122	0	4,379
	77	Metroville 3	2,750	450	4	3,204
	77	Metroville 4	3,680	167	0	3,847
41	83	Surjani Town	40,354	9,485	1,161	51,000
		Mehran Town	1,282	5,437	170	6,889
TOTAL			319,196	150,094	19,992	489,282*

SOURCE: "An Overview of KDA's Housing Schemes in Karachi," Urban Design Unit, Master Plan and Environmental Control Unit, KDA, 1984.

colonies. Of these, 76,135 plots were allotted between 1974-85. Approximately two-thirds of KDA's plots were planned at less than 120 square yards (small plots). Medium-sized plots between 121 and 400 square yards account for 31 percent, and large plots, over 400 square yards, account for 4 percent.

Over the past 35 years, the distribution of planned plots by size has shifted from large plots to smaller ones. From 1950 to 1969, the distribution of plots was: 59 percent small, 37 percent medium, and 4 percent large. During the 1970s, with the development of Shah Latif Town, Surjani Town, and Jacob Lines, the pattern shifted--nearly 82 percent of the planned plots were small, 17 percent were medium, and 2 percent were large.

The Location of KDA Plots

Of the total 489,282 plots planned by the KDA, most are located a considerable distance from the central city. As illustrated in Table 4, only 15.2 percent of the total plots are located within ten kilometers of the center of the city. Another 15 percent are located within 10.1 to 15 kilometers. Nearly half (48 percent) of the total planned KDA production is located between 15 and 20 kilometers from the center of the city. The remaining 21 percent of the plots are located beyond 20 kilometers. Cross-tabulations of planned plots by plot size indicate that small plots are slightly more concentrated in both close-in (0-10 kilometers) and distant (over 20 kilometers) locations, relative to medium and large plots. Given that 56 percent of residential land conversion between 1970-88 took place within 15 kilometers of the CBD, the KDA is clearly locating its projects in more remote locations, beyond most urban development.

Table 4

Distribution of Planned KDA Plots
By Size and Distance to Central City

Distance From Central City	Plot Size in Square Yards						Total Plots	Per- cent
	Less Than 120	Per- cent	121-400	Per- cent	Over 400	Per- cent		
0-10 Km	63,272	19.8	8,569	5.7	2,733	13.7	74,574	15.2
10.1-15 Km	32,227	10.1	34,368	22.9	7,071	35.4	73,666	15.1
15.1-20 Km	132,668	41.6	97,550	65.0	6,413	32.1	236,631	48.4
Over 20 Km	91,029	28.5	9,607	6.4	3,775	18.9	104,411	21.3
Total	319,196	100.0	150,094	100.0	19,992	100.0	489,282	100.0

SOURCE: Karachi Land and Housing Market Study, 1989.

The Development and Allocation of Plots

To plan plots does not necessarily mean that they get allotted to individuals or builders, or that they get developed. Between 1974 and 1985 the KDA planned a total of 200,780 plots, but allotted only 76,135. Of these, 55,799 were actually developed. The process of allocation and development has been slow, reflecting the financial limitations of the KDA to provide critical infrastructure. Table 5 illustrates recent plot allocation activity by size of plot between 1979 and 1985 (the totals exclude auctioned plots and those allocated by quota or discretion). As the table shows, between 1979 and 1985, 58,232 residential plots were allotted by computer balloting, accounting for 12 percent of the total number of residential plots planned by the KDA.

The Pattern of Residential Construction on KDA Plots

As of 1985, 41 percent of KDA plots were standing vacant. The high levels of undevelopment are a reflection both of a lack of infrastructure (plots were allotted but not serviced) and speculation. Unfortunately, data limitations do not permit tabulations of plot vacancies by availability of infrastructure. However, the data do show that closer-in plots (which are more likely to have access to infrastructure) are more likely to be developed. The data also show that larger plots are far more likely to be vacant than small ones--only 15 percent of the large plots are developed vs. 53 percent of the small ones (Table 6). Since larger plots are ultimately more valuable because they can have larger, expensive houses built on them, they are more likely to be the preferred vehicle for speculation. This proposition is borne out by the fact that the prices of small plots have not increased nearly as fast as larger ones.

