

The Concept of Urban Sustainability : The Key Component In Achieving Sustainable Development of Cities

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ABSTRACT

The growing urbanization in India is a major problem for the policy makers and planners. For tackling this situation there is a need for sustainable urban development. Urban development should be in harmony with nature. This paper attempts to understand the problems faced by the cities in achieving urban sustainability. It also highlights the different studies done on developing an urban sustainable index and the dimensions which are used in these studies. It also elucidates the challenges which are faced while developing a sustainability indicator. Not a lot of research has been done in India regarding the development of an urban sustainable index. Hence the researchers should focus more on this and try to develop an index for the cities. These index will help the city planners to plan for the city development accordingly.

Keywords : Urban Sustainability, Sustainability, Indicators, Sustainable Development, Urban Sustainability Index

I. INTRODUCTION

Sustainability has been defined in many different ways, the Brundtland Report captures its essence in broad terms: meeting the needs of people now without devastating the life-supporting ecosystems for future generations. (Huang, Lu, et.al, 2015). Sustainability is a dynamic process rather than a fixed state: “In essence, sustainable development is a process of change in which the exploitation of resources, the direction of investments, the orientation of technological development, and institutional change are all in harmony and enhance both current and future potential to meet human needs and aspirations” (WCED 1987). The basis of sustainable development is to promote harmony among human beings and between humanity and nature. The pursuit of sustainable development requires striving for a balance between economic goals, human (social, cultural, liveability and health) and environmental needs. This involves a process of effective citizen participation in decision-making (Jain, A.K., 2010).

As a focus of sustainable development, urban sustainability has become increasingly prominent on political agendas and scientific studies during the recent

decades (Huang, Lu, et.al, 2015). According to Rosario Turvey ‘urban sustainability’ is the idea of urbanised towns and cities organised without an excessive reliance on the surrounding hinterland and characterised with liveable spaces, prosperous economies, secure environment and empowered communities. Adinyira et al., describes the concept of urban sustainability as a desirable state of urban conditions that persists overtime. It is often characterized by issues such as inter-generational equity, intra-generational equity, protection of the natural environment, minimal use of non-renewable resources, economic vitality and diversity, community self-reliance, individual wellbeing, and satisfaction of basic human needs. Panda S. et.al, 2016 defines Urban sustainability as the challenge to “solve both the problems experienced within cities and the problems caused by cities”, recognising that cities themselves provide many potential solutions.

II. NEED FOR URBAN SUSTAINABILITY

More than half of the world’s people now live in cities and the figure will rise to more than two thirds by 2050. Urbanisation has enormous environmental consequences, both global and local. Already city dwellers are thought

to be responsible for up to 70% of the world's greenhouse gas emissions. Sprawling urban development consumes arable land and vital green spaces. Growing numbers of city residents put pressure on energy and water resources, waste management, sewer systems, and transport networks (Green City Index, 2012). Nevertheless, as cities grow, managing them becomes increasingly complex. The speed and sheer scale of the urban transformation of the developing world presents formidable challenges. Of particular concern are the risks to the immediate and surrounding environment, to natural resources, to health conditions, to social cohesion, and to individual rights (Cohen B., 2006). Urban problems in developing countries are becoming more acute as populations rise and resources become scarcer (Williams K., 2010).

Most of these environmental problems have their origin in unplanned development of cities leading to higher use of resources such as land and water. Many times, there is not even consensus as to which challenges are more important and need to be addressed. It is therefore necessary to have an understanding of India's serious urban environmental challenges along with empirical evidence, to enable policymakers to examine them. (Sridhar K.S., Kumar S, 2013). In general, it is recognized that, in order to respond to the idea of sustainability, urban areas have to maintain an internal equilibrium among economic activity, population growth, infrastructure and services, pollution, waste, noise, etc., in such a way that urban system and its dynamics evolve in harmony, internally limiting, as much as possible, impacts on the natural environment. Thus, for this purpose, there is a need to understand concepts of urban sustainability (Balachandra B., Reddy B.S. 2013). Sustainable urbanization is a dynamic, multi-dimensional process. It embraces relationships between all human settlements, from small towns to metropolises, as well as between urban centres and their surrounding rural areas. Most crucially, it includes not only environmental but also social, economic and political-institutional sustainability. (UN Habitat/DFID, 2002).

