

Urban growth management-the Saudi experience

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Abstract

Saudi Arabia experienced a high rate of urbanization during the period 1970–1986 resulting in accelerated annual growth rates for Saudi cities averaging more than 6.4%. Higher than usual growth rates created demand for the opening up of huge areas to meet housing, commercial, industrial and other land uses. Government's land grant policy and liberal interest free loans resulted in massive expansion of cities and towns all over the country with major cities of Riyadh, Jeddah, and Dammam having the biggest share. Lack of planning frameworks and weak city institutions could not direct the growth properly leading to sprawl and lop-sided development. This meant rapid extension of road network and utilities with high financial outlays. The slow-down in the economy and ever-increasing demand for infrastructure provision forced the government to initiate growth boundaries to tackle these problems in 1986. The paper discusses the methodology adopted and the process of devising urban limits and evaluates their impact on urban structures of Saudi cities. The paper draws some conclusions in the realization of objectives of the exercise with respect to, (a) control urban sprawl by encouraging infill development where utilities were generally available; (b) reduce cost of provision of infrastructure through better coordination tied to commonly agreed phasing; (c) maintain natural environment around the cities.

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1. Introduction: establishing the national context

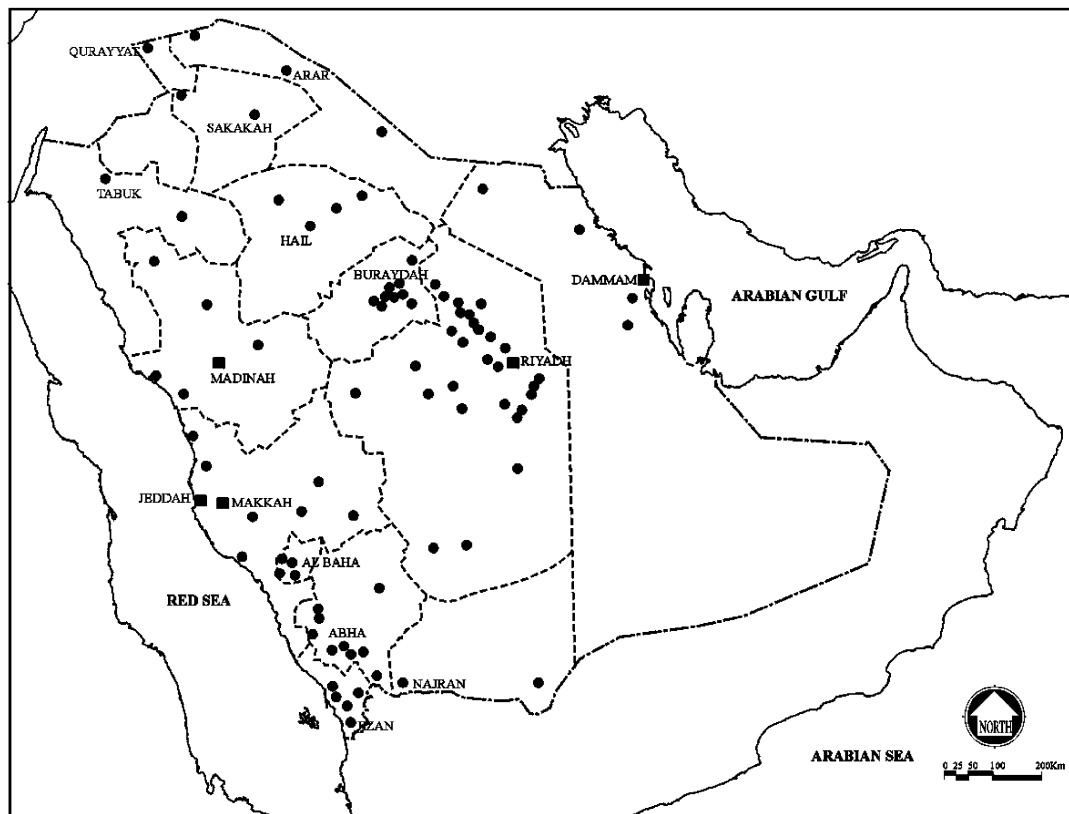
Saudi Arabia has a population of 16.9 millions living in settlements ranging from metropolitan areas of over 2 millions to villages consisting of few houses (Ministry of Finance, 1992). Except for the Nafud desert in the north and big Empty Quarter of Rub-al-Khali in the southeast, the rest of

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the national space has fairly scattered settlement pattern with highest village density in the southwest (Fig. 1). Gross density for the whole country is 8 persons/km² indicating a thinly populated pattern. In 1983, there were 10,365 rural settlements in the country. Out of a total of 343 urban settlements only two; Riyadh and Jeddah, have populations of more than 2 millions, while 294 have populations of less than 25,000 and the population of remaining 47 ranges between 25,000 and 1.5 millions (Ministry of Finance, 1992). The growth rates of some selected cities are given below that indicate the resulting pressure for housing and other services (Table 1).

