

“Analyzing Traditional Persian Cities as a Model for Eco-City” Case Study: Bushehr city in Iran with high potentiality to convert into a Sustainable City

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Keywords: Bushehr, Traditional Texture, Urban Development, Sustainability, Eco- city

1. Introduction

Urban Sprawl versus the Compact City

Urban growth causes various environmental problems. In order to help this problem, the idea of the compact city has been introduced nowadays.

A concept designed to implement sustainable development within the urban environment and to counteract the perceived negative social, economic and environmental impacts of urban sprawl. There have been many attempts to define exactly what a compact city is, but in general [it] is taken to mean a relatively high-density, mixed-use city, based on an efficient public transport system and dimensions that encourage walking and cycling' (Burton, 2000:1970). Compact city policies have often been designed primarily to reduce the use of private cars and to minimize the loss of open countryside. However, proponents of the concept claim more than just environmental benefits can be gained from intensifying urban areas; in fact 'higher density settlements are argued to be more socially sustainable because local facilities and services can be maintained, due to high population densities, and therefore accessibility to goods and services is more equitably distributed' (Williams, 1999: 168). Furthermore, '...high density urban living is seen as a prerequisite for vitality, vibrancy, cultural activities and social interaction' (Williams, 1999: 168). Therefore, at least theoretically, it appeared that a solution to the sustainable city problem had indeed been discovered in planning literature by the mid 1990s, Contention over exactly what a compact city is, and how a great variety of urban forms have been promoted as being 'compact' has proliferated throughout literature concerned with urban sustainability over the past fifteen years.

However, densification can imply a loss of other important urban quality factors, such as green spaces. And it cause high pressures. But a disconnection of urban green structure, Parks, green spaces and trees, affect our everyday moods, activities and emotional health.

They improve our quality of life in ways that are sometimes understood, often underestimated. Whether we are active in urban nature² or passively encounter city green³, we experience personal benefits that affect how we feel and function. Proof of psychological and social benefits gives us more reasons to grow greener in cities in a sustainable ecological human way.

2. What is eco-city?

Eco-Cities are places where people can live healthier and economically productive lives while reducing their impact on the environment. They work to harmonize existing policies, regional realities, and economic and business markets with their natural resources and environmental assets. Eco-Cities strive to engage all citizens in collaborative and transparent decision making, while being mindful of social equity.

The Eco City is the next step in the evolution of our urban environment: built to fit its place in cooperation with nature rather than in conflict designed for people to live while keeping the cycles of atmosphere water nutrients and biology in healthy balance, empowering the powerless, getting food to the hungry and shelter to the homeless creating a place for everyone in every land for all time. Eco City is a green city where emphasis is

placed on pollution prevention reuse, recycling and efficient use of energy taking advantage of locally available sources.

Eco-city Evolution

The successful evolution of an eco-city will depend on our developing an understanding of the ecological systems that we live with and how we need to relate to them, and on our willingness to act on that information. Three imperatives will form the basis for eco-city evolution: social justice, prosperity, and a healthy natural environment. These are sometimes viewed as separate and even contradictory, but are now merging in the overarching vision of sustainability. Social justice is the gateway to sustainability. Mutual trust and cooperation between neighbors will be essential.

The link between the natural environment and human survival, prosperity, and quality of life is another potent evolutionary force. Environmental destruction is inevitably accompanied by a decline in health and quality of life. The first stage of awareness and application of conservation techniques has gained widespread acceptance. The second stage - the creative reuse of what is already built - is in the pilot or demonstration phase. And already on the drawing boards are plans to recycle existing roads, buildings, and landscapes into the qualitatively new forms that will mark the eco-cities' mature stage.

Just as the history of land use in the watershed has had major effects on the ecosystem, so too will changes in the landscape future.

Climate, urban and suburban development, agriculture and forestry, and land conservation. Before addressing changes in agriculture and forestry, we first examine the patterns and effects of development throughout the watershed. The spread of suburban development, in particular, has reshaped the landscape during the last half-century, the following factors lead to sprawl and its consequent problems:

The desire to live near open space leads to conversion of rural lands and subsequent loss and degradation of existing open space. New development must then locate even farther away, or leapfrog, so that it can also be near receding open spaces. (Beach, D. 2002)

When developments converts open natural land into impervious surfaces, however, it can create or worsen water quality problems. Urban and suburban lands contribute greater amounts of nutrient pollution on a pound-per-acre basis than any other land use other than broken soil agriculture. The uniform placement of houses in subdivisions frequently does not account for each parcel's ecological and physical characteristics. In fact, large land tracts are often stripped of all vegetation and regarded prior to construction. This practice changes a region's hydrology, disrupting natural water flow patterns, greatly increasing sediment and nutrient loads into nearby streams, and eliminating any onsite benefits due to the original vegetation⁴. (Chesapeake Bay Program 2001)

Subsequently planted vegetation, such as young trees and lawns, may require years to provide equivalent ecological benefits. Often they never reach their former levels of benefit. Where development impacts riparian forests, it often reduces the important ecological values and functions of these forests.