III. INDICATORS FOR URBAN SUSTAINABILITY

Sustainability Indicator is a statistics tool which captures and measures a particular aspect of sustainable

development in a way that is easy to understand and communicate, permitting monitoring and subsequently the execution and conduction of a public policy or process of management. The number of indicators of sustainability depends on the level of analysis that needs to be carried out as well as the variables and categories which define each case (Moreno S.H., Martínez J.H. 2010). Indicators can play an important role in turning data into relevant information for policy makers and help in decision-making. They also simplify a complex and large information base. In this way, the indicators provide a "synthesis" view of existing situation. The indicators have become well established and are widely used in diverse fields and at various levels, viz., global, regional, national and local (Balachandra B., Reddy B.S. 2013). Indicators are important for establishing a mechanism for accountability necessary for good governance (Bhattacharya S. et.al, 2016). Adoption of suitable indicators is fundamental to implement sustainable development at the urban level (Scipioni et al., 2009).

Indicators help in knowing the direction and distance from the target and urban sustainability index obtained by an aggregation of all the indicators shows where the link between economy, environment and society is weak. It gives a quantitative and measurable definition to the progress in urban sustainability. The quantitative values are easy to understand and grasp by the policy makers (P. Sudha et al., 2016). Indicators help city managers and decision makers monitor the performance of policies. Use of city indicators at the national level can enable national governments to determine the management and financial capacity of municipalities. Indicators are necessary in order to assess trends to determine future implementation of policies (Bhada P., Hoornweg D., 2009).

To measure the performance of a city in terms of sustainability, establishing a system of indicators is essential. Hence, in recent years, while preparing the sustainability index, an integral approach involving indicators of different dimensions such as 'economic', 'environmental' and "social" is being used. Economic dimension encompasses the growth, development and productivity of the city. Environmental dimension deals with the ecosystem wellbeing and social dimension deals with human well being. Measuring all the

sustainability dimensions is often necessary to satisfy the needs for theoretical comprehensiveness and for diagnostic analysis of policy action areas.(Huang, Lu, et.al, 2015)



Fig 1. Cycle for sustainable urban development

Source: Digant P., Kevin M.(2016).” Sustainable Urban Development a: need of 21st Century”

There are a few prominent sustainability planning approaches that are used by cities and various agencies for planning purposes. These include frameworks, methodologies, and study reports having sustainability planning as their primary scope, or indirectly contributing to the sustainability agenda as a larger goal. Thus there is neither a single universally accepted nor widely practiced framework for sustainability planning, nor for designing sustainability indicators (Bhattacharya S. et.al, 2016).

There are many organizations that have come up with their own indicator systems. Some of them are given below-

Urban Audit (2003) – Urban audit assesses the quality of life of the European towns and cities. It takes into account 9 variables which are demography, social aspect, civil involvement, economic aspect, training and education, environment, travel and transport, information and society and culture and recreation. These are further divided into 25 domains.

The Green City Index (2009) - This is a research project conducted by Economist Intelligence Unit (EIU)

sponsored by Siemens group. More than 120 countries all over the world green city index were calculated. Depending on the region approximately 30 qualitative and quantitative indicators were taken across eight to nine categories. It covers CO2 emissions, energy, land use, transport, buildings, water and sanitation, waste management, air quality and environmental governance.

The Urban China Initiative (2011) - This is a think-tank founded in 2010 by Columbia University, McKinsey &Company, and Tsinghua University. This is first of a kind developmental tool created just for Chinese cities. 112 Chinese cities were ranked on the basis of economic, social and environmental indicators. To measure the level of sustainability four broad categories were taken which were social sustainability, economic sustainability, resource sustainability and environmental sustainability which was further broken down into air quality, waste treatment and built environment.