Gross density of Saudi cities is, generally, low. It ranges between 12 persons/ha in the small town of Al Khabra to 29 persons/ha in Riyadh (MOMRA, Deputy Ministry for Town Planning, 2001). This, in physical configuration, means spread-out settlements with leapfrog developments thereby making the provision and maintenance of utilities and services quite expensive. The urban percentage of national population increased from 48.7 in 1970 to 77.3 in 1990 (Al-Hathloul & Abdel Rahman, 2003a). The urban sprawl is the direct result of massive urbanization creating demand for housing and commercial facilities. Hundreds of thousands of residential plots were distributed free of cost to the general public through land grant policy of the government. The



LEGEND :

MAJOR CENTRES ■ MEDIUM & SMALL CENTRES ● EMIRATE BOUNDARY - - - - -

Fig. 1. Spatial distribution of urban centers.

Table 1
Growth rates of selected Saudi Arabian cities

City	Population			% Annual growth rate	
	1940	1974	1986	1940–1974	1974–1986
Riyadh	30,000	672,382	1,310,624	9.57	5.75
Jeddah	30,000	568,046	1,032,855	9.03	5.11
Dammam	—	127,844	260,048		6.1
Makkah	80,000	366,801	666,940	4.58	5.1
Buraidah	20,000	76,442	208,152	9.02	8.70
Abha	—	31,359	160,290		14.60

Source: Population Censuses, Ministry of Finance, Kingdom of Saudi Arabia, 1992.

construction component of housing was largely funded through the advance of interest free loans by the government and a total of 550,532 were financed under the programme up to December, 1996 (*Real Estate Development Fund, 1998*). The issues of lop-sided urban growth have been addressed through the preparation of the National Spatial Strategy. The overall objective of this Strategy is to achieve, over the long run, a balanced development between regions on one hand, and within regions on the other (*Al-Hathloul & Abdel Rahman, 2003b; Al-Hathloul, 1996*).

Saudi Arabia is one of the few countries in the world that has no housing shortage. Large tracts of land, both developed and undeveloped, are a common scene in major urban centers. This indicates the realization of an important national objective: housing the rapidly growing urban population in a short span of time. However, the rapid urban growth could have been guided more rationally by employing effective planning and management tools. The pace of development was so rapid that the limited planning efforts were rendered ineffective. These included the master plans prepared for a number of rapidly growing cities that became outdated in a short period of time. The problem was further compounded by the lack of institutional support in the country, particularly at the local level, to manage urban growth. This was also an important factor in the non-implementation of master plans of some cities (*Al-Hathloul, 2003*).

Saudi Arabia has a strong centralized system of government whereby federal ministries/agencies directly provide services through their field offices. These include arterial roads, water, electricity, sewerage, drainage, telecommunication, schools, health facilities, and other services. Municipalities are responsible for providing municipal services and appointed mayors head these. The municipalities are under the administrative control of Ministry of Municipal and Rural Affairs (MOMRA). There are 13 regions in the country that have appointed governors who are basically responsible for law and order, and coordination of development activities. The municipalities have no authority to levy direct taxes, such as a property tax. Even the provision and maintenance of services and utilities is heavily subsidized by the federal government. The municipalities get their budgets from the federal government on the basis of population and specific projects. Unlike the case in many other countries, this gives the government a strong tool to intervene in the planning and development of all settlements (*Al-Khedheiri, 2002*).

It was with this background that the MOMRA felt the need to initiate delineation of urban growth boundaries in 1984. After a thorough review of the situation in consultation with the mayors of five major cities, the Ministry made a recommendation to the Council of Ministers

regarding the urgency of the matter and requested approval to undertake an urban growth boundaries study. The issuance of a royal decree set the stage to initiate the study in a comprehensive manner. The delineation of urban boundaries was intended to: (a) control urban sprawl by encouraging infill development; (b) reduce cost of provision of infrastructure for new development through better coordination between its provision and economic development plans; and (c) ensure the maintenance of natural environment particularly around the cities through preservation measures (Al-Hathloul & Abdel Rahman, 1989).

