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Urban and industrial development planning as an approach for Saudi Arabia: the case study of Jubail and Yanbu

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Abstract

During the last thirty years, the Saudi government has widely employed massive oil resources to enhance urban and industrial development. This was crowned by two giant urban and industrial projects in Jubail and Yanbu. The planning efforts attempt to provide the means to control and manage the industrial development and the physical growth of the two communities. In order to achieve a set of planning objectives, the Saudi government employed two independent planning commissions known as the Royal Commission for Jubail and Yanbu (RCJY). These commissions undertook the responsibility to plan, build and manage two large-scale industrial cities. The system of Commissions and Higher Committees was followed and still practised in the planning of airports, seaports, universities, medical cities and residential neighborhoods. The paper attempts to review analytically various planning processes, which was adopted by some known agencies in Saudi Arabia. By examining these processes one would hope to draw key lessons which can be used by professionals as well as students in the field of planning in Saudi Arabia. © 2001 Elsevier Science Ltd. All rights reserved.

Keywords: Urban planning; Industrial development; Saudi Arabia

Introduction

In the last fifty years, urbanization as a phenomenon of rapid physical growth of villages, towns and cities has occurred in almost every quarter of the Middle Eastern countries, including Saudi Arabia (Mostyn & Hourani, 1988; Saqqaf, 1987; Mubarak, 1995; Al-Hathloul, 1996). The urbanization process in Saudi Arabia was further accelerated in the 1970s after the government started to implement a series of five-year development plans. During this period, and at a very rapid speed, old settlements were expanded in size, new towns were built, basic infrastructures

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were laid down, and many other important large- and small-scale urban projects were developed (Al-Hathloul and Edadan, 1995). However, since the reduction of oil prices in the mid-1980s, and the Gulf War in early 1990s, the development process has been slowed down.

In Saudi Arabia the acceleration of the phenomenon of urbanization during the seventies and early eighties and the deceleration of the urbanization during the nineties were likely due to several factors. Among the most overriding ones are the following:

1. The high level of integration into the global economy, which has further strengthened the links between Saudi Arabia's national socio-economic and urban policies and those of the international community, especially of the Western nations (Al-Farsy, 1986; Masood, 1984).
2. The existence of a substantial amount of revenue, which resulted from the large increase in oil prices and production after 1973 (Al-Hathloul & Anis-ur-Rahmaan, 1985; Alp, 1988).
3. The government's decision to quickly achieve maximum socio-economic growth and improvement in the average quality of urban life and living standards for the rapidly increasing local population (Al-Mobarak, 1993; Ministry of Planning, 1970, 1975, 1980, 1985, 1990, 1995).
4. The increasing number of rural people migrating to major cities who are seeking relatively better economic urban conditions that existed in major cities (Daghistani & Lee, 1982).
5. The rapid industrial development, particularly after the initiation of the two industrial cities in Jubail and Yanbu (Benna & Awad, 1995) (Fig. 1).

These factors are possibly the controlling mechanism that may have provoked rapid urban expansion in almost all parts of Saudi Arabia. In addition, the high influx of foreign experts into the country is another factor that may have contributed into shaping the country's entire current pattern of labor forces and urbanization.

However, very important urban achievements were made during the last few decades in Saudi Arabia. Unfortunately, the rapid expansion of existing cities as well as the development of new towns and cities occurred in a very short time and were dependent on foreign experiences. The local socio-cultural context and the rich urban value of the country's traditional urban environment have been discounted in the design and planning processes of many modern urban projects. Consequently, the country's entire traditional urban structure and morphology have changed (Eben Saleh, 1998). This rapid change, however, raised several questions as to the success of the current urban environment in Saudi Arabia.

The early period of urbanization and industrial development in Saudi Arabia characterized with the lack of professionalism and technological knowledge, which were compensated with experiences and advanced technology of the developed countries. Accordingly, imported modern technologies and planning models and principles of the Western World have been introduced to Saudi Arabia (Mubarak, 1995). Such modern principles were applied indiscriminately with no appreciation to the rich historical legacy of the country's traditional urban pattern that accumulated over centuries. This has raised a need for a serious investigation and further research as to what implications the further use of modern principles may cause in Saudi Arabia. It is very important to mention at this point, that the direct application of the Western advanced technology, urban and industrial solutions, as well as, design concepts and principles without full regard to the local traditions, socio-cultural factors and physical realities will lead to serious urban implications.

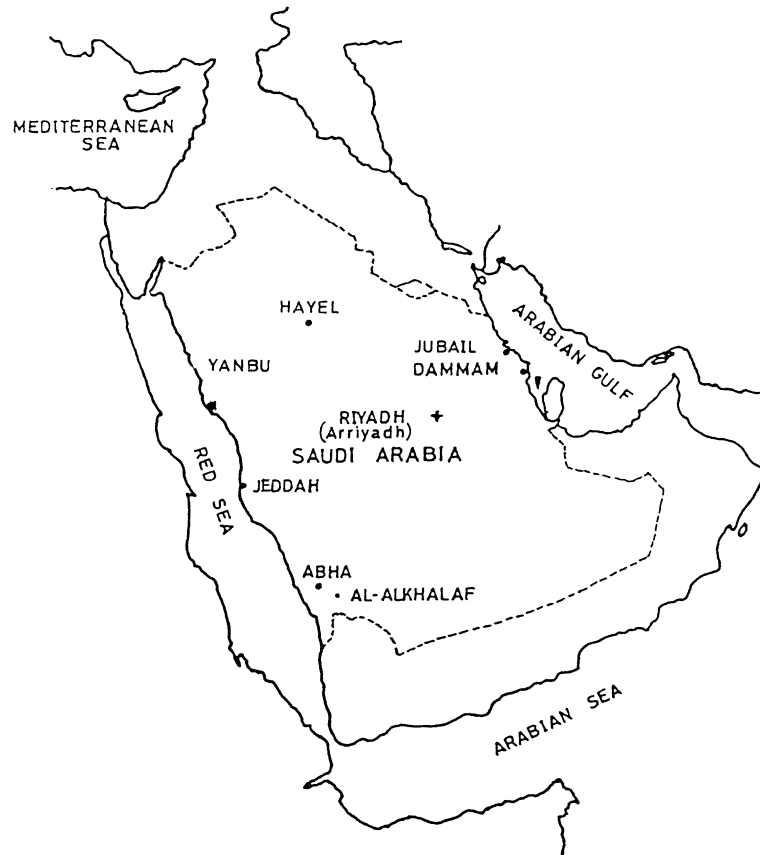


Fig. 1. Map of Saudi Arabia showing the twin cities, Jubail and Yanbu.