Table 5

Plot Allotment by Size of Plot, 1979-1985

<u>Year</u>	<u>Size of Plot Allotted</u>					<u>Total Plots</u>
	<u>60 Sq.Yds.</u>	<u>80 Sq.Yds.</u>	<u>120 Sq.Yds.</u>	<u>240 Sq.Yds.</u>	<u>400 Sq.Yds.</u>	
1979	2,914	4,000	2,100	1,604	1,000	11,618
1980	211	658	542	655	414	2,480
1981	10,000	8,000	5,000	-	-	23,000
1982	-	-	-	-	-	-
1983	1,917	2,881	833	938	1,055	7,624
1984	-	-	3,300	-	-	3,300
1985	-	-	7,000	1,955	1,255	10,210
Total	15,042	15,539	18,775	5,152	3,724	58,232

SOURCE: Directorate of Land Management, KDA, Special Tabulations, 1988.

Table 6

Developed Plots by Size & Scheme, Township, and Colony, 1985

Scheme No.	Year	Name	Square Yards			Total
			Less than 120	121-400	Over 400	
1	52	Dilkusha	0	0	641	641
2	53	North Nazimabad	238	7,487	1,800	9,525
3&4	58	Landhi	1,835	0	0	1,835
5	64	Clifton	0	0	0	0
7	54	Jail Drigh Road	0	0	0	0
		Chandni Chowk	0	0	0	0
16	60	Federal B	15,014	3,238	1,525	19,777
24	64	Gulshan-e-Iqbal	1,012	5,667	1,136	7,815
25-A	80	Shah Latif Town	11	0	0	11
27	65	Qasba	6,068	444	0	6,512
28	69	Orangi Town	11,317	205	0	11,522
29	65	Baldia Town	311	0	0	311
50		Nazimabad	3,689	2,695	127	6,511
50		Aurangabad	3,000	0	0	3,000
50		Liaquatabad	11,745	0	0	11,745
53		Shah Faisal Colony	6,055	559	0	6,614
55		Malir Colony	6,296	116	0	6,412
57		Malir Extension	8,032	0	0	8,032
59		North Karachi	46,159	2,130	95	48,374
59		Karangi	44,634	149	155	44,938
33	67	Gulzar-e-Hijri	1	221	159	381
35	73	Jacob Lines	790	0	0	790
36	78	Gulistan-e-Jauhar	250	223	7	480
37	74	Metroville 1	814	65	0	879
	77	Metroville 2	0	0	0	0
	77	Metroville 3	0	0	0	0
	77	Metroville 4	0	0	0	0
41	83	Surjani Town	3,060	0	0	3,060
		Mehran Town	108	0	0	108
TOTAL			170,429	23,199	5,645	199,273

SOURCE:... "An Overview of KDA's Housing Schemes in Karachi," Urban Design Unit, Master Plan and Environmental Control Department, KDA, 1984.

LAND PRICING IN KARACHI

Since it controls nearly 70 percent of the prime developable land in Karachi, the KDA plays an extremely important role in shaping market price trends. However, once the plots are conveyed, they can be resold at prices depending on demand and supply conditions and the development of infrastructure.

Because of the very low initially KDA-set prices and the ability of owners to resell plots, there is a tremendous potential for land speculation. For example, if an allottee receives a plot from the KDA at Rs. 50 per square yard and is able to sell it in the open market for Rs. 200 per square yard, the KDA is essentially transferring development value of Rs. 150 per square yard to the initial allottee. While the rationale for transferring land at low cost to allottees is laudable, reflecting the goal of providing low- and middle-income Pakistanis with land, by allotting plots at between one-fifth and one-half their market value, the KDA is fostering speculation.

But another, more important effect of selling plots below market value is the financial shortfall in KDA revenue. Since the KDA's development schemes must be self-financing, the under-pricing of plots severely limits their ability to make timely infrastructure investments. Quite frequently, the development of schemes is delayed for several years due to the lack of funds. This delay in the production of serviced residential plots pushes up the prices of serviced plots, and fosters speculation. By altering its pricing structure, the KDA could dramatically increase its revenues, accelerate the deployment of infrastructure, and dampen speculative forces. The remainder of this paper describes the patterns of plot prices in Karachi and analyzes the financial ramifications of KDA's underpricing of plots.