2. Delineation of urban growth boundaries

2.1. Concept and scope

The 1984 decree issued by the Council of Ministers encompassed the delineation of zones of Saudi towns and cities for the next 20 years until 2005 (Zahid, 1995). It was in response to (a) ever increasing demand for the extension of services and public utilities beyond the periphery of existing blocks of settlements, which led to the exhaustion of budgets; (b) the non-adherence, by the citizens, to the limited stages of urban growth in certain planned urban centers; and (c) the urgent need to support the infrastructure and make the best possible exploitation of utilities and services. Various urban growth management approaches were studied to determine their suitability to the Saudi situation and a careful consideration of all factors led to the adoption of the growth boundary approach. It aimed at regulating the supply of land for development. Local growth management programs often determine how, when and for what purpose developed-land should be used (Chinitz, 1990). The selected approaches consisted of a combination of urban boundaries and some elements of public improvement techniques which made it more suitable for the local situation. It was also decided to extend the scope of the study to the 100 largest municipalities. As the municipalities had institutional deficiencies it was considered imperative that the central government, as represented through the Deputy Ministry for Town Planning (DMTP), MOMRA, played an important role in initiating, organizing, undertaking, approving and implementing urban growth boundaries. Hence, a central pool of experts in the DMTP was established to initiate the massive exercise in the light of the direction given by the Council of Ministers.

2.2. Methodology

Most of the municipalities did not have even single planner or architect and the reliance was to be on surveyors and draftsmen. The problem was further compounded as there was severe lack, and in certain cases complete absence, of data, particularly base maps. In light of this situation, a number of options were considered and the following three were identified for detailed scrutiny: (1) a number of consultants could be hired and assigned on regional basis to cover a group of settlements; (2) a huge central pool of experts could be created in the DMPT and charged with the responsibility of actually undertaking the exercise; and (3) a limited technical staff could be made available to assist the municipalities in carrying out studies under the direction and supervision of the DMPT experts.

The first option, the engagement of consultants would have taken a long time due to procedural problems and non-availability of sufficient number of qualified firms in the country. Engagement of foreign firms usually requires a much longer time period. In addition, it would have required a huge financial outlay for which allocation in the national budget would have been difficult to obtain. In the second option, it would have been necessary to expand the small pool of experts available in the DMTP considerably through fresh recruitment, which would have been time consuming, particularly when experts were not available locally. Also, dealing with a large number of settlements spread all over the vast country from the center would have been logistically difficult. This would have required a much longer time span than that fixed by the Council of Ministers and a substantial financial allocation. In the third option, the work was to be carried out by the limited municipal staff located in each municipality with strong support from the DMTP at every stage of the work. This option allowed for the simultaneous start of work in all the selected settlements; hence, taking less time and costing less in required financial resources. It also meant active local participation for injecting pragmatism in the study outputs and greater acceptability by all concerned authorities facilitating implementation at a later stage. However, in this option, some compromise on quality was inevitable, as the reliance was to be on the municipalities' staff, which were mostly unqualified and inexperienced.

The pros and cons of the three options were debated and finally the third option was selected in view of the technical know-how, on-the-ground realities, financial aspects and the emphasis on the active involvement of the local staff. Once this approach was chosen, the central group in the DMPT undertook the preparation of a detailed and comprehensive manual laying down the objectives, scope, methodology, and outputs of the study. As the manual was intended for the unqualified and inexperienced staff of the municipalities, it was made very simple using examples wherever possible. The central group of professionals was divided into two-man teams consisting of one expert and one DMTP counterpart and assigned on a regional basis to work with the staff of the municipalities. These teams continued to work closely with the municipal staff and provided step-by-step guidance throughout the study period. This arrangement also provided an opportunity to the DMTP teams to get first hand knowledge of the prevailing conditions in the settlements, which proved extremely useful at various stages of the study particularly at the time of defining the urban growth boundaries. In terms of outputs each town was to produce a report and an atlas presenting the basic data, projections, analysis and recommendations. This was considered necessary so that each municipality would have all the information available to them to implement the urban growth boundaries.

2.3. Data collection and analysis

The most urgent problem to overcome was the non-availability of updated maps. The available maps were 10–20 years old and had been prepared at varying scales. A proper updating of the maps for the 100 towns through aerial photography, spread as they were around the country, would have taken years and considerable financial expenditure. In view of the urgency of completing the work, all available maps and aerial photographs of the towns were collected from different sources and the municipal surveyors were guided to record additions and major changes on the old maps. In addition, the approved subdivisions not covered by the available maps were also located on those maps. The end result was updated maps, which, although sometimes of

questionable accuracy, were considered good enough to carry out various surveys and indicate the urban growth boundaries. As the focus was on the delineation of big zones, the level of accuracy of the resulting maps was thought to be acceptable.

A detailed land use survey was carried out to obtain a reasonably accurate picture of the situation on the ground. The rest of the data, collected from concerned ministries and organizations, included health and education facilities, water supply, sewerage, drainage, electricity, telephones, recreational and cultural facilities, mosques, transportation network and other features special to a particular town. A considerable effort was spent on cleaning the data and filling in the essential gaps. All these data were presented in the form of tables and maps which constituted the base-line information to precede the next stage of analysis.