The purpose

The main purpose of this paper is twofold. First, it provides an insight into the current Saudi pattern of urban and industrial development paradigms. Second, it points out practical ways for using urban and industrial development as an invaluable planning approach for directing Saudi contemporary urban planning towards a path that leads to future urban success and industrial sustainability. In addition, the paper suggests that the improvement of the country's current industrial planning policies and processes and the valuable experiences of the two industrial projects of Jubail and Yanbu can be considered as models for future industrial planning in Saudi Arabia.

The changing nature of planning

It is true that the early 1970s witnessed an important juncture in the nature of planning in Saudi Arabia. A series of five-year development plans has been initiated with the principal aim to

transform rural areas in Saudi Arabia to a more urban and industrial societies. The purpose of these plans is mainly to set physical infrastructure targets, to develop human resources, and to provide an overall-spending framework. The supervision of these development plans, however, was and still is the responsibility of both the Ministry of Planning and the Ministry of Municipal and Rural Affairs. The Ministry of Planning supervises the country's sectoral growth, whereas the Ministry of Municipal and Rural Affairs deals with the geographic spatial aspects of the country's urban growth and provides municipal urban services to the country's various regional and local municipalities (Mashabi, 1995).

Since 1970, the government has completely implemented six of the Five-Year Development Plans and is at the first year of implementing the Seventh Five-Year Plan. The Sixth Five-Year Development Plan resumed on December 31, 1995. This plan was prepared under different circumstances due to the Gulf war and the sharp drop in oil prices. Finally, the most recent plan (the Seventh Five-Year Plan) was approved by the Council of Ministers on August 28, 2000 and became effective on August 29, 2000. A large proportion of the plans' capital, particularly those of the first two plans, were applied to urbanization policies and hurried settlements' creation and physical expansion (Daghistani & Lee, 1982; Mostyn & Hourani, 1988).

The Five-Year Development Plan as a short-term strategy

In the case of Saudi Arabia, the short-term planning of any type (namely urban, industrial, agricultural, economic, or the geographic scale) can possibly work by increasing the general awareness of the country's planning organizations. Fig. 2 illustrates the hierarchy of physical planning and the prominent government agencies: the Ministry of Municipal and Rural Affairs and the Ministry of Agriculture and Water. Their planning efforts need the co-ordination with other agencies like the Ministry of Planning, the Ministry of Transportation and other higher committees and commissions. This means that the Saudi planning organizations should function with an adequate level of autonomy that enables them to work together in a harmonious manner. Thus, the integration of organizations should reflect the concepts of diversity and unity. Unity also means an increase in the co-ordination level between the organizations, particularly during the decision-making process. Moreover, It should reflect the idea of higher committee or commission of multi-planning agencies.

The multi-planning agency model is a model that is widely applicable in the developmental process in Saudi Arabia. This dynamic model is a one possible way to show how short-term planning should be for Saudi Arabia.

Moreover, such agencies may be involved in the Saudi planning process each according to their areas of interest. Therefore, it is crucially important that each agency is wary of its own professional capabilities and must ensure that any allocated responsibilities or tasks do fit compatibly with its area of interest. The co-ordination stage is important to direct all planning actions and programs of all the Saudi planning agencies towards a common satisfactory goal and solution that are in the best interest of the agencies and their client groups (the public).

But to insure effectiveness, a body that makes decisions of a strategic importance should continuously monitor co-ordination among the various agencies. The Saudi Planning Ministry, which is the country's current acting body responsible for Saudi Arabia's overall planning affairs,