Data on residential plots of various sizes have been estimated for 1980, 1985, 1987, and 1988, based on a survey of experienced real estate brokers across Karachi. Within each neighborhood included in the survey, three brokers, each with at least 10 years of experience, were approached to provide appraisal estimates of vacant plots. Each broker was asked to estimate the probable selling price of a standard west-facing plot, located on a residential collector street, for 1988. After establishing the current price, these same brokers were asked to estimate the price of the same plot in 1987, 1985, and 1980. The plot prices are tabulated for each neighborhood according to the level of infrastructure service provided at the various years. Within each area, the median value of the three brokers was selected for inclusion in the database. Approximately 300 observations have been included for each of the years surveyed--1980, 1985, 1987, and 1988.

KDA ALLOTMENT PRICES

By statute, plot prices are set to provide for the full cost recovery of each KDA self-financing scheme, and no more. The prices do not reflect market, locational, or affordability factors. The total revenues associated with the sales of all plots in a scheme should provide the KDA with revenues equal to the cost of site development and the nominal land acquisition cost from the Board of Revenue. However, because of the enormous time-lag between the estimate of development costs and the actual execution of the scheme, these cost estimates grossly underestimate actual development costs.

Over the years, allotment prices have been set for each scheme and have been periodically adjusted upward. Table 7 illustrates the most recent KDA-set plot prices by scheme and size of plot. As the table illustrates, most of the

Table 7

KDA-Set Prices for Plots Allotted by Balloting,
by Scheme and Size of Plot

<u>Scheme or Township*</u>	<u>Plot Size Sq. Yards</u>	<u>Price (Rs.) Sq. Yard</u>	<u>Price in Effect Since</u>
Shah Latif	60	75.00	1981
	80	75.00	1981
	120	100.00	1981
Gulshan-e-Iqbal	80	80.00	1976
	120	80.00	1976
	240	80.00	1976
	400	80.00	1976
Gulistan-e-Jauhar	60-80	100.00	1985
	240	125.00	1985
	400	200.00	1985
Metroville-I	80	27.50	1976
	120	30.00	1976
	240	32.00	1976
	400	35.00	1976
North Karachi	80	50.00	1976
	120	50.00	1976
	240	50.00	1976
Qasba, Korangi, Malir	80	35.00	1976
	120	35.00	1976
	240	50.00	1976
Surjani Town	60	100.00	1985
	120	150.00	1985
	240-400	200.00	1985
Clifton	80	100.00	1976
	200	100.00	1976
Federal "B" Area	60-80	80.00	1976
	120	80.00	1976
	200	80.00	1976
	400	80.00	1976
North Nazimabad	60-80	80.00	1976
	200	80.00	1976
	400	80.00	1976

* For the location of these schemes, see Map 1.

SOURCE: Economics Unit, Master Plan and Environmental Control Dept., KDA, 1988

plot prices, with the exception of Gulistan-e-Jauhar, Surjani, and Shah Latif, are the same per square yard, regardless of plot size.

These prices do not reflect the actual supply conditions in Karachi, since many of the plots in the schemes listed have already been allocated. To gauge the actual supply, according to price and size, recent balloting activity is crosstabulated with the plot prices presented in Table 7. Table 8 presents the supply of KDA plots from 1979 to 1985 according to plot size. Prices, in constant 1988 Rs. per square yard, reveal a clear pattern between the size of the plot and price--smaller plots below 120 square yards are allotted at lower prices than larger plots.

Overall plot prices were relatively flat between 1979 and 1983, then fell in 1984 when 3300 plots in Korangi were allotted at a very low Rs. 43.6 per square yard. In 1985, prices increased substantially, rising to Rs. 187 per square meter.

Part of the price increase is because more expensive larger plots are now being developed and allotted. For example, between 1979 and 1985, the average size of allotted plots increased from 132 to 177 square yards. Based on the prices used by the KDA in 1985, if the KDA allotted plots with exactly the same size distribution as occurred in 1979, the average price of all plots would have been Rs. 102.2 per square yard, a decrease (in real terms) over the 1979 level. Thus, by allotting larger plots, the KDA has essentially pushed up the price-per-square-yard of plots.

ESTIMATING WHAT THE KDA IS GIVING AWAY

By pricing its plots at the cost of land development (most likely below the actual cost), and by not charging market prices which reflect accessibility

Table 8

Price* and Supply of KDA-Allotted Plots
by Size, 1979-1985, Constant 1988 Rs.