Estimation of the current populations (as of 1987), in the absence of any recent data, was a big challenge as the last population census had been undertaken in 1974. Hence, a number of sources were used for estimating current populations, including 1974 national census, primary school enrollments, land use survey data and the number of domestic electric connections. Population estimates were derived from the last three sources and 1974 census figure was projected to the base year. The four figures obtained by various methods were then compared and analyzed to estimate a 1987 base population figure for each town.

The next stage was to project the current population to the end of the study period, i.e. 2005, with an estimate for the year 1995 which was the date selected to mark the first phase of the study, assuming growth rates based on the previous trends and agreed through extensive discussions among the experts and city officials. However no functional analysis of the economic potential of the towns was carried out in view of the paucity of resources. Sectoral information from various government institutions, research investigations and some local knowledge and information provided the general bases for the determination of the functional role of various urban centers on the regional, sub-regional and national levels (Zahid, 1995).

The amount of land required for the planning period up to 2005 (1425 AH) and for Phase 1 (1995) was calculated on the basis of the projected population for target years and the gross density derived from the existing pattern of settlements. To this was added the land required for public services, public utilities, major roads and other infrastructure by using the planning standards. Land needed for the study period constituted the main basis for growth boundaries, hence these calculations received special attention. There were some other considerations also in defining the growth boundaries, which will be discussed in the following sections.

Data on existing and proposed public utilities was collected from the concerned agencies by providing them the copies of base maps and requesting them to indicate the networks on them, in addition to providing data in the form of tables and charts. Analysis of each utility was carried out with respect to their existing networks; future plans of the administering agencies and the possibility of extensions to cater to the future requirements. The analysis indicated the logical sites for future growth, indicating some clues about the directions of settlement growth from the point of view of the utilities.

Data on the existing and proposed road network was plotted on the base maps and the analysis was carried out at three levels, i.e. inter city movements, connections to serve the surrounding villages and the intra-city movements. All these were seen as important in determining the degree of accessibility, thereby indicating the need for up-grading or the provision of new linkages. The

intra-city analysis had to be carried out along with the existing and proposed land uses. Also, all the three levels play a significant role in determining the future directions and patterns of growth.

Assessment of the existing public facilities was undertaken to determine deficiencies in the systems with particular reference to space requirements. The future requirements were calculated by using planning standards to cater to the population increase. A special importance of this analysis was to assess the land requirement so that it could be provided while delineating the urban growth boundaries. The public facilities included education, health, religious, cultural, recreational, governmental and others.

Growth trends of the towns for possible future growth scenarios were studied taking into consideration the topography, existing built-up area, approved subdivisions, infrastructure networks, committed projects/sites and future land requirements. This analysis consisted essentially of combining the analytical maps of various utilities, public services, road networks and topographical features to obtain a composite picture of the projection of growth trends at the settlement level. Potentials and constraints were built into the scenario through discussions among the experts and the local officials. The availability of government lands in the vicinity of the builtup areas was an important factor in visualizing the future growth trends of the settlements under study. All of this was fine-tuned to provide a basis for the next important stage of the study.

2.4. Devising urban growth boundaries

All these analyses led to the delineation of the urban growth boundaries for the year 2005 (1425 AH) with the first phase covering the period to the year 1995 (1415 AH). The underlying factor was to provide enough land to cater to the needs of the present and projected populations for the two phases. Then the designated lands were to be earmarked with the provision of utilities and services to promote compact and contiguous development. However, local realities had to be taken into consideration, as there existed plenty of subdivided land in almost all the towns, particularly the big ones. Hence, the boundary delineation was not based on future requirement of land alone but the judicious use of subdivided land became a crucial factor. The end result was a liberal delineation of the boundaries, particularly in the big cities. However, in smaller towns due to the non-existence or limited number of subdivisions the boundaries established were much tighter.

A number of alternatives were prepared to arrive at the best possible one. Evaluation criteria were developed for the selection of the most suitable alternative. The main elements of the criteria, among others, included (a) spatial integration of built up areas; (b) economical provision and maintenance of infrastructure and services; (c) development and utilization of approved subdivisions, and (d) efficient utilization of the idle capacity of the existing infrastructure. The basic determinants of development phases for the optimum alternative have been defined by availability of infrastructure in areas designated for urban expansion, integration of the existing builtup areas, growth and development of builtup areas along existing axes and arterial roads, and approved land subdivisions in which roads were paved and asphalted (Zahid, 1995). The alternatives with the application of the criteria were subjected to detailed discussions at the local level and the municipalities closely collaborated with the representatives of all sectoral ministers and agencies responsible for the provision of infrastructure and services in the urban areas. At the regional level, governors were involved in the final stages of the study. It was, however, the central

level represented by the DMTP, which was intensively involved in technical discussions, and a series of meetings were held for each town attended by the Deputy Minister, DMTP officials and experts, mayors and their staff. The extensive discussions proved extremely useful in selecting the best alternative and in fine-tuning the details.