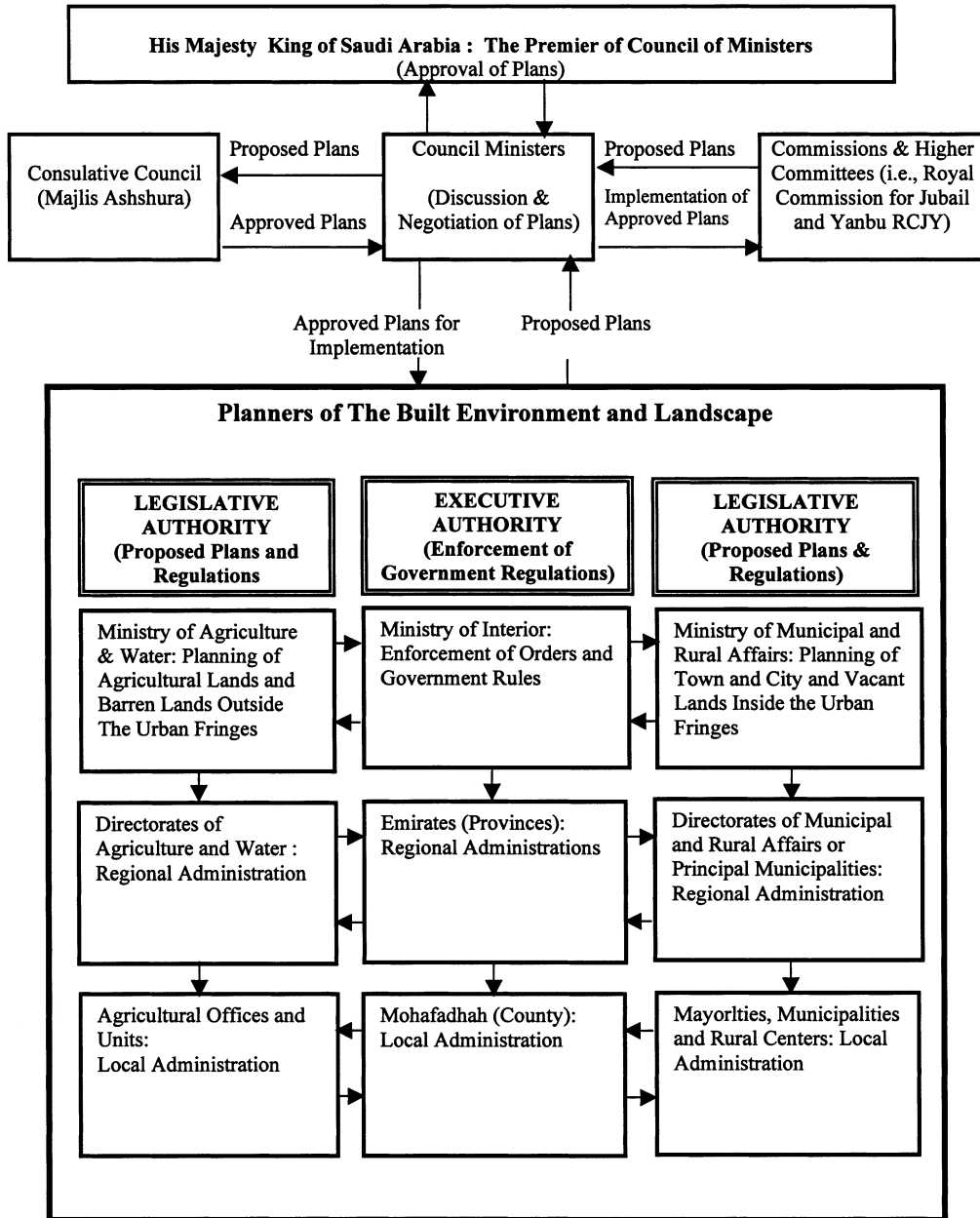


Fig. 2. Schematic chart showing the hierarchy of planning in Saudi Arabia.

can fulfill such a requirement and act as the country's strategic planning agency that censors and monitors co-ordination among the various planning agencies. On the one hand, its role may extend to set an overall framework that these agencies should follow without jeopardizing their autonomy. On the other hand, the Ministry provides the agencies with some autonomy and

encourages them to participate in the formulation and revision of the overall framework and its guidelines. Hence, privileges are given to the agencies allowing them to suggest modifications and adjustments to the framework's outline; in case the outline cannot be implemented or if changing conditions warrant an adjustment.

All the country's implemented development plans were suggested by governmental bodies like ministries, higher committees or commissions and then discussed in the Council of Ministers. Usually, the Council of Ministers refer to the King for final approval of the plans. The plans are submitted to the Consultative Councils for study and final check before approvals (Fig. 2). This process is a direct product of the country's contemporary centralized planning system. It is largely based on short-term urban planning policies, programs, and approaches which advocate growth that only implies quantitative measures or an increase in the physical scale and number of similar urban projects rather than qualitative ones (Abdel Rahman, Al-Muraikhi, & Al-Khedheiri, 1995).

In addition to the centralized and short-term planning system and processes, the phenomenon of physical growth and the geographic spread of urbanization and modernization happened at speeds and rates beyond anything imaginable. This acceleration occurred most likely as a response to the government's decision to invest the huge amount of oil revenues gained in the early 1970s in initiating urbanization and industrialization policies and programs designed to achieve maximum economic, social, and physical growth in a very short time.

In modern planning as the paper conceives it, planning approaches are quite likely perceived as a consequence of various integrated factors. Planners should not view a particular approach as a holistic approach to planning, but as a mix between various approaches and a blend of their goals and objectives. By implementing such an approach, one would hope that the Saudi's contemporary planning system will improve, which will possibly help the country to overcome many of its future development and urban challenges.

The urban industrial development paradigm

The urban industrial development paradigm as a radical and decentralized approach encourages the initiation and continuity of a solidly planned and dynamic process of long-term progressive achievement that is socio-culturally relevant and ecologically and economically sustainable. The process is also a complex one advocating economic use of all resources in order to create successively productive capacity and increased self-sufficiency and reliance in the future. Moreover, the paradigm can be seen as a process of justice in which collective and individual rights are secured. This means that the approach is a process based largely on grassroots participation and decentralization as a means for making decisions in order to generate, orient, and free human potential so as to engage practical and constructive work. Hence, it enhances the co-operative practices and provides a framework for government, professionals, and individuals to learn how to work together in a co-operative and systematic manner in order to collectively make right decisions and choices affecting their communities' sustainability. Additionally, the urban industrial development paradigm can also be defined as an approach that carries with it desires for greater human dignity, equality and security.

Finally, the urban industrial development paradigm can be conceived as a sophisticated urban planning process of studying, analysing, understanding and implementing valuable and unique

planning principles based on the integration between local cultural values and available resources to respond to modern needs and lifestyles. It is perhaps noticeable that from the above-developed definition(s) of the paradigm several features can possibly be extracted. Among the most salient are the following features:

1. The urban industrial development paradigm is an interactive and integrated process happening within a complex matrix of constantly interacting relations among different systems (e.g., socio-cultural, ecological, economic, urban, environmental etc.).
2. The paradigm is not simply a fixed process but rather a dynamic and fairly systematic process of change consistent with past, present, and future needs and cultural lifestyles. It tends to improve traditional urban experiences and recycle them into contemporary and future urban practices. This will help in creating an authentic present and future that both reestablish a sense of attachment, faithfulness, and continuity with the past.
3. The paradigm's emphasis is on balanced urbanism and justice, equality, and security; its emphasis is on systems' change, improvement, and self-reliance; and its emphasis is on decentralization and grassroots participation and on the wise maintenance of ecosystems.