Plot Size, Sq. Yards	1979		1980		1981		1983		1984		1985	
	#	Price	#	Price	#	Price	#	Price	#	Price	#	Price
60	2,914	105.3	211	94.4	10,000	116.5	1,917	101.6	0	0.0	0	0.0
80	4,000	111.1	658	100.0	8,000	116.5	2,881	101.3	0	0.0	0	0.0
120	2,100	99.3	542	89.7	5,000	155.3	833	135.1	3,300	43.6	7,000	169.9
240	1,604	230.6	652	210.3	0	0.0	938	168.9	0	0.0	1,955	220.7
400	1,000	241.4	414	218.1	0	0.0	1,055	236.4	0	0.0	1,255	232.1
TOTAL	11,618	135.2	2,477	146.0	23,000	124.9	7,624	132.1	3,300	43.6	10,210	187.3
Average plot size	131.8		182.6		80.0		143.3		120.0		177.4	

*Rs. per square yard.

SOURCE: Master Plan and Environmental Control Department, KDA, 1988.

and the added value of infrastructure, the KDA is giving the "development gain" away to allottees.

To estimate the potential land value gain that the KDA is creating but transferring to allottees, projections of KDA allotment revenues and the potential revenues it could have earned if it allotted plots at their development value are made for 1980 and 1985 (the two years for which there is an overlap between the broker survey and KDA allotment data). These two years provide a sample of the range of revenues that have been created by the KDA and what could have been generated through a system of marketbased pricing.

Using the data on land prices tabulated from the broker survey, a regression model was developed for 1980 and 1985 to estimate plot prices. The model reflects the plot's size, its distance from the city center, and whether it is fully served with infrastructure. The equation takes the following form:

$$\ln V_x = c + a_1d_1 + a_2d_2 - hx$$

where V_x is the estimated plot price in 1988 rupees per square yard; c is the constant; d_1 is the dummy variable for plots larger than 120 square yards; d_2 is a dummy variable for full infrastructure provision; a_1 and a_2 are parameters reflecting the proportionate effect of large plots and infrastructure provision respectively; h is the distance gradient coefficient; and x is distance in kilometers. The results of the fitted model is presented in Table 9.

The equation is used to estimate the potential revenues associated with allotting fully serviced plots, based on their size and location, in 1980 and 1985. The estimates are based on actual characteristics of plots allotted during these years, and therefore, provide a reasonable estimate of the potential market value of the allotted plots.

Table 9

Regression Model of Plot Prices by Size of Plot,
Distance, and Infrastructure Development, 1980 and 1985

<u>Year</u>	<u>c</u> <u>Constant</u>	<u>d1</u> <u>Large Plot</u> ⁺	<u>d2</u> <u>Developed</u> ⁺	<u>h</u> <u>Gradient</u>	<u>R</u> ²	<u>F</u>
1980	546.1 (39.36)	1.314 (3.17)	2.244 (8.04)	-.04175 (-5.03) [*]	.372	.0000
1985	692.5 (44.69)	1.636 (6.29)	1.958 (7.43)	-.05767 (-7.1)	.494	.0000

* T-statistics in parenthesis; all coefficients are significant at the 0.05 percent level.

+ The constant has been converted from log basis to rupees per square yard. Developed dummy has been converted to a multiple of the constant value.

SOURCE: Dowall, 1989a.

The estimated coefficients all have the correct sign and are all significant at the 0.05 confidence level. Large plots are valued at between 31 and 64 percent more than comparable small plots. Those with full infrastructure are valued at 96 to 124 percent more than comparable unserviced plots. The gradient values for both years are consistent with findings in other third-world cities (Ingram, 1982). While the overall predictive power of the model is limited, it is sufficient for assessing the KDA revenue shortfall.

Table 10 compares the actual allotment revenues with estimated developed market values of plots allotted in 1980 and 1985. In 1980, the KDA allotted 2,477 plots by computer ballot. Based on the 1980 allotment price schedules for the schemes in which these 2,477 plots were located, the KDA received a total of Rs. 81,334,729. Of this amount, Rs. 12,298,080 was from the allotment of "small plots" below 120 square yards; the remainder was from larger plots. Based on the regression model developed and presented in Table 9, the total value of these plots when fully developed would be Rs. 339,743,280.

According to the land disposal regulations, the allotment prices are to be set to fully recover the cost of land development. Thus, in theory at least, the Rs. 81,334,729 figure represents the KDA's cost of developing these 2,477 plots, an average of Rs. 32,835 each. By developing these plots and providing them with infrastructure, the developed value of these plots in 1980 is Rs. 339,743,280, for an average of Rs. 137,159 per plot--over four times the allotment price. (This estimate does not consider the fact that it might take several years to actually develop these plots. However, it is not unreasonable to assume that, in an inflationary environment, people would pay the full current development value of a plot that will not be provided with infrastructure for two to three years.) Thus, the difference between the Rs. 81,334,729 and Rs. 339,743,280 represents the development gain created by the KDA.