3. Where is Bushehr

Introduction

With 27,653 square kilometers, and with 60 kilometers sea border, the province of Bushehr is located on the south-west of Iran, and on the Persian Gulf. Thus this province has remarkable strategic importance for the country and the whole region.

The population of the province in 1996 was 743,675 from which 53% were registered as urban inhabitant, 44.8% villagers and the remaining 0.2% was unsettled people.

The geographical structure of the province divides the province into two different areas; the plain on the west and south -west and the mountainous on the north and north-east. The plain is striated on the Persian Gulf cost, and in includes most of cities and towns.

The weather on the Persian cost of the province is very warm and humid, while the other parts of the province are very war and dry. There are two distinguishable seasons in the province, the winter, with moderate to cold which usually start from November and lasts to March. The summer is very hot and long season, while the spring and the autumn seasons are very short. The average of the temperature in the province is 24C degree; the absolute high was recorded at 50C degree, while the lowest was recorded at 6C degree. The average temperature of the coldest month of the year was recorded at 15C degree in the city of Bushehr, and from the middle of May till the middle of October⁵, the temperature usually rise up to 40C degree. And during 5 months of the winter, while a large part of Iran and most northern Europe and America are usually covered with plenty of snow and is ice, the sunny beautiful cost of Bushehr is suitable for holiday and relaxation. The moderate temperature in the autumn and the winter, the nice sea waves, the beautiful fishes moving across the cost and thousands of sea birds fledging in the blue sky provides marvelous opportunity to spend a pleasant and unforgettable holiday there.

Bushehr and its History

The good and strategic location of the city of Bushehr has been the main reason for the city to become part of eco-city system. It is obvious that the Persian Gulf and consequently the province of Bushehr enjoys a remarkable situation with trade in addition to is remarkable situation regarding military affairs, so it is magnificent for the government and the people for its importance regarding wealth knowledge, political relation and hegemony. Bushehr has a unique character as a city of green and blue – large preserved green areas and blue waters around the city was built on. This unique character is very important as a basis for the future development. It forms a prerequisite for the city, which is, we believe in there, an important factor when people choose to live, work and visit in there.

But the attractiveness also demands good conditions for business and visitors, for housing and cultural events. Therefore our goal is to continue to develop the city while these unique characters at the same time are preserved and enhanced.

2. Case study methodology

A planned city

Land use, transport, and energy systems create demands that are transferred to ecosystems. Urban sprawl is increasing, open space and farmland are disappearing and climate change is a growing concern. Bushehr as a traditional city in Iran as a model of environmental & technological excellence is a famous city in the south of Iran and is situated in the coastal part of Persian Gulf.

There are some items in compact city that we can use them in Bushehr because of its natural climate.

Flexible Construction

The challenge is to design a city in such a way that it can economically adapt to changing functional needs. Compact City could be made flexible in its construction to meet this challenge. First and foremost, the various functions in Compact City must be separated. For example, residential areas are separated from work and commercial areas. The good

thing about Compact City is that it is even more conducive to diversified use of space. (T., McLaren, D. and Hillman, M., 1991)

No Congestion or Noise Pollution

The more effective use of the time dimension in Compact City would reduce dramatically the number of people passing any particular point within the city at any particular time. All the parts of the city on any level would become easily accessible from any other level and any other part by foot, bicycle, car, or by the efficient mass transit system.

Proximity

Proximity, the provision of good public space, the presence of natural landscape and the exploitation of new urban technologies can radically improve the quality of air and of life in the dense city. Another benefit of compactness is that the countryside itself is protected from the encroachment of urban development. The concentration of diverse activities, rather than the grouping of similar activities, can make for more efficient use of energy. The Compact City can provide an environment as beautiful as that of the countryside.