An effort was made to devise boundaries along the identifiable natural or man-made landmarks but it was not possible everywhere. Within the urban growth boundaries established, Phase-I was delineated pertaining to the year 1995, which included the existing builtup and partially builtup areas to meet the requirements of population growth and the capacities of the government departments/agencies to service these areas with utilities and public facilities. The emphasis was on the intensive utilization of the serviced vacant areas and the vacant areas contiguous to the existing built up areas. Phase-II relates to the areas lying between boundaries pertaining to the year 1995 and 2005. The area included in the second phase was based essentially on the area calculations done earlier but with adjustments to include approved land subdivisions. Outside the urban boundary (Phase II) “urban protection zones” have been designated to serve as reserve land for future extension beyond the year 2005, which can be termed as Phase III. Thus in fact there are three boundaries, pertaining to the years 1995, 2005 and beyond 2005. Intensive discussions were held and written agreements reached with the representatives of departments/organizations responsible for provision of services and utilities with respect to the areas included within the two boundaries, i.e. 1995 and 2005 (see Fig. 2).

2.5. Review and approval procedure

As the municipalities did the basic analysis, their technical staff were fully involved in all the stages and the mayors were partners with DMTP officials in directing and supervising the work. An extensive review process was followed in the DMTP whereby each town’s proposal was discussed, on average, three times. The Deputy Minister, DMTP officials, mayors, experts and the municipal staff attended these discussions. At least 300 such meetings were held in a short period of 20–24 months. The local and regional emirates were also actively involved in the process leading to the approval of boundaries. These were then presented to the High Planning Committees of each region, which are headed by Governors with the Deputy Minister for Town Planning and Regional Mayors or Director Generals of MOMRA as members. On the recommendation of these committees, the Ministry of Municipal and Rural Affairs submitted them to the Council of Ministers and these were approved in 1989 (Ministry of Municipal and Rural Affairs, 1989).

As per the approval order, all government authorities and public institutions as well as other sectors were directed to coordinate with MOMRA in the setting up of execution programs necessary for development within the phasing of urban growth boundaries in accordance with the actual needs of the towns. A set of general regulations, which lays down the procedure for implementation of the boundaries, is an integral part of the approval of urban boundaries. According to these regulations, white lands (large tracts of vacant lands) within Phase I can be planned by the municipalities without waiting for landowners to apply for their subdivision approval. This was considered necessary to ensure rights-of-way of primary roads and land for public utilities projects to encourage infill development. To discourage growth in Phase II, the regulations lay the onus of providing roads and utilities on the landowners if they are interested in

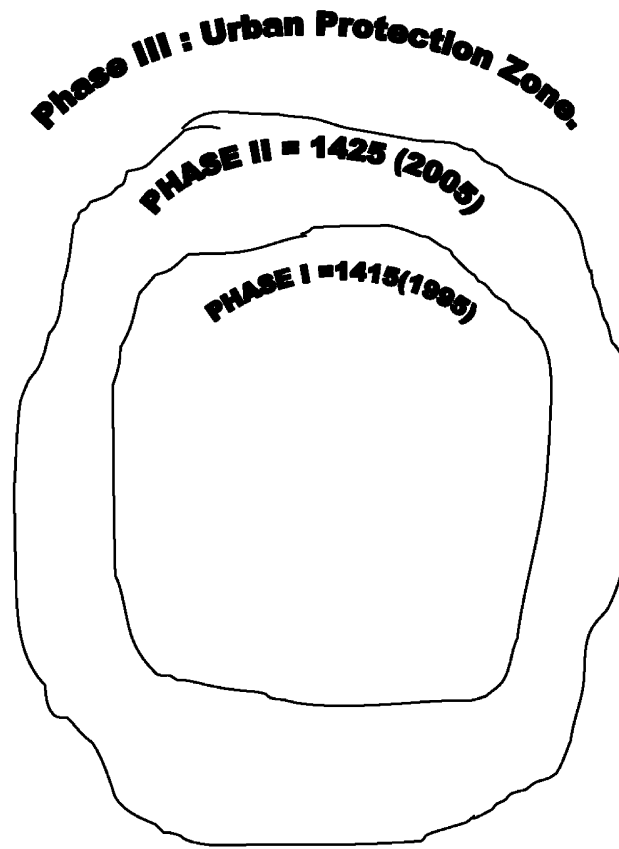


Fig. 2. Urban growth boundaries phasing.

obtaining approval of land subdivisions before the start of Phase II. The Minister of MOMRA has been authorized to issue directives and ordinances for the operationalization of these regulations. MOMRA has been directed to study areas in the urban protection zone and propose control measures for these areas.

