



Surveying the Environmental Quality of Coastal Cities to achieving urban Sustainable Development (Case Study: Bushehr Port)



Fatholah Akbarianfar

MA of geography and urban planning, University of Sistan and Baluchestan, Iran
Fatollaakberi@yahoo.com

Hosein Komasi

PhD student of geography and urban planning, Payame Noor University Tehran, Iran
Komasi1365@gmail.com

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Name of the Presenter: Fatholah Akbarianfar

Abstract

Today, due to the unique attractiveness and facilities in coastal cities, a large population has flowed into these cities. This has made it necessary to pay more attention to these cities more than before. It seems special climatic and locality conditions at the beaches has made these cities very vulnerable in terms of environmental circumstance. The purpose of this study is to evaluate environmental quality of Bushehr port to achieving urban sustainable development in citizens' viewpoint. Considering the purpose, this research is practical and its method is descriptive-analytical. The results of Binomial Test in SPSS software showed that garbage gathering situation with mean 3.39 and the 0.000 significance level is favorable and other components quality is critical and lower than the average level. Therefore, first of all for sustainable development and maintaining balance coastal environment of Bushehr, noise and air pollution, sewerage and then roads quality should be taken into special consideration and with a subtle look, be included in urban development plans.

Keyword: Coastal cities, environmental quality, Sustainable development, Bushehr.

1. Introduction

The rapid rate of urbanization during the 20th and 21st centuries has created not only socio-economic problems but also an unprecedented concern of the physical environment degradation (Sinha, 2007). Economists, social scientists and government look at this issue from any particular viewpoint. Recent studies have shown that today, most urban communities are concentrated along or near coasts (Hinrichsen, 1999; Eugenio, 2001). Among the issues that could threaten the future of these sensitive areas are Population growths, growing intervention in the natural environment of coastal areas, garbage generation, noise pollution, etc.

The Club of Rome with its report "limits to growth" is the first and most organized reaction in relation to quality of life. Club of Rome's main focus was on the environment, that today attention to the quality of life step beyond the environment as social and cultural.

Recently, quality of life has been proposed in sustainable development literature and development planning, and has a special place. National and local governments, various organizations are working on measurement and indicators making and several indicators for measuring it have been introduced (Mahmoudinejad and Sadeghi, 2009). In recent years a group of researchers and institutions, have been investigating quality of life with emphasis on the field of environmental sustainability (Portney, 2003; Smith and Levermore, 2008; Moser, 2009).

One of the reasons that politicians, policy-makers and planners are constantly faced with decisions on environmental, social and economic issues, directly linked with quality of life, at a national, regional, urban and neighborhood level (Morais and Camanho, 2011). In report of the European spatial development landscape, which was prepared by European Commission in 1999, it is stressed that today most of the cities are fighting against environmental problems like noise, air and water pollution, traffic, waste, extreme water. For this reason planning as a management science of systems control to improve people's lives (Ziari, 2009), and improvement of environmental quality in many urban areas is necessary (Senlier et al, 2009).

Environmental factors are including important and tangible matters in urban communities. For example, urban waste, both industrial and domestic, causes pollution of urban space, incidence of diseases and will increase urban costs. Air and noise pollution also seriously harm residents' quality of life and can cause health problems for children and adults (Verma, 2007). Those are produced by motor vehicles, garages, urban industries and etc. During the past 20 years, numerous scholars the interaction between social sciences and environmental planning have proposed that measurements of environmental quality should include both objective measures of environmental phenomena and subjective measures of human responses to them (van Kamp et al, 2003; Cummins, 2000). Approach of development should be accompanied by a written planning and management to ensure a balance and maintain the stability of coastal cities.

There is a mysterious attraction about the coastal planning (Lazarow, 2002) and environment in development plans (Behzadfar, 2011). Urban development strategies of Bushehr discussed the improvement of the urban environment, water and sewage facilities and other items, but status of their quality and citizenship viewpoint has received little attention. Thus, the aim of this study is surveying the environmental quality of Bushehr port to achieving urban sustainable development and public policy-making to satisfy the Bushehr urban society, planning and maintenance of environmental sustainable development particularly.

2. Case Study

Bushehr port is located in latitude of 28°59' north and longitude 50° 51' Eastern Hemisphere (North Coast of Persian Gulf). The legal extent of the city is 8083/51 hectare that urban built environment is 1993/53 hectare equivalent with 24/66% of city whole.

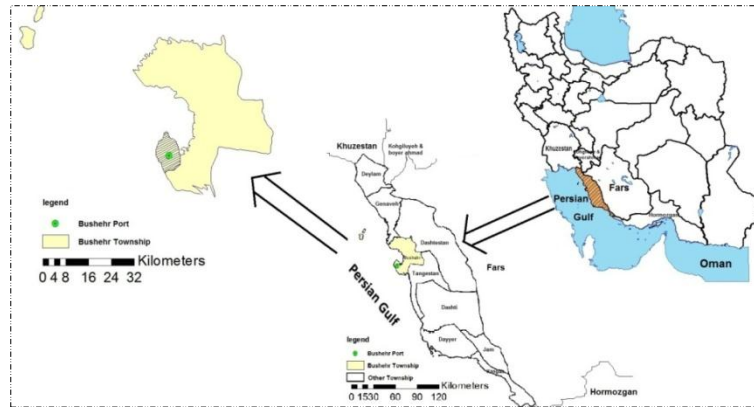


Fig. 1: Location of Bushehr port in Iran country

3. Definition of components

There is no single methodology for determining indicators and environmental factors. The relevant indicators can be selected by examining the literature, interviews with individuals (e.g. experts, residents). In this study the environmental indicator and its components (Tab. 1) were selected.