Rich Urban Landscaping

There are other important environmental advantages to a compact form of city that has fewer roads but more landscaped public spaces. Parks, gardens, trees and other landscaping provide vegetation that shades and cools streets, courtyards and buildings in summer. Cities are generally 1-2⁰C warmer than their hinterland. The overall effect of rich urban landscaping is to reduce the heat of cities. Bushehr it self has narrow lane with high walls because of sun to put them in shadow and make it cooler, there for texture of city become compact to make it happen. In other places we can find more landscape that we can use them as public space. Landscape plays urban areas are relatively devoid of vegetation. (de Roo, and Miller, 2000)

Reduced Waste of Energy

Both a compact city and eco-city reduces the waste of energy. Generating electric power produces hot water as a by-product, which in conventional power plants is simply wasted. Local Combined Heat and Power plants can be used both to distribute electricity and, due to their proximity, to pipe hot water directly into buildings. This can more than double the efficiency of conventional urban power distribution. City rubbish, which is usually either dumped as landfill or incinerated, both with polluting effects, can be burned by local CHPs and supply up to 30 percent of a community's energy needs. In a city that combines a variety of activities, it is easier to transfer waste heat from one activity to another. Excess heat generated by offices, for example, is usually dissipated into the environment, but it can be reused in other places.(Williams, 2000)

4. How to make bushehr as a model of untie-sprawl city

The Bushehr Regional Growth Strategy

Today's bushehr is very much a result of planning efforts and development strategies during the last century. An important part of the strategy was to buy land for development and also to preserve areas for recreation purposes. The strategy and the planning goals were inspired by modernistic ideals with clear physical separation between dwelling, work and business areas, following the principles of zoning.

In the beginning a city-wide comprehensive plan was made that lined out a strategy for the growth of the city. Each suburb was designed as a neighborhood unit with a social and commercial core, high density housing close to the station. A green structure was established with green areas and parks dividing the neighborhoods.

Strategy for the 21st century:

Build the City inwards

Today the city is facing new challenges in creating a modern sustainable city for the next century making it obvious that the old strategies in many ways have become obsolete. There are several reasons for this. The environmental issues came into focus during the later decades of the last century, very much as a result of increasing car traffic. Since the city decided to protect valuable green areas there was little land left possible to develop within the city borders, still the city was growing. Industries moved out from the city and left behind more or less abandoned land.

Obviously there was a need for new planning strategies. A broad discussion among citizens, organisations, local authorities, companies, governmental authorities was part of the process in making the plan. At public meetings and exhibitions all around the city citizens gave their opinion about the plan. (Pemer, 2001)

The aim of the City Plan is to "build the city inwards". The new strategy is not to use virgin land for new development, but rather reuse already used land. Today, for one reason or another, lots of land is not as well used as it should be regarding its attractive location close to the inner city or as it constitutes a node for local and regional communications.

Urban development areas connected with public transport

In the plan a number of urban development areas are pointed out, most of them constituting a circle around and close to the inner city. In these areas the city plans to develop mixed-use areas with attractive housing, business facilities etc. The idea with these urban development areas is to reuse and redevelop old partly abandoned industrial and harbour areas and also take advantage of already existing investments in infrastructure.

Environmentally friendly mixed-use urban development

The first of these development areas is where the focus is on the water. This run-down port and industrial district is being transformed into a modern, ecologically sustainable part of the city. Environmentally Bushehr will be a well-planned area with its own recycling model and its own local sewage treatment plant.

Preserving and developing the green structure

Bushehr has retained a great deal of its natural and cultural landscape. The waterways and the inner archipelago of the province contribute to the city's character as do the green open land areas and greenways, all over present in the city and integrated into the built-up environments.

The green structure is important for health and recreation of people living in there; it allows us to experience natural qualities and scenic beauty in the city, caters for a rich flora and fauna, creates a good urban climate and provides a basis for a sustainable city.

Environment and democracy

Resources must be handled more efficiently. Travel and transportation must be adapted to environmental needs. Food must be healthy and wholesome. Green areas within

the city must be protected. The local infrastructure must be suited all forms of traffic. This reflexes thoughts and wishes of Bushehr inhabitants and will be an important input to the ongoing work with the environmental programme. (Pemer, 2001)

Since public awareness of environmental issues has grown, it is no longer sufficient to consider environmental issues solely from the viewpoint of the administration. Certain aspects of the environmental programme call for active participation by the inhabitants themselves.

Social aspects of sprawl: Mental health

One of the original motivations for migration to the suburbs was access to nature. People like trees, birds, and flowers, and these are more accessible in suburbs than in denser urban areas.

Moreover, contact with nature may offer benefits beyond the purely aesthetic; it may benefit both mental health and physical health. In addition, the sense of escaping from the turmoil of urban life to the suburbs, the sense of peaceful refuge, may also be soothing and restorative to some people. In these senses, there may be health benefits to suburban lifestyles.

