

# **Indicators of sustainable urban development: A review of urban regeneration projects in Karachi, Pakistan**

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## **Abstract**

The notion of sustainability is widely used from micro to macro scale studies but only few approaches deal with its measurement. Increased global interest in sustainability has triggered attention in indicators as a means of achieving a more sustainable world. Although the search for indicators has led to the development of criteria for good indicators, it has also been dominated by scientific elites. After the implementation of new devolution plan, last six years have seen significant changes in the mega city of Karachi, Pakistan; both in terms of environment and physical landscape. Recent modifications in the landscape of this mega city has produced diversified impacts on the dwellers who have to suffered major problems in shape of poor air and noise quality, ultimately destructing the human as well overall ecological health. The concept of urban renewal has been legitimately applied but the impact assessment of interim effects has not been conducted. In this paper, a set of indicators have been developed which could be useful for the interim evaluation of the alleged urban regeneration process. An attempt is also made to answer the question about the possible involvement of the common public as the evaluator during the urban development activities. Mostly, these questions are recommended to be asked more objectively for the quantitative analyses. The approach proved to be quite appropriate for achieving sustainability where the people's choices and satisfaction has been taken into consideration.

Keywords: Urban renewal; Sustainability science; Environmental planning; Urban ecosystem; Urban geography

## **Background**

Urbanization is occurring on a staggering scale. The urban population of the world is estimated to increase from three billion in 2000 to five billion in 2030, with almost all of the growth occurring in developing countries. Therefore, it is obvious that environmental problems as well as social and economic problems characterizing cities in developing cities will remain a challenge for authorities. Urban planning is a fundamental tool for urban development and management. It is understood to refer to the planning of the physical structure of the development or land-use planning through the implementation of different types of plans: structure plan, local strategic plan, action or informal plans and masters' plans. Nevertheless, in recent years it has been much less effective than it could be.

Sustainable Urban development has become a widely recognized and acknowledged goal for human society ever since deterioration of environmental and social conditions in many urban areas of the world has taken place. Which indicates that its sustainability is may be at risk. Sustainability is not an absolute, independent of human conceptual frameworks. Rather it is always set in the context of decisions about what type of system is to be sustained and over what spatio-temporal scale (Allen and Hoekstra, 1994). A definition of sustainable

development from an ASCE/UNESCO working group on developing sustainability criteria for water resources systems is put forth here as "... systems designed and managed to fully contribute to the objectives of society, now and in the future, while maintaining their ecological, environmental and [engineering] integrity" (ASCE/UNESCO, 1998).

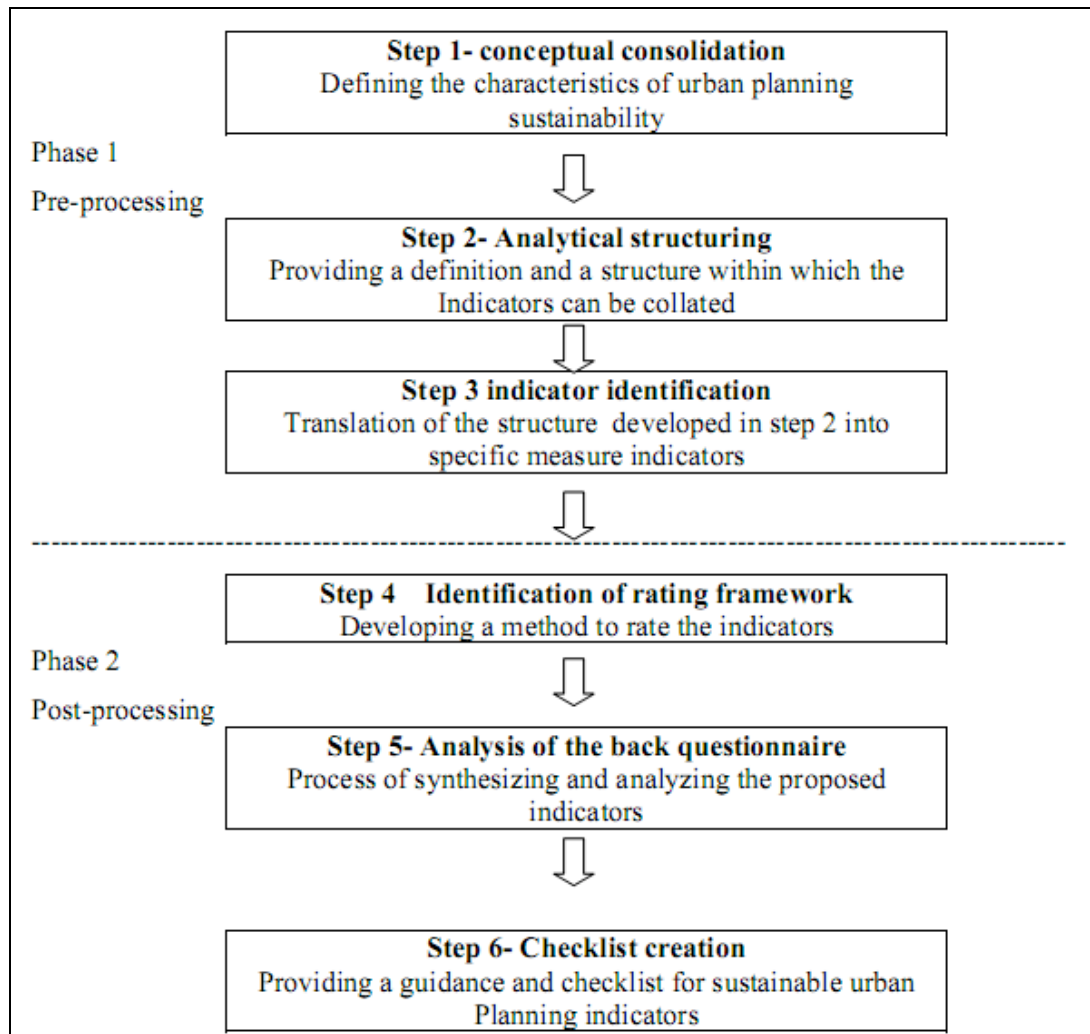
Sustainable development is truly about achieving a balance between several objectives (environmental, economic and social) over dynamic time and spatial horizons. Holism versus reductionism is advocated (Haimes, 1992; Hellströmet *et al.*, 2000). Sustainable urban development means different things to different people. While there is a general consensus that "sustainable urban development" is a good and desirable state of development that countries should commit to, considerable confusion remains on how to translate this broad objective into national and local strategies or plans of actions for achieving it. (UN, 2001)