Table 10

Comparison of KDA Allotment Revenues and Developed Value
of Plots Allotted by KDA in 1980 and 1985.
in 1988 Rs.

	<u>1980</u>	<u>1985</u>
1. KDA Plot Allotment Revenue		
Small Plots	12,298,080	142,691,415
Large Plots	69,036,649	220,011,600
Total KDA Allotment Revenue	81,334,729	362,703,016
2. Developed Market Value of Plots:		
Small Plots	58,406,780	171,295,716
Large Plots	281,336,500	380,970,092
Total Developed Plot Value	339,743,280	552,265,809
3. Potential Additional Revenues (2-1)		
Small Plots	46,108,700	28,604,301
Large Plots	212,299,851	160,958,492
Total Potential Revenues	258,408,551	189,562,793

SOURCE: Karachi Land and Housing Market Study, 1989.

By pricing its allotment prices at cost recovery, the KDA is transferring a development gain of Rs. 258,408,551 to the allottees. Since there is no guarantee that the allottees are of low or moderate income, the transfer of this gain serves little social purpose. The KDA would have been better off to charge market prices for the allotments and use the additional revenues to build low-cost housing or cross-subsidize the purchase of plots by accurately targeted low-income households.

The situation for 1985 is much the same, in terms of the relationship between allotment revenues and actual developed market value. A total of 10,210 plots were allotted in 1985. They generated total revenues of Rs. 362,703,016, an average of Rs. 35,524 per plot. Using the regression equation estimated for 1985, the projected total development value of these plots based on their size and location is Rs. 552,265,809, or Rs. 54,091 per plot. The difference between development gain and allotment price is Rs. 189,562,793, or Rs. 18,566 per plot. In this case, plots are being sold at a 34 percent discount off their market value. This higher allotment price for 1985 is apparently quite effective in closing the gap between market and allotted prices. Another factor explaining the small gap between allotment and market prices is the fact that most of the plots allocated in 1985 were located at considerable distances from the city center, where market land values are closer to allotment prices.

Conclusion

The results presented in Tables 9 and 10 illustrate the impacts associated with the public sector producing and allocating land to citizens at below-market prices. The price difference creates an enormous incentive for speculation, merely transfers the benefits of development gain from the public sector to private individuals, and financially constrains the KDA, limiting its ability to build much-needed infrastructure.

As a matter of public policy, the KDA should consider shifting the disposal of plots from allotment by balloting to auction for all but the smallest plots. These small plots should be carefully targeted for delivery to low-income households. By shifting most of the plot disposal to auctions, the administrative burden would be reduced, allowing the KDA to concentrate on conveying plots to low- and moderate-income groups.

By using auctions to dispose of most of its plots, the financial condition of the KDA would be vastly improved; production of schemes and serviced plots would accelerate. At the same time, a portion of the additional resources could be used to subsidize the production of low-income housing.

The findings here, generally apply to other public land development agencies which underprice plots. They would be wise to take note of the KDA experience.

REFERENCES

- Baker, Lee E., and Tanan Kampholpan [1987]. NHA Land Acquisition and Site Selection Practices, Bangkok: Bangkok Land Management Study, Technical Report 7.
- Cohen, M.A. [1983]. "The Challenge of Replicability: Towards a New Paradigm for Urban Shelter in Developing Countries," Regional Development Dialogue, Vol. 4, No. 1, pp. 90-99.
- Dowall, David E. [1989a]. Karachi Land and Housing Market, Washington, D.C.: PADCO.

Dowall, David E. [1989b]. "Making Land Development Work: The Process and Critical Elements for Success," Real Estate Finance, Vol. 6, No. 3, pp. 15-26.

Ingram, G.K. [1982]. "Land in Perspective: Its Role in the Structure of Cities," in M. Cullen and A. Woolery, eds., World Congress on Land Policy, Lexington, Mass.: Lexington Books, pp. 103-118.

Van Meurs, Arianna [1986]. "Public Land Development Agencies in Developing Countries: Elements of Financial and Managerial Appraisal," Discussion Paper for the Water Supply and Urban Development Department, Operations Policy Staff, World Bank.