On the other hand, certain aspects of sprawl, such as commuting, may exact a mental health toll. For some time automobile commuting has been of interest to psychologists as a source of stress, stress-related health problems, and even physical ailments. Evidence links commuting to back pain, cardiovascular disease, and self-reported stress. As people spend more time on more crowded roads, an increase in these health outcomes might be expected.

5. Conclusion

Bushehr's future urban growth strategies, at the regional, district and community levels, represent a decisive relation with traditional 'patterns of development.

Plans for Bushehr's urban future follow a theoretical debate over the virtues of urban sprawl and compact city types of development to move away from sprawl as the basis for urban growth and focus more on intensification. However, there are many critiques of the compact city thesis, and those critiques can be readily applied to Bushehr, especially with regards to feasibility and acceptability problems that have already plagued the implementation of intensification, as higher-density urban living contradicts. To achieve Bushehr's growth management goals, feasibility and acceptability issues with urban intensification will need to be overcome.

Policy Recommendations

Communities are not sitting back waiting for government or business to come up with the brilliant solution to urban sprawl. Some communities are taking action on their own. Whether urban, suburban, or rural, it will take a coordinated effort among the divergent interest groups to fix the sprawl problem. A long-term commitment is needed to address the legacy of neglect and procedural, geographic, social, and intergenerational inequities that are exacerbated by sprawl. A major challenge facing the region is to create meaningful forms of collaboration among the regional actors. The following policy recommendations are offered as a start:

Streets for Walking, Bicycles, and Transit.

As a rule, sprawl development is not pedestrian, bicycle, or transit friendly. Infrastructure enhancements and service improvements are needed to get people out of their homes and cars. Walking and biking are two major travel modes that produce zero

pollution. In addition, sidewalks, bike lanes, jogging paths all encourage physical activity, enhance public health, and promote social interaction and a sense of "community."

Pedestrian injuries and fatalities

The most dangerous stretches of road were those built in the style that typifies sprawl: multiple lanes, high speeds, no sidewalks, long distances between intersections or crosswalks, and lined with commercial establishments and apartments.

While many factors contribute to the high toll of pedestrian fatalities, including inadequate lighting, and pedestrian behavior, the proliferation of high-speed, pedestrian-hostile roads in expanding metropolitan areas play an important part. Although a shift from automobile use to walking offers important public health benefits, safe and attractive sidewalks and footpaths are needed. Much of the knowledge needed to make progress is available, but further research might help clarify the best and most cost-efficient ways to build walkways, and the most successful approaches to zoning, financing, and other incentives.

As discussed above, further research is needed to clarify the complex relationships among land use, transportation, and eco-city. What approaches to urban planning, design, and construction are most likely to reduce air pollution, reduce urban heat, encourage physical activity, and promote mental health and have a city without sprawl?

Some interventions may be relatively simple, such as planting more trees or providing more sidewalks. Others are more complex and/or expensive to implement, such as mass transit and mixed-use zoning. For each of these, standard health research methods, ranging from clinical trials to observational epidemiology, may offer insights. Such research will require innovative partnerships with other professionals, such as urban planners, architects, and real estate developers.

It is especially important to recognize and study "natural experiments." Patterns of urban land use are changing, with migration back into inner cities, suburban growth boundaries, development of mixed-use projects, innovations in mass transportation, green space programs, and related initiatives.

As we recognize and understand the health costs of urban sprawl, we can begin to design solutions. Many of these are found in an urban planning, including higher density, more contiguous development; preserved green spaces; walk able neighborhoods; limited road construction, balanced by transportation alternatives; and effective, coordinated regional planning. Importantly, less air pollution, more physical activity, lower temperatures, fewer motor vehicle crashes—would also yield collateral benefits such as a cleaner environment and more livable neighborhoods.

Today, about 2.8 billion⁶ people live in coastal cities. This has significant implications for the coastal environment, inhabitants and ecosystem stability. These trends provide challenges to the basic values coastal environments offer as well as the values held by the communities located in these areas.

Coastal ecosystems are among the most productive on earth. It has been estimated, for example, that more than 90% of the planet's living and nonliving resources are found within a few hundred kilometers of the coast. These valuable natural assets are seriously threatened by coastal development pressures, coastal sprawl and coastal pollution.

Preserving the natural values we associate with coastal regions will be a significant challenge on a planet whose population is projected to reach eight billion or more people. Compounding these challenges are the prospects of the vulnerabilities these regions face. Among these are climate changes, sea level rise, new maritime security needs associated with increase transportation by sea, and the ever present danger of extreme events such as tropical storms and tsunamis.

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Endnotes

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² planting trees, growing gardens

³ such as a stroll through a park

⁴ shading, animal habitat, sediment retention

⁵ for 140 days

⁶ more than 40% of the total global population