To appreciate the usefulness of the paradigm of urban industrial development to Saudi Arabia's contemporary planning, it is necessary to set up the stage that would help in comprehending the paradigm and delineating the course in which it can be possibly practised in the context of urban and industrial planning. A comprehensive implementation process of the urban industrial development can help clarify the paradigm broad meaning, and strengthen one's intellectual capacity to visualize the paradigm within several contexts, including that of urban industrial planning. The identification of the paradigm features and prerequisites improves one's theoretical understanding about the unique nature of the paradigm. In addition, the identification of the features and the prerequisites may also be beneficial in providing the key ingredients necessary for knowing how to employ the paradigm in order to pursue a truly effective course of urban and industrial development. Collectively, the paradigm features, and prerequisites can also serve as a useful planning tool for measuring the previously discussed phenomenon of rapid urbanization and modernization in Saudi Arabia, and for evaluating the effectiveness of future modern planning.

Features of the urban industrial development paradigm

The features of the suggested urban industrial development paradigm are likely the solid ground on which the planning rests, and the power which makes its practice in the field of planning to be of a great merit for achieving successful and effective future urban results.

After uncovering some of the paradigm's potentially most salient features, however, it seems that a balanced urban industrial development approach is a goal with a moving target. But, even approaching a balanced urban industrial development approach is perhaps not easy or straightforward. This may likely require a fairly sophisticated planning system that is largely supported by the national government, the regional and local governmental and non-governmental agencies, and the public at all levels. The approachability of urban industrial development may also require a full commitment for fulfilling some basic prerequisites. Therefore,

the approachability of a balanced urban industrial development cannot be practically secured without the presence of a flexible and decentralized system that views all individuals and non-governmental organizations as active staff members fulfilling functions and responsibilities essential for achieving developmental planning goals and objectives. Thus, the planning system gives the individuals and the organizations the right to participate effectively, creatively, and constructively in the development planning and decision-making processes, the formulation of policies, and the realization of the goals and objectives of these policies.

Apparently, therefore, the existence of such a planning system is ultimately crucial for four reasons. First, the existence of such a system can help in diminishing the destructive capacity of centralized decision-making, and by distributing political power that may affect the implementation. Second, the system's presence can help in setting up and increasing the levels of dialogue, communication, co-operation, and understanding between technocrats and all other constituencies of a society, and thereby widen the base of decision-making. Third, the system can possibly help in largely raising individuals' and non-governmental organizations' confidence and knowledge about urban industrial development goals and objectives. It can also serve as a source of information and collective wisdom in providing policy-makers and planners with additional invaluable data that significantly bear on the success of urban industrial developmental processes and the design and implementation of urban industrial projects. Fourth, the system could be useful in identifying the local people's developmental and urban needs and wishes. This could, in turn, serve as the critical means for specifying local planning agencies' missions, delineating the main course of future industrial developmental and urbanization programs, and measuring the quality and quantity of such programs and projects.

Bridging the gap between urban and industrial development

The rapidity of the phenomenon of physical expansion growth and urbanization seems to have also had other serious negative implications of a socio-cultural, ecological, and economic nature. Socio-culturally, for example, expansion and urbanization accelerated during a time when Saudi Arabia was capital rich but severely lacking in institutional capacity; skilled local personnel; and a large sophisticated body of administrative, technological, architectural, urban design, and planning knowledge and practices. Such overriding factors were perhaps the main reason that led the government to seek the advanced experience and technology of the western industrialized nations. The aim was to provide solutions to reduce the country's urban pressures, and to cope with the demands and the new urban ideals of the twentyfirst century. Most likely, this decision was reinforced by the elite's general belief that urbanization and development models used in Western nations were the most acceptable and ideal models, and could be used successfully to solve Saudi Arabia's urban problems, and to modernize the Saudi society.

The phenomenon of physical growth and the geographic spread of urbanization and modernization have been closely associated with the importation of complete Western models. Such models included architectural designs and styles, urban design models and principles, and urban planning policies, zoning regulations, and programs. It is vitally important to conceive that there is a need for a coherent impersonation between urban development and industrial development in urban planning practices. In addition, it is equally important to understand the

significant role of the grassroots and their participation in the decision-making and planning processes. The importance of the grassroots participation to people's lives is apparently noticeable from Fathy's statement: "to be alive is to make decisions" (Fathy, 1973, p. 22). While the importance of such participation to the successfulness of urban projects is evident from Simon's statement: "development projects stand little chance of success unless the local population not only derive tangible and sustained benefits, but are also actively involved in planning and control throughout" (Simon, 1989, p. 46). Therefore, it is perhaps obvious that the existence of a flexible—decentralized—political system that is based on a participatory approach is the key prerequisite to success and the light guiding decision-makers to virtually approach sustainable urban industrial development.

Additional requirements may include the formulation of a modern urban planning system that would take care of operating, sustaining, and improving traditional urban systems, and use such systems as a basis for guiding new urban systems and patterns of urbanization. It may include the development of an exceptional educational system that advances scientific research and technological activities. It may also include the development of a reliable database that is capable of formulating long-term industrial developmental planning approaches and management policies and strategies. As such, the fulfilment of such critical prerequisites is extremely imperative for practically approaching a course of long-term sustainability and progressive urban industrial development. Thus, all the mentioned prerequisites should be viewed as broad planning goals that should guide and underlie any country's present and future developmental and urban planning processes and actions.