A system for revisions/modifications of urban growth boundaries was also specified by the Council of Ministers. MOMRA was directed to undertake a full study of such a town and present its findings to a committee formed by representatives of MOMRA and the Ministries of Interior, Finance and National Economy, PTT, Industry and Electricity and Communication. Recommendations of this committee were to be forwarded to the Council of Ministers for final decision, thus making the procedure for changing the urban boundaries quite difficult ([The Council of Ministers, 1989](#)).

3. Implementation issues

The implementation of urban growth boundaries started immediately after their approval by the Council of Ministers as the developers and the municipalities had been facing a freeze on new

land subdivisions for more than 2 years. As the highest legislative body of the country approved the boundaries, all municipalities and the concerned agencies were obliged for their strict adherence. Thus, the first requirement to ensure implementation was fully met through legal approval by the competent authority. As the authority for any subsequent modifications was also retained by the Council of Ministers, it became very difficult for the interested parties to exert pressure on the municipalities for any exemption. The result has been the obligatory acceptance of the boundaries with focus of disputes being on their interpretation and application on the ground.

The municipalities are the main local authorities responsible for the implementation of the urban growth boundaries as they undertake the initial scrutiny of the land subdivisions both in public and private sectors before forwarding them to the DMTP for final approval. The municipalities, with the approved urban growth boundaries and regulations, became equipped with the necessary framework to process land subdivision applications. As the municipalities are not well staffed, the problems relating to specific issues are referred to MOMRA, where DMTP examines them from the technical, legal and administrative points-of-view and takes appropriate action.

Since the approval of urban growth boundaries, almost all-new land subdivisions in cities other than the three metropolitan areas of Riyadh, Jeddah and Makkah, have been located within Phase I of the boundaries. In case of the three metropolitan areas, the adherence to Phase I has not been very strict, for which there are many reasons. In Unaziah, a major urban center of Al-Qassim region, a subdivision was approved in Phase II but the developer provided the entire infrastructure as required by the regulations. As far as building plans are concerned, the major activity has been concentrated in Phase I of all cities, which can be attributed to the priority of servicing the areas in Phase I. This is true even in case of the three metropolitan areas, as is clear from the case of Riyadh. According to a study carried out by Arriyadh Development Authority it was concluded that a major portion of development has taken place on serviced vacant lots in Phase I of urban growth boundaries of Riyadh city. Between 1986 and 1993, the rate at which serviced vacant land has been brought to use has been very encouraging. An average of 11.5 km² of vacant serviced land was brought to full use annually and vacant land serviced with infrastructure has declined from 329 to 248 km² (Arriyadh Development Authority, 1993). Probably some percentage of this land might have been used anyway but the process was accelerated with the approval of urban growth boundaries.

The concerned sectoral ministries and agencies have focused on providing public utilities and services within Phase I of urban growth boundaries as directed by the Council of Ministers. As these are generally high-density residential and commercial areas, there is much more efficient utilization of the utilities and infrastructure. This has meant higher investment-service/return ratios, hence larger numbers of households are being served. Thus, the strong role of the government in the provision of free infrastructure is being used as an effective tool in shaping the growth patterns. However the coordination of the agencies/ministries providing utilities and services, on an area basis, still remains to be made more effective for which the municipalities have to play an active role. The private developers in Phase II have to provide infrastructure on their own, which has become a strong discouraging factor outside Phase I.

The maintenance of natural environment has been ensured through the designation of urban protection zones beyond Phase II where no development is allowed until the preparation of detailed plans are made by MOMRA, as directed by the Council of Ministers. However there

have been some jurisdictional problems whereby the Ministry of Agriculture and Water started granting approval for agricultural subdivisions in urban protection zones without going into the present and future implications for the environment as well as the cities. These subdivisions, located on the fringes of the cities, are primarily for building rest houses, which are used to spend evenings or weekends. Normally these homes have agricultural lots attached to them. If the lot size is big and agricultural character is maintained then there is no problem but if the lot size is small and there is no proper infrastructure it can create serious problems for the municipal authorities. The problem of rest houses is limited to some selected areas in the country but it has to be addressed in view of future implications when these areas will integrate with urban structures necessitating provision of higher level of services and utilities.

Growth controls tend to raise the value of existing housing and sites on which development is still allowed and lower the value of undeveloped land and properties that might be profitably redeveloped (Fischel, 1990). This has been a major concern in respect of growth management systems. Restricting water extensions and setting urban limit lines may affect land values (Gleason et al., 1990). To date there has been no proper study in Saudi Arabia to measure the impact of urban growth boundaries on land prices and property rentals. The indications are that there has been no impact during the period 1990–1995. However, after 1995, when speculators came to know that lands in Phase II would not automatically become eligible for servicing, the prices of land in the second phase came down. The reason for this was that, at the time of devising urban growth boundaries, there was surplus housing in major cities and abundant subdivided land, both developed and undeveloped, in almost all the cities, but particularly in the five metropolitan areas. In view of surplus housing and subdivided lands it can be said that the Kingdom was in a unique situation to undertake the study and implement it without fear of price escalation. As 100 settlements were covered simultaneously there was also no danger of spill over effect.