Indicator	Domains
Environmental	city roads, sewage and water excretion systems, garbage collection, air pollution, noise pollution

Tab. 1: The selected Indicator and components

To assess the environmental components, the following questions were raised:

- Construction of Roads in the city is proper; the city's sewage and water excretion systems is well; the garbage collection is appropriate; air pollution is a big problem; noise pollution is a big problem.

4. Research Methodology

Considering the purpose, this research is practical and its method is descriptive-analytical. The Methodology or approach and policy of research, is based on the philosophy of Interpretivism.

Data collection in this study is based on assumptions and questions designed to both a library (books, Persian and Latin articles, websites and other documents) and field (questionnaire). To calculate the sample size, the formula in the Cochran (Eq. 1) was used:

$$N = \frac{\frac{(1.96)^2 \cdot .8 \cdot .2}{(.05)^2}}{1 + \frac{1}{54400} \left(\frac{(1.96)^2 \cdot .8 \cdot .2}{(.05)^2} - 1 \right)} = 244 \cong 255 \quad (1)$$

The main feature of this formula is that the society volume can also be involved and a more rational sample can be achieved (Hafeznia, 2010). Based on Cochran formula with 95% confidence level, 244 households were defined as the sample size, it should be mentioned that for achieving better results, sample size was increased to 255 families. Questionnaires during 2 weeks with surveying of 255 household residents of Bushehr aged over 20 years, were completed by the authors.

Cronbach's alpha coefficient was used to determine the reliability of the questionnaire. That reliability of the questionnaire with 0/852 alpha coefficient was very good.

Cronbach's Alpha	N of Items
0/852	11

Tab. 2: Reliability of questionnaire

5. Results and Analysis

To evaluate the environmental quality of the target community, we faced two modes: success (undesirable) and failure (desirable) in Binomial test. Analysis of Binomial test is this way that considers scores higher than 3 as the failure and 3 or smaller as the success, it also tests this question whether the quality of environment at Bushehr is desirable or not. If the significance level be lower than error rate (0/05), thus the inequality of observed proportion than test proportion is concluded. The statistical assumptions of Binomial test (Eq. 2) are:

$$\begin{cases} H_0: P = 0/6 & \rightarrow \text{success and test proportion are equal.} \\ H_1: P \neq 0/6 & \rightarrow \text{success and test proportion are not equal.} \end{cases} \quad (2)$$

According to the significant level of environmental indicator (sig=0/000) in (Tab. 3), Assumption of equality the observed proportion than test proportion (0/6) is rejected. Then due to the higher observed proportion in environmental indicator (0/72) in comparison with the test proportion, the Bushehr citizen satisfaction is evaluated at the lower level, and research hypotheses with 95% confidence level is acceptable. In the components as well, since the significance level in all components is less than 0/05 alpha, the equality assumption of these components in observed proportion than test proportion will be rejected, and citizen satisfaction of the garbage collection, is evaluated in the highest level with an 3/39 average only.

Components	Category	N	Observed Prop.	Test Prop.	Exact Sig. (1-tailed)
Quality of roads (construction)	Group 1 <= 3	171	0.67	.6	.030
	Group 2 > 3	84	0.33		
	Total	255	1		
Quality of sewerage	Group 1 <= 3	173	0.68	.6	.010
	Group 2 > 3	82	0.32		
	Total	255	1		
Garbage gathering	Group 1 <= 3	107	0.42	.6	.000 ^a
	Group 2 > 3	148	0.58		
	Total	255	1		
Air pollution	Group 1 <= 3	209	0.82	.6	.000
	Group 2 > 3	46	0.18		
	Total	255	1		
Noise pollution	Group 1 <= 3	196	0.77	.6	.000
	Group 2 > 3	59	0.23		
	Total	255	1		

environmental condition	Group 1	≤ 3	184	0.72	.6	.000
	Group 2	> 3	71	0.28		
	Total		255	1		

Tab. 3: environmental quality in Binomial Test

a. Alternative hypothesis states that the proportion of cases in the first group $< .6$.

6. Conclusions

Urban sustainable development requires identifying environmental limits to human activity associated with cities. One way of achieving the environmental goals of sustainable development is considering the viewpoints of citizens on environmental issues. Test results confirm the quality of environmental indicator in Bushehr is critical. So the quality of roads, sewerage system and water excretion in city is not appropriate. Air quality (with the most dissatisfied) is very bad and noise pollution is next level. Thus in 95% confidence level, in 5 components affecting environmental quality, 4 components of roads quality, sewerage system and water excretion, air quality and noise pollution are in very bad levels, and only the situation of garbage collection with an $3/39$ average and 58% satisfaction is in good level. According to the revised plan, in master plans as well as observations made in Bushehr port, inappropriate quality of roads (construction), lack of sewerage systems and excretion of surface waters, low slope in the middle city section, high humidity and dust are major problems in this city.

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