Understanding the paradigm and accepting its meaning and features can help enlighten decision-makers' and local planners' with regard to essential planning approaches needed for achieving a balanced future urban and industrial development. Furthermore, understanding the paradigm and accepting its meaning and features may perhaps help increase awareness of local organizations and citizens. Consequently, they can thoroughly recognize and apprehend the fundamental role their participation can play in the country's urban planning and decision making processes in the improvement and success of the country's urban planning system, and in the design and implementation of the country's current and future urban industrial projects. Thus, increasing such consciousness may encourage the participation of the organizations and the citizens together in the preparation processes of the country's planning process, and to express their aspirations and views about the urban quality of the built environment in which they will reside.

The paradigm of urban industrial development, if well conceived and practised, can be of a great value for establishing an efficient mechanism for co-ordination at the level of policies' and programs' formulation among the country's various ministries and agencies involved in urban planning and industrial development affairs. Setting the base for developing such a mechanism may also contribute significantly in increasing co-ordination between the ministries and agencies involved in the design of national, regional, and local urban planning policies.

Most importantly, the paradigm of urban industrial development and its application may also be useful to the Saudi Arabian contemporary urban planning system because, as already mentioned, it encourages and reinforces the idea of grassroots participation. This kind of participation is extremely crucial to the process of increasing the local people's confidence in their country's urban planning and industrial affairs. In other words, grassroots participation is important to strengthen and soften the relationship between the government and the public.

Hence, this in return will increase the public commitment to, and involvement in, the planning and decision-making processes that decide the pattern of their country's urban structure and the character of industrialization. This kind of participation is also significant to the process of envisioning how urbanization and modernization in Saudi Arabia can progress and thrive in response to the needs, wishes, and urban life-style and values of the majority rather than only to those ones of the minority. Lastly, grassroots participation is crucial and must be encouraged in Saudi Arabian contemporary urban planning system and urban industrial activities simply because it is a good attitude, in and of itself, and because grassroots participation and good urban planning are often supportive and go hand in hand.

The paradigm's crucial aim is to decentralize the Saudi Arabian contemporary urban planning system and to implant the spirit of constructive work and co-operation among all parts of the Saudi society by introducing a participatory approach to the country's urban planning system. In addition, the paradigm of urban industrial development and its practice are useful to the system in several other important planning aspects. Initially, the paradigm is defined as a radical approach of development advocating culturally and ecologically sensible changes and long-term qualitative improvement of various systems (e.g., economic, socio-cultural, urban, ecological, political, administrative, technological, educational, informational, etc.). However, it is quite important not to conceive the paradigm of urban industrial development as a procedure of growth. Instead, the paradigm is a fairly dynamic, systematic, interactive, and integrated approach of change and progressive betterment occurring within a sophisticated fabric of constantly interacting relations between different systems. It is consistent with the past, the present, and the future needs, socio-cultural values and life-styles, and ecological conditions. It is perhaps noticeable that the paradigm of urban industrial development largely advocates, besides a participatory approach, the use of a radical approach in urban planning. Such an approach is based entirely on human development, on cultural and ecological ethics, on systems' change and flexibility, and on long-term urban planning development policies, strategies, and solutions to urban problems as one of its most critical objectives.

Appropriate planning approach for Saudi Arabia

In the mid-1970s, Saudi Arabia embarked on a bold approach designed to create a strong diversified national industrial economy to upgrade the country's natural resources, and reduce dependency on oil revenue. The benefits derived from this new approach were to be shared by the Saudi Arabian people through an enhanced standard of living. This approach is currently being realized in the construction of two new industrial cities on opposite sides of Saudi Arabia (Fig. 1). Madinat Al-Jubail Al-Sinaiyah (MJAS), on the Arabian Gulf (Fig. 3), the heart of the petroleum deposits and close to deep Gulf Waters, and Madinat Yanbu Al-Sinaiyah (MYAS) (Fig. 4), on the shores of the Red Sea (Daghistani & Lee, 1982). The creation of these brand-new manufacturing and urban industrial centers vigorously carried out by the Royal Commission for Al-Jubail and Yanbu (RCJY) plays a major role in the Saudi Arabia's economy. The RCJY is in charge of several tasks: the promotion of private-sector investment, community and human resources development, and environmental protection in Jubail and Yanbu. It is also responsible for providing all the social and physical infrastructure needed for the construction and operation of