There have been some questions regarding the arbitrariness of the boundaries particularly from those landowners whose lands were either fully or partially excluded by being on the boundary. This problem is related to the adjustment of boundary alignment with respect to land ownership. As the land ownership information was not available at the time of delineation of the boundaries this problem had to arise. On the other hand, the absence of land ownership information probably eliminated potential biases and pressures for the inclusion or exclusion of certain areas. These problems are now being resolved on a case-to-case basis by the municipalities in consultation with the DMTP.

In some small towns, it is already being realized that the boundaries are too tight, resulting in limited space for growth. This can be attributed to the absence of functional and economic base analysis, which was not undertaken due to time limitations and a lack of resources. This problem can be resolved through the revision of boundaries for which a procedure has been laid down. According to this, a technical committee located in MOMRA with representatives from various ministers may study the problems and make recommendations to the Council of Ministers through the Minister of MOMRA. The responsibility of technical solutions in the form of structure plans for much larger areas than that covered by the urban growth boundaries was also given to the MOMRA and these plans have since been prepared.

The technical and institutional capability of the majority of the municipalities is very weak, thereby creating difficulties with respect to the interpretation and implementation of the urban boundaries. The active involvement of the staff of the municipalities has been very useful for the

implementation stage but it is not a substitute for adequate and qualified professionals. The result has been a much greater reliance on DMTP, thereby causing delays in the resolution of disputes between the municipalities and the developers.

An important by-product of the study has been the collection of a very large amount of data. With this in mind, DMTP has developed a format for a PC-based storage and retrieval system titled “Land Information System” (LIS), to be located in each municipality. Training of municipal staff was carried out to handle the system at the local level and it has been installed in a large number of municipalities while others are in the process of achieving it. An integral component of the system is updating procedure of the data on a regular basis. LIS has also been converted into GIS for selected settlements for the purposes of testing as well as demonstration. It is anticipated that the bulk of future growth will be directed within the two phases of the boundaries, therefore, the cities have to prepare themselves with respect to vacant areas within the boundaries to cope in a better manner with the pressure of development. Preparation of structure plans for all these settlements has been initiated and the program is nearing completion. Structure plans are essentially based on urban growth boundaries but covering much larger areas, thereby resolving the problems being faced in the implementation of boundaries. These plans are to be followed by local plans focusing on the resolution of specific issues of zoning, land use, urban design, traffic and others so a comprehensive planning system will be in place.

4. Evaluating the urban boundary project

The delineation of urban growth boundaries of 100 cities simultaneously is a major comprehensive attempt at the national level to control urban sprawl and promote efficiency in the urban system. This gigantic task was undertaken in a very short period of time with reliance on limited and unqualified staff of the municipalities. The non-availability of base maps and serious data gaps appeared to have further compounded the situation. In view of all the problems, some compromise on quality was inevitable. However, the final output, in the form of atlases and reports, was a significant contribution to Saudi planning system.

The weakness on the technical side appears to have been more than compensated by the strong backing of a centralized system of government. The approval of the study by the Council of Ministers sent a strong signal to all the national, regional and local authorities for extending an effective cooperation to MOMRA in carrying out the work. Similarly the approval of urban growth boundaries by the Council of Ministers gives a strong administrative and legal basis to the proposals, which is so essential for implementation. Furthermore, the government’s power for budgetary allocations to all the national, regional and local authorities strengthened the position of the central government in the effectuation of urban growth boundaries. The Saudi situation becomes unique for planning and implementation, whereby the administrative, legal, and financial authority has been effectively used in aid of the planning system.

Although local authorities were actively involved in the process, there was no direct public participation in devising urban growth boundaries that would have increased the acceptability at the level of the public, thereby eliminating some of the problems being faced by the municipalities in the implementation stage. This probably can be attributed to the absence of such institutions

when the study was undertaken, even though they are now available through the introduction of the Provincial System. However there appears to have been active involvement of a large number of concerned functionaries at all the three levels of government. Even this extent of involvement was the first of its kind in the country and created an impact on the planning process in many ways.

The evaluation of urban growth boundaries will be assessed against the stated objectives of (a) control urban sprawl by encouraging infill development within the planned areas; (b) reduce cost of the provision of infrastructure through better coordination between its provision and urban development plan; and (c) maintain natural environment particularly around the cities through preservation measures.