Star Community Rating System (2014) – STAR stands for sustainability tools for assessing and rating communities. This is a certification program to recognize communities. It has 7 major goal areas which are built environment, climate and energy, economy and job, education arts and community, equity and empowerment, health and safety, natural systems. Each of the goal area has 5-7 objectives. Hence there are a total of 44 objectives which the communities need to achieve for acquiring a STAR rating.

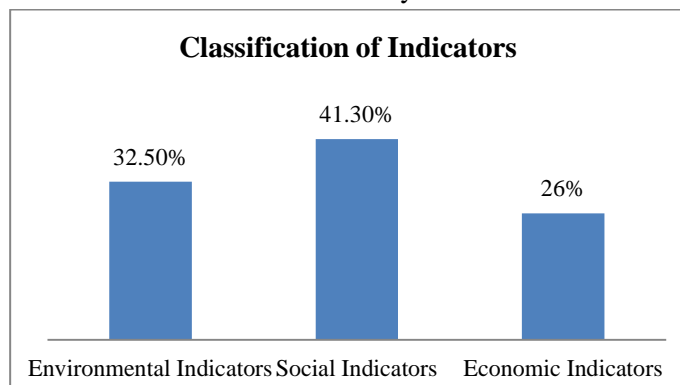
Sustainable Cities Index (Australia, 2015) - It is a project by Australia’s Conservation Foundation. It measures the urban sustainability of Australia’s 20 largest cities. To measure the level of sustainability 15 indicators were taken in three broad categories which were environmental performance, quality of life and resilience.

The Sustainable Cities Index (2016) - developed by Arcadis it ranks 100 global cities on three dimensions of sustainability i.e. people, planet and profit. People sub index include health, education, income inequality, crime, housing, work—life balance, dependency ratio and living costs. Planet ranks cities on energy, pollution and emission. Profit assesses business environment and economic health.

IESE Cities in Motion Index (2017) - This is an annual study launched by IESE Business School Centre. It ranks 180 cities in relation to 10 key dimensions which are economy, human capital, environment, international

outreach, social cohesion, governance, urban planning, public management, mobility and transportation.

In all the above studies environmental, economic and social indicators were taken. Out of the 203 indicators 26.1 percent belonged to economic dimension, 32.5 percent to environmental dimension and 41.4 percent to social dimension. All these studies focus more on social and environmental dimensions for achieving urban sustainability. For developing the indicators of sustainability a balance should be maintained between all the dimensions of sustainability.



Source: Based on Calculation

IV. THE INDIAN SCENARIO

Urban India today is “distributed” in shape—with a diverse range of large and small cities spread widely around the nation. As the urban population and incomes increase, demand for every key service such as water, transportation, sewage treatment, low income housing will increase five- to sevenfold in cities of every size and type. And if India continues on its current path, urban infrastructure will fall woefully short of what is necessary to sustain prosperous cities (The Planning Commission, Approach to the 12th Plan).

India, while also urbanizing on a monumental scale, is still fairly early in its transition to an urban economy. Only 30 percent of Indians live in cities of all sizes. State borders appear to limit mobility, and economic policies favouring small-scale local production have encouraged people to stay closer to home. Yet the number of people in India’s towns and cities increased from 290 million in 2001 to an estimated 340 million in 2008 and could hit 590 million by 2030 (Sankheet al., 2010). India is one of the least urbanized countries of the world, yet its urban population is second largest amongst the countries of the world. Most of the urban growth in

India is taking place in slums. This is because of the large scale out-migration of rural population into. Secondly, there is the problem of one-sided growth of metropolitan cities at the expense of smaller towns. Smaller towns failed to attract immigrants due to poor infrastructure and employment opportunities there. In big cities, population explosion and rural migration is hampering the provision for adequate water supply, education facilities, traffic and housing (Ghosh R., Kansal A., 2014). Following are the results of some of the studies done on the Indian metro cities.