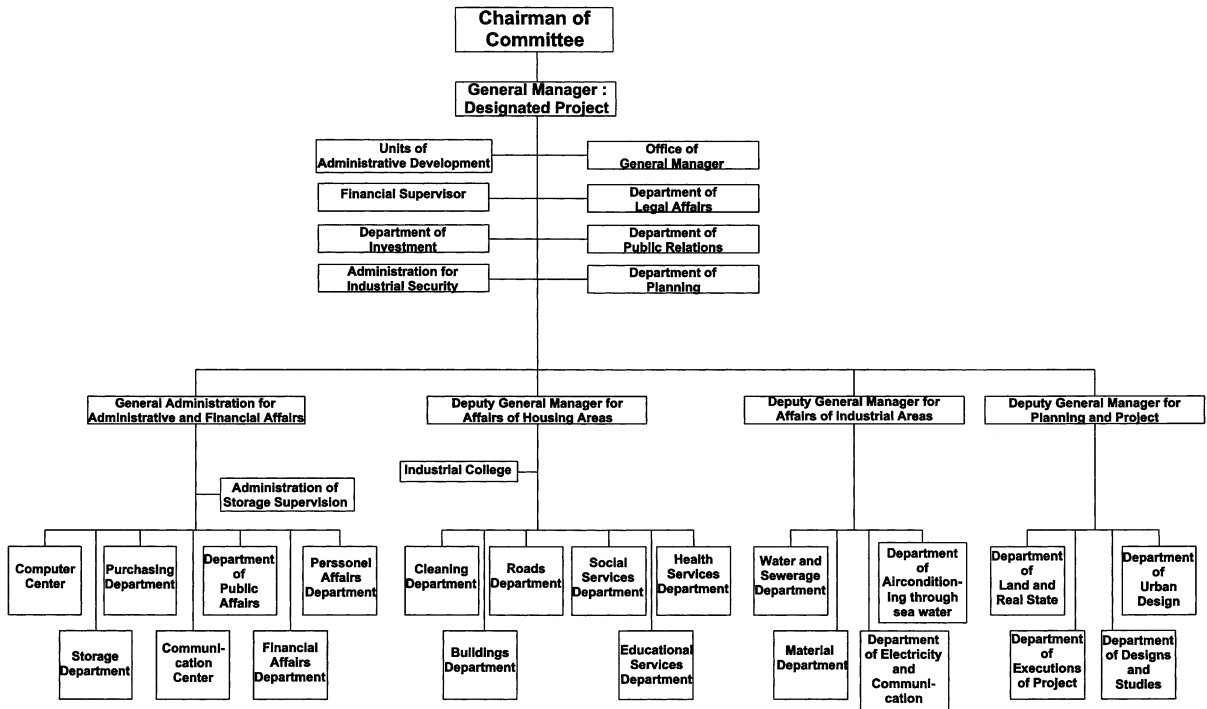


Fig. 5. Functional relationship diagram of the Royal Commission of Jubail and Yanbu.

the huge urban industrial developments in these two cities (Fig. 5). Therefore, these two urban industrial cities could be in fact considered as pilot projects in terms of size, type, infrastructure, and the sophistication of their urban planning concepts and environmental quality.

The Industrial Areas are the main objective behind the construction of Jubail and Yanbu urban industrial cities. The Industrial Area in Jubail, for example, envisages the setting up of 19 primary industries together with 136 secondary industries and 100 ancillary industry, to operate under the capital concentration method. These industries created more than 100,000 jobs by the beginning of the millennium. The industrial city utilizes an estimated 4 billion US dollars' worth of natural gas, which until recently was considered as an expendable product. It also produces steel, aluminum, plastics and fertilizers for local and international markets.

Work in these two cornerstones of Saudi Arabia's industrial economy progressed according to plan. Work took place so that the development of the infrastructure started at the same time as work was started on the residential areas, the building of industrial installations, and the planting of gardens. This method achieved positive results, reflected in the fact that the master plans for both Yanbu and Jubail were drawn up in a relatively short time. Both state organizations and the private sector made concerted efforts to complete their parts of the project so that it rapidly took shape.

Planning for the building of the two industrial cities of Jubail and Yanbu was based on achieving integration between the two cities, despite the long distance separating them (1200 km). Accordingly, Yanbu's share of the primary industries included a crude oil export terminal, oil refineries for local consumption and export, a natural gas separation complex and a petrochemical complex. All these projects have been completed, and started operating by the end of the third



Fig. 6. One of the sub-neighborhoods in Jubail industrial cities.

development plan. Benna and Al-Deufi (1999) argue that the proactive and reactive policies (as well as the policy instruments of this strategy) try to keep balance between the needs of the urban industrial development and the enhancement of the environment. These projects are believed to be leading projects in introducing a new form of modern economic and urban development in Saudi Arabia (Figs. 6–8). The RCJY projects employed long term strategies for economic and urban development in the form of guidelines to preserve religious, social, cultural and environmental imperatives, which are believed to be sustainable. The RCJY projects were conceived as self-contained entities.

The RCJY also issued instructions for the protection of the environment and the areas of archaeological formations. The environmental regulations and standards were in action since 1988, but from September 2000 every factory must comply with them, otherwise fines, penalties or shut down may take place. Engineering Manual: Environmental Guidelines, 1988; (Royal Commission Environmental Regulation, 1999). The reduction of pollution (air, water, sound, soil) to the minimum is possible when the standards and regulations are applied to a certain level.



Fig. 7. One of the sub-neighborhoods in Yanbu industrial city.

In Jubail and Yanbu industrial cities the protection of the beautiful sea mangroves, used as a refuge by marine life, was particularly an important consideration. Special efforts were made to protect as large an area of these trees as possible and the offshore coral reefs. Special precautions were taken to purify factory water and sewage to comply with environmental protection specifications. Thus, in recognition of their landscape and environmental programs, these two cities received several international awards from the United Nations and other organizations for the protection and enhancement of their environment and ecosystem.

Madinat Al-Jubail Al-Sinaiyah (MJAS)

Jubail is a part of the old Jubail vicinity. It is located to the north of the old seaport. This location establishes the basic butterfly form of the community. In addition to its location, certain general organizing principles and several major structural elements shape the community plan (Fig. 3).



Fig. 8. Saudi petrochemical company (SADAF) complex in Jubail.

The community plan adopted a system of hierarchy of districts, sectors and neighborhoods. It is divided into eight districts, which accommodate between 30,000 and 38,000 people and have an area of approximately 1000 ha each. Each district has a center with a variety of districts serving facilities. It is divided into four to five sectors of between 5000 to 8000 people. Each sector is served by a center with a mosque and a clinic and, in many cases, a sector level commercial center. Each sector is divided into two to four neighborhoods of about 2500 people. Each neighborhood contains a full range of housing types and local facilities. The focal point of the neighborhood is a Friday or a daily mosque, a kindergarten and, in most cases, a neighborhood commercial center. A significant factor of shaping the community is the hierarchy of the road system, which influences the community form.

The open space and recreation system provides the second major structural element of the plan. This system contains landscape corridors, coastal corridors; bayshore landscaped open

space, and parks and recreation facilities. The open space and recreational systems define the limits of districts by providing landscaped open spaces along the coastal edge and between districts and provide a location for recreational and educational facilities that serve more than one district.