It appears that urban sprawl has been influenced through the urban growth boundaries in number of direct and indirect ways. Firstly, the imposition of a moratorium for a 2-year period on the approval of new land subdivisions eliminated the prospective commitment of more lands for urban use irrespective of their locations. Experience in other places has shown detrimental effects if proper measures are not taken for the interim period during planning studies. Secondly, the introduction of urban protection zones around the cities was an effective check on the urban sprawl beyond Phase II. It also meant preservation of agricultural lands and the reservation of other vacant lands for future expansion. Thirdly, the approval of land subdivisions in Phase II, being tied to the provision of roads and public utilities by the developers, has been a big discouraging factor contributing to the control of sprawl. Wherever land subdivisions have been approved, as in case of Unaizah, a major town in Al Qassim region, the burden on the municipality for the provision of infrastructure has been shifted to the developer. Fourthly, the assigning of priority to the provision of public utilities and infrastructure to Phase I increased the attraction to subdivide and build in this phase as pointed out in case of Riyadh where utilization of serviced land, within Phase I, was accelerated. The success story of the three metropolitan areas Riyadh, Jeddah and Makkah is, however, questionable with respect to the approval and location of some new land subdivisions in Phase II without conditional ties. The boundaries could not be strictly enforced in the three metropolitan areas mainly due to ineffective local administration, which could not withstand the pressure from influential people having vested interests. But this does not mean that the boundaries have not had an impact on the development of these three metropolitan areas and the study of utilization of serviced land in Riyadh bears testimony to this effect. Certainly a more strict enforcement would have created much better results. One area of concern, in this regard appears to be the indiscriminate approval of agricultural subdivisions by the Ministry of Agriculture and Water on the fringes of some urban settlements. This problem is now being solved through the enforcement of the structure plans.

Urban growth boundaries do provide a technical basis for the programming and implementation of public utilities and services by all concerned agencies operating in the urban areas. These agencies have been directed by the Council of Ministers to focus on Phase I for the concentration of their programs. Thus, for the first time, provision of infrastructure has been effectively tied to the planning and multi-sectoral development in a coordinated manner. As the density is usually higher in the central areas of the cities, which are all covered by Phase I of urban growth boundaries, the utilization per unit length of public utilities is of much higher intensity, thereby increasing the efficiency. This approach, compared to the common scenes of lopsided extensions of utilities and road network in Saudi cities, is bound to yield better returns on

investment. In addition, a more compact system of utilities and road networks is cheaper to maintain, implying long-term financial implications.

The preservation of the natural environment has been attempted through the creation of the urban protection zone after Phase II. It is not possible to leave huge areas vacant in the name of preservation, as there has to be economic use of land. However, efforts should be made to emphasize preservation of natural resources with particular focus on mountains, valleys, forests, agricultural areas and coastal zones. Even the type and intensity of development should be compatible with the natural environment. This has been an important consideration in the structure plans developed for all the cities covered by the urban growth boundaries.

It can be seen from the preceding discussion that there has been realization of the three stated objectives, although probably in varying degrees. Urban growth boundaries are not substitutes for comprehensive plans due to the difference in their objectives, but the boundaries do provide a basis for the provision of utilities and services by the public agencies. The provision of utilities by the government on a no-cost basis and the facility of interest-free loans for house building are two powerful tools available to Saudi authorities that if effectively used can bring a desirable change in the national urban landscape. Attention also needs to be focused on the accelerated utilization of vacant serviced areas within Phase I for which additional fiscal and legal measures may be required to force the landowners for early use instead of holding them for speculation purposes for indefinite periods of time. Such measures are being practiced in some other countries with positive results.

5. In conclusion, longer run benefits of the effort

In addition to the realization of intended objectives, the undertaking of the study and its implementation has made very significant contribution in some other areas relating to the planning process in the country. The intensive and extensive involvement of national, regional and local authorities, from the Council of ministers to the mayor of a small municipality, has created a wide spread planning awareness in the country. This has laid a good foundation for the planning profession in the country. The awareness of spatial planning, particularly at the decision-making level, will go a long way in promoting the profession and ensuring its sustainability.

The DMTP as well as the municipal staff has gained very useful on-the-job training by doing and being involved in all stages of the exercise. The experience gained in the process is also helping in the interpretation and implementation of the boundaries. It should also be quite beneficial in the preparation of spatial plans in the future and in carrying out of day-to-day activities of the municipalities.

The generation of large amounts of data pertaining to 100 settlements is another significant outcome of the study and these data have been used by many agencies in the country. Proper storage of the data under LIS, at the municipality level, will play a very important role not only in daily activities of the municipalities but will also be a crucial input in all the future spatial planning studies. Furthermore municipalities can use LIS as a tool for collaboration and co-ordination with other agencies operating in the urban areas. The establishment of LIS should be followed vigorously in view of its wider use. LIS converted into GIS will strengthen the planning process in the country and help streamline decision-making relating to urban development.

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