The Sustainable Cities Index (2016) by Arcadis ranks Bangalore at 91st position, Mumbai at 92nd, New Delhi at 97th and Kolkata at 100th position out of 100 cities.

According to A.T. Kearney’s **Global City Index** (2017) New Delhi ranks 79th, Mumbai 80th, Kolkata 86th and Bangalore at 90th position out of 128 cities.

The **IESE Cities in Motion Index** (2017) ranks Mumbai at 159th, Delhi at 168th, Bangalore at 174th and Kolkata at 178th position out of 180 cities.

In the **Asian Green City Index** (2012) Delhi achieved an average overall rating because it generated the least amount of waste (i.e. 147 kg/capita) in the index. Kolkata, Bangalore and Mumbai were below average.

In these reports one thing is clear that Indian cities lag behind majorly at global level. City planners, policy makers, urban local bodies and the common people should work in hand in hand to make their city more sustainable. There should be more of public participation so that the city planners can make an informed decision for the betterment of cities’ infrastructure. The urban local bodies should make sure that these policies are implemented properly.

V. CHALLENGES IN ACHIEVING URBAN SUSTAINABILITY

Sustainable development indicators are a solid base for the regular and long term monitoring of the progress registered in the achievement of strategic objectives of sustainable development and the evaluation of various aspects of sustainability (Moreno S.H., Martinez J.H. 2010).

In recent years, there have been many efforts designed to compare economic growth and environmental

sustainability. Most of those efforts focused on the valuable work of creating the necessary theoretical framework for measuring sustainability, resulting in various models with substantial overlap. Only a few moved from theory to measurement, and those that did often focused attention on national-level statistics or on the developed world. As a result, little is available to measure the sustainability of developing country cities, where the challenge is often most acute (The Urban China Initiative, 2010).

Measuring urban sustainability is a major challenge for environmental managers and decision makers. The most critical step is to identify a sound conceptual framework to underpin the interrelationships between different social and economic factors and their environmental impact, and to disentangle input/causal factors from outcome measures. This will reduce the chance of having a disparate set of indicators measuring different spheres of development without an integrative framework to oversee the progress on sustainability (Wong C. 2000).

Developing indicators should not just be about gathering a whole lot of indicators but preferably analysing the ones that are more fundamental in essence and more likely to produce the most accurate information about the status of practice (Shen, Ochoa, Shah, & Zhang, 2011). Much of the literature and theory surrounding sustainability assessment have argued that current assessment methods often fail to involve sufficient vision and understanding of the interrelations and interdependencies of social, economic and environmental considerations (Adinyira, E., 2007). To date, no single, standard, or comprehensive system exists to measure and monitor city performance and quality of life. Cities, on average, are each collecting in excess of 100 indicators, and in some cases, annually collect 1,000 indicators (Bhada P., Hoornweg D., 2009).

VI. CONCLUSION

For achieving sustainable urbanization, urban development processes must be guided and managed in a sustainable way. Urbanization is associated with economic growth and development but it also poses threat to achievement of sustainable development as it leads to environmental degradation and intensive

resource consumption. Well managed urban growth will not only help in economic advancement but also reduce poverty and improve quality of life for all. There is a need for collaboration between public, private, educational institutions and non-profit organizations for achieving urban sustainability. The selected indicators should be easy to understand and should produce accurate information which will be helpful in policy and planning. Local communities and implementers should be involved in developing the indicators. There is a need for a single standardized indicator system to measure urban sustainability. Indicators should be developed so that cities can observe trends, monitor its growth and learn from each other. Whatever indicator chosen should possess certain qualities so that it is accurate and relevant for policy and measurement purposes. They should be objective, relevant, inclusive, flexible interrelated, effective and measurable. It is important that we focus more on urban sustainability. This index will help the policymakers to gauge the city's performance and make decisions accordingly.

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