Madinat Yanbu Al-Sinaiyah (MYAS)

The MYAS or Yanbu Industrial City is located 350 km north of Jeddah City on the Red Sea and 19 km south of the old port city of Yanbu Al-Bahr. The City has been functioning for centuries as an entry point for pilgrims on route to the Holy Cities Makkah and Al-Madinah. Historically unpopulated, MYAS has been developed on a desert plain with an exception of few agricultural dwellers. Virtually, it is without any relief from the Hejaz Mountains on the East to the Red Sea coastline. Thus, it enjoys a location resembling a resort.

The projected design capacity of the Community may exceed some 120,000 people, although not more than 100,000 are expected by the year 2010. Its area is subdivided into fourteen districts, all of which are self-contained and provide full facilities and services to the residents. Current population in the completed residential areas is approaching 50,000, and the city accommodates over fifty industrial enterprises. The basic planning and development concept for the community's land use provides for a concentration of higher density residential uses, such as apartments and townhouses, around the City Center with lower density uses, primarily villas, on the outer periphery (Fig. 4).

The overall community has been developed in a sequential phases in order to accommodate the growth of population. The residential quarters are categorized into three basic types which are arranged in a generally concentric pattern around Fahd Quarter which itself contains high-density residential development. The city core has five residential quarters, which are characterized by higher densities. The coastal quarters have access to the waterfront. Two quarters have higher densities. Quarters with lower density and prime locations are inevitably locations for high-income housing development. The peripheral quarters are three, the furthest from Fahd quarter and the industry zone are more similar to traditional suburbs with lower density, higher car ownership and less reliance on public transit.

A descending hierarchy of commercial centers on three levels was established with the fundamental objectives of locating as many households as possible close to these centers. This is similar to the commercial center strategy at Jubail.

The City Center, located in Fahd Quarter, symbolizes the unity and identity of the community. It is the center which is the primary focus of MYAS. It is the location of the communities most importantly includes major services, mainly religious, civic cultural and commercial facilities. Realization has just begun in the Central Area with the completion of its unique park promenade and circular bay. The City Center is oriented to the Red Sea coast. Building masses will diminish as the sea is approached providing space for landscaped areas, parks and recreation. There will be a crescent shaped marina for recreational use. The sea, the bay, and the marina are major attractions in the city. The center combines major recreational and leisure facilities as well as commercial and retail services, which can be considered as important qualities to encourage continuous and intense activities.

Concluding remarks

There is no best planning approach, nor there is a single specific way of applying one or even several approaches in any situation or country. However, it is perhaps possible that one planning approach can outline a framework under which a particular planning approach can successfully function.

The Planning system in Saudi Arabia is viewed as a process to achieve main goals to comply with socio-economic and physical growth of communities. This process follows established but unique, paradigms when judged by common conventional planning standards. The Planning system adopted development paradigms, which raises two fundamental issues with respect to urban and industrial development, these are:

1. Urbanization differs from modernization as a thought for development which underlies socio-economic, cultural, ecological, and social meanings.
2. The changing nature of planning for industrial development underlies long term goals, which view both urbanization meanings as part of the development paradigm.

The geographic spread of Saudi Arabia demanded that urbanization have to be made within a short time frame, so most of the spectacular physical growth and urbanization projects in Saudi Arabia have not been screened for their socio-cultural and environmental impact. They have been implemented through a fast process of employment of a massive scale of foreign technologies, and the direct imitation of different socio-cultural urban solutions. As a result of such a process, the local socio-cultural balance of the country's settlements has been weakened by an imported urban value system that is based on zoning regulations. Being conceived as such, this new value system and its rigid practice seem to have had a pivotal impact on the way residential areas are planned today in Saudi modern settlements.

In spite of the failure of using Western planning models, it must be stated that, industrial development adopted Western technology and urban industrial solutions are not entirely bad. On the contrary, the technology is astonishing and most of the urban design and industrial planning models and approaches as well as the zoning regulations are of a very good quality and effective when applied in the west. But, what makes them seem inappropriate when applied, for example, in Saudi Arabia is the likely failure to recognize that they are of significantly different quality from the ones which have been traditionally ascribed to in the country. They are different in the sense that they have evolved in a completely different socio-cultural and physical environment. They are also different because they are part of a whole legal system and tradition. This legal system is based on a certain notion of social order that is unique to the context in which it has been developed. Therefore, using Western planning models directly and indiscriminately without careful adjustment to fit compatibly with local urban traditions and local socio-cultural and physical conditions could lead to serious urban problems. This may also lead to create an extremely puzzling urban environment that is difficult to perceive. The current urbanization pattern in Saudi Arabia seems to suffer from this issue.

Jubail and Yanbu industrial cities are two exceptions, however. They are not only industry and infrastructure, but also living communities designed for local citizens to lead full and satisfying lives. The local tradition and environment in these two cities have not been sacrificed to foreign modern technology. Physical infrastructure facilities and services are modern, yet the traditional

way of life still permeate these two communities and contribute greatly to their residents' quality of life. Their environments and ecosystems are also protected through tight policies and programs implemented by the Royal Commission since the beginning of their development. Hence today, it is true that the Jubail and Yanbu urban pattern is modern and accommodates good facilities and high standards services and infrastructures. It also reflects the demand of socio-cultural and physical orders which makes it fundamentally compatible to indigenous socio-cultural traditions and environmental conditions.

The two industrial cities, as a result of planning effort, provides an arena for actors in planning and design (clients, architects, urban designers and planners) whom are seeking genuine planning and urban ideas for their endeavors. The professionals (economists, planners, urban designers, industrialists etc.) find them a means to develop later genuine schemes and relationships by trying to use principles that enhance the preservation of a healthy environment when putting industry and living in the same scheme. These principles, when used in Jubail and Yanbu as a source for the creation of distinctive urban concepts, flourished as a result of three decades of urbanization.