After the implementation of the new devolution plan, the last six years have seen significant changes in the mega city of Karachi, Pakistan; both in terms of environment and physical landscape. Recent modifications in the landscape of this mega city has produced diversified impacts on the dwellers who have to suffered major problems in shape of poor air and noise quality, ultimately destructing the human as well overall ecological health. The concept of urban renewal has been legitimately applied but the impact assessment of interim effects has not been conducted. In this paper, a conceptual framework has been developed which could assist in selecting and filtering a set of sustainability indicators of urban regeneration projects. The set of indicators has been implemented on Karachi and recent development activities have been assessed.

## **Methodological Framework**

The literature review is the first step of the methodological process. Primary readings of books, papers articles and reviews from academics, professionals and from institutions and organisations have been made. The purpose of primary readings is to have a broad understanding of the issue of the concern within a theoretical framework; and also to get more understandings firstly, about urban sustainable development and its indicators and secondly about the urban regeneration process.

Following the primary readings secondary readings have been made regarding assessment frameworks with the intent to figure out more appropriate assessment techniques regarding the time limit but also concerning to the current thesis topic. The conception of the matrix through data collection and questionnaires is the second step of this methodological process. The purpose of conceiving this matrix is to have at the end, a list of sustainable urban development indicators as complete as possible, with their description while providing some measurement techniques as well. Therefore, thanks to the data collection from the readings, an indicative complete list of sustainable urban development indicators has been provided, joined to a questionnaire. The questionnaire consisted of "yes or no" questions, asking experts to agree or not with each sustainable urban development indicator according to urban planning process and according to three fundamental issues which are environmental, economic and social issues. People of this target group are mainly experts in this field of study and practitioners. Figure 1 presents the conceptual framework that has been used for the development of the set of indicators.



Source: Siko, 2007 adapted from Hemphill (2004)

## Results and Discussion

The last few years under new administration, the mega city of Karachi has carried out different development projects on a large scale thus courting foreign investment, encouraging international ties and boosting the city's tourism. Its goal is to turn Karachi into the next Dubai and its Green Karachi projects aims to plant thousands of trees in the mega city. But all this development is somehow deteriorating the overall ecological environment. To overcome this damage we need smart and innovative urban planning and must look upon the appropriate indicators. Table 1 presents the selected indicators (out of dozens), which helps to assess the urban regeneration process.

One of the major indicators is traffic congestion. At the heart of our urban mess is a paradigm which is geared towards making a city suitable for cars rather than people. Recent efforts are made to ease Karachi's traffic congestion, for instance, by building wider roads, flyovers, elevated expressways, and a much-talked about rail-based mass transit system are unlikely to ease traffic congestion in the long run because these initiatives are de-linked from social and environmental land-use planning (particularly, housing development), and transport needs of the non-car owning majority. Experiences from around the world shows that traffic jams create demand for new road infrastructure which in turn stimulates development around major roads which leads to further increases in traffic congestion and yet more demand for infrastructure. The vicious circle continues, more jams, more pollution and more poverty.

**Table 1 Selected indicators of urban regeneration**

General Criteria	Sub Criteria	Indicators
Environmental	Buildings	Construction material, energy and land usage
	Noise	No. of noise complaints
	Transportation	Construction material, energy and land usage
	Water	Construction material use, energy use, land use, chemical usage, contaminants
	Air	Number of air pollution complaints
Economic	Buildings	Capital and operation and maintenance costs, Affordability of housing, Expenditures in research and development
Social	Transportation	Capital and operation and maintenance costs, Expenditures in research and development; Choice of mode, time of travel
	Water	Capital and operation and maintenance costs, service fees
	Safety	Feeling of insecurity
	Mobility	No of people injured in traffic accidents
	Buildings	Supply of housing,
	Health	Indoor air quality, Public satisfaction
	Water	Access to portable water and sanitation services, quality of water

## Conclusion

If we say that the sustainability of the world is at stake, then we need appropriate indicators because ‘we measure what we value, and we value what we measure’. Indicators provide crucial guidance for decision making in a different ways. These translate physical and social science knowledge into manageable units of information which helps in decision making. Moreover these can warn us in time to prevent lasting social, economic and environmental damage.

The study conducted here shows that the presented framework is able to produce reliable and valid assessment results for evaluation of sustainability performance of local urban regeneration projects. In addition to the assessment of the overall performance, the model also helps to identify the deficiencies of the renewal projects, and the level of satisfaction of the affected persons and the concerned parties to the renewal projects being assessed.

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