The implementation and evaluation of innovative planning ideas in Jubail and Yanbu projects that Saudi Arabia went through and their consequences are grounds for later dire decisions to deal with the dynamic cultural, economical, political and ritualistic influences and enhances search of this type. The implication of urban and industrial development approach that creates a sustainable economic base of distinctive urban and architectural identity is a paramount objective, whereby the planning and urban concepts of the RCJY's two projects created precedents for other planning and urban industrial development of Saudi villages, towns and cities. They also proved that urban industrial development and environmental protection could coexist through controlled programs and policies. The urban development process as an amalgamation of history, culture and economic interests and its symbolic importance seems to be a perfect place for the emergence of different forms of engagement between tradition and modernity which are seen in the RCJY projects.

Finally, the RCJY projects are reflecting real participation between the public and private sectors in terms of planning and development. Thus, they are thriving projects offering their residents all the means and services to lead an enriching, comfortable, and secure life.

References

- Abdel Rahman, M., Al-Muraikhi, F., & Al-Khedheiri, A. (1995). A national spatial strategy for Saudi Arabia. In S. Al-Hathloul, & N. Edadan (Eds.), *Urban development of Saudi Arabia: challenges and opportunities* (pp. 331–356). Riyadh: Dar Al Sahan.
- Al-Farsy, F. (1986). *Saudi Arabia: A case study in development*. London: Kegan Paul International Limited.
- Al-Hathloul, S. A. (1996). *The Arab-Muslim city-tradition, continuity and change in the physical environment*. Riyadh: Dar Al-Sahan.
- Al-Hathloul, S. A., & Anis-ur-Rahmaan (1985). Evolution of urban and regional planning in Saudi Arabia. *Ekistics*, 1–17.
- Al-Hathloul, S., & Edadan, N. (1995). Introduction: An overview. In S. Al-Hathloul, & N. Edadan (Eds.), *Urban development of Saudi Arabia: Challenges and opportunities* (pp. 1–15). Riyadh: Dar Al Sahan.
- Al-Mobarak, N. A. (1993). From Order Take to Policy Maker—The Expanding Role of Planning in the socio-economic development of Saudi Arabia from 1932 to Present, A Ph.D. Dissertation, City and Regional Planning, The University of Pennsylvania.

- Alp, A. V. (1988). Architects' response to traditional and vernacular architecture of Saudi Arabia. In *Preservation of Islamic architectural heritage: Proceedings of the conference on the preservation of architectural heritage of Islamic cities* (pp. 279–290). Riyadh, Saudi Arabia: King Saud University Press.
- Benna, U. G., & Awad, M. H. (1995). The role of industrial centres in sapatial development. In S. Al-Hathloul, & N. Edadan (Eds.), *Urban development of Saudi Arabia: Challenges and opportunities* (pp. 113–137). Riyadh: Dar Al Sahan.
- Benna, U.G., & Al-Deufi, A. (1999). Harmonizing the environmental concerns with industrial development in Jubail Industrial City, in Symposium on Innovation and Distinction in Urban and Infrastructure Development of the Kingdom in 100 years, 7–9 February 1999, Ministry of Public Works & Housing, Riyadh, Saudi Arabia, pp. 119–132.
- Daghistani, A. M., & Lee, C. (1982). Urban planning and development in Saudi Arabia. In I. Serageldin, & S. El-Sadek (Eds.), *The Arab city: Its character and Islamic cultural heritage* (pp. 142–150). Riyadh, Saudi Arabia: Arab Urban Development Institute.
- Eben Saleh, M. A. (1998). Socio-economic development in formerly isolated rural contexts-Al-Alkhalaf village, southwestern Saudi Arabia. *Canadian Journal of Development Studies*, XIX(2), 221–258.
- Fathy, H. (1973). *Architecture for the poor*. Chicago: University of Chicago.
- Mashabi, O. (1995). Institution context of spatial development planning. In S. Al-Hathloul, & N. Edadan (Eds.), *Urban development of Saudi Arabia: Challenges and opportunities* (pp. 49–76). Riyadh: Dar Al Sahan.
- Masood, R. (1984). *Industrialization in oil-based economies*. New Delhi: ABC Publishing House.
- Ministry of Planning (1970). First Development Plan—1970–75. Riyadh, Saudi Arabia: Ministry of Planning.
- Ministry of Planning (1975). Second Development Plan—1975–80. Riyadh, Saudi Arabia: Ministry of Planning.
- Ministry of Planning (1980). Third Development Plan—1980–85. Riyadh, Saudi Arabia: Ministry of Planning.
- Ministry of Planning (1985). Fourth Development Plan—1985–90. Riyadh, Saudi Arabia: Ministry of Planning.
- Ministry of Planning (1990). Fifth Development Plan—1990–95. Riyadh, Saudi Arabia: Ministry of Planning.
- Ministry of Planning (1995). Sixth Development Plan—1995–2000. Riyadh, Saudi Arabia: Ministry of Planning.
- Mubarak, F. (1995). The role of state in shaping urban forms. In A. Al-Hathloul, & N. Edadan (Eds.), *Urban development of Saudi Arabia: Challenges and opportunities* (pp. 247–285). Riyadh: Dar Al Sahan.
- Mostyn, T., & Hourani, A. (Eds.) (1988). *The Cambridge encyclopaedia of the Middle East and northern Africa*. Cambridge, New York, New Rochelle, Melbourne, Sydney: Cambridge University Press.
- Saqqaf, A. Y. (Ed.) (1987). *The Middle East city: Ancient traditions confront a modern world*. New York: A PWPA Book.
- Simon, D. (1989). Sustainable development—theoretical construct or attainable goal? *Environmental Conservation*, 16(1), 41–48.