

EMBRYONIC CITY PLANNING STRATEGIES FOR GROWTH MANAGEMENT: THE WAY FORWARD FOR INTEGRATED SUSTAINABLE COMMUNITY DEVELOPMENT OF URBAN INDIA

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Abstract: Environment and the city looks at the evolution of cities in the developed and developing world, and the implications for resources consumption and environmental impacts, locally, regionally and globally. Urban areas are now habitat to over half of the world's population and also represent the most significant concentration of global environmental challenges. The range of major problems those are associated with the excessive consumption of resources; the generation of vast quantities of waste; the pollution of land, air and water; and a vast array of health and security concerns that would appear to be inevitable condition of dense urban living, in a concrete forest. The scale of problem facing cities in their attempt to become sustainable communities is considerable, and has become more severe over the past century. Cities are probably the most complex things that human beings have ever created. Urban Planning can be defined as the design and regulation of the uses of space that focus on the physical form, economic functions, and social impacts of the urban environment and on the location of different activities within it. It has been advertized as a new planning agenda, though the viewpoints regarding the meaning of sustainability are still diverse. The first is the appropriate geographical scale for action. Since 'local action' (a bottom-up perspective) is the consensus approach to practical action, and since a community can serve as the fundamental element of a hierarchical structure of an urban area, it would be appropriate to address sustainability at the scale of community development.

In addition to this geographical scale, there is concern for finding an effective method to plan and manage local development in a sustainable manner. Urban growth management strategies consist of the various tools used to manage the amount, type, extent, rate, and quality of urban development. In other words, these tools can be used to manage how much growth occurs, what kind it is, where it occurs, how fast it happens, and with what impacts. Change is constant in our world and not all communities are dealing with the issues of growth. Some communities must manage the issues that derive from decline. Many communities have neighborhoods that are in decline while other parts prosper. Still, growth management strategies can be used to help those that are struggling, for instance, by concentrating investment in distressed areas. The focus of this work is to determine appropriate embryonic urban growth management strategies that can help to achieve a greater degree of community sustainability.

The current urbanizing world of 21st century the city development that earth's need is 'sustainable development', with increasing population and growing pollution, we can't ignore the ill effects of planning on the environment. The greatest challenges faced by the urban planners and policy makers are in developing and implementing the concept of Integrated Sustainable Community Planning for managing contemporary urban growth in the system. How can sustainable development be made meaningful at the local level? How can we develop systems to involve stakeholders in devising

appropriate solutions to local development issues? How can the quality of municipal services be improved and integrated to address the environmental, social, cultural and economic prospect of communities? These are some of the pressing issues that this research study has focused to address under the Indian perspectives. Integrated Sustainable Community Planning recognized as a means to help cities and communities to effectively plan and manage their assets and resources to achieve identifiable outcomes, deliver services and address priorities within an integrated framework encompassing the economic, environmental, social and cultural dimensions of community sustainability. The purpose of this study is to stimulate and inform discussion about the community role in sustainable development and to broaden our understanding of the opportunities for sustainable community development activity. Having the aforesaid knowledge, the investigators have made an attempt to explore the challenges ahead for sustainable community development, in an urban environment of India. The information employed in this research study consists of case studies and local government initiatives related to sustainable development. By employing urban system's concept the investigators analyzed the nerve complexity and after systematic examination, established the common linkages amongst subsystems of urban system and developed an Integrated Model Concept for Sustainable Community of an Urban System. Furthermore, the investigators have proposed to examine the relevant policy instruments and planning tools towards building sustainable communities, with endeavor to develop a framework which contributes to sustainable community development. Eventually, it is concluded with embryonic planning strategies for the efficient urban growth management that can navigate towards sustainable community development. This is an attempt to develop the integrated planning approach and an understanding of the implications of sustainable development at the community level, pertinent to megacities of India.

Keywords: Urbanization, Sustainability, Urban Growth Management, Integrated Sustainable Community Development, Urban System.

INTRODUCTION

The rapid growth of the world population is a recent phenomenon. About 2,000 years ago, the population of the world was about 300 million. It took more than 1,600 years for the world population to double to 600 million. The rapid growth of the world population started in 1950, with reductions in mortality in the less developed regions, resulting in an accumulated population of more than 7 billion in the year 2010, nearly three-times the

population in 1950. With the declines in fertility in most of the world, the global growth rate of population has been decreasing since its peak of 2.0 per cent in 1965-1970[20]. Cities are mushrooming almost everywhere around the world. With good planning and thoughtful policies, Governments can usher in urban growth that boosts economies and creates jobs while using energy more efficiently and making social services available to more people. People under 25 make up 43 per cent of the world's population. When young people can claim their rights to health, education and decent working conditions, they become a powerful force for economic development and positive change. Throughout the developing world, social scientists and policymakers want to make the most of large youthful populations, for the sake of hopeful young people themselves as well as in the interests of economic growth and development.

The Population Division of the United Nations Department of Economic and Social Affairs, in its *World Population Prospects: the 2010 Revision* [21], (published in May 2011) foresees a global population of 9.3 billion people at 2050, an increase over earlier estimates, and more than 10 billion by the end of this century and that scenario assumes lower fertility rates over time. With only a small variation in fertility, particularly in the more populous countries, the total could be higher: 10.6 billion people could be living on Earth by 2050 and more than 15 billion in 2100, the Population Division estimates. "Much of this increase is expected to come from the high-fertility countries, which comprise 39 in Africa, nine in Asia, six in Oceania and four in Latin America," the United Nations reports. China and India recently released the findings of their latest censuses, giving the world a glimpse of how these two population behemoths are realigning in numbers and rates of growth. Below are the two countries in numbers, using official figures or United Nations projections. According to projections by the Population Division of the United Nations Department of Economic and Social Affairs, in 2025, India, with 1.46 billion people, will have overtaken China, with 1.39 billion, as the world's most populous nation. China's population will then, based on a medium variant, decline to about 1.3 billion by 2050. India will continue to grow to about 1.7 billion by 2060 before beginning to decline. India's population rose to 1.21 billion people. During the last 10 years, the population of India increased by 181 million, according to the 15th Census of India, 2011[4]. Significantly the growth is slower for the first time in nine decades. India now accounts for world's 17.5 per cent population and whereas the China is the most populous nation accounting for 19.4 per cent of the global population.

Table 1: Decadal population growth of India

Population(in millions)				
S.No.	Year	Urban	Rural	Total
1	1961	78.90	360.30	439.20
2	1971	109.10	439.10	548.20
3	1981	159.50	523.80	683.30
4	1991	217.60	628.70	846.30
5	2001	286.10	742.50	1028.60
6	2011	377.10	833.10	1210.20

Source: Compiled by the investigators based on the report of NIUA, New Delhi, India, 2011[18]

Table 2: Urbanization level in India

Level of Urbanization (%)		
S.No.	Year	Urban
1	1961	17.96
2	1971	19.90
3	1981	23.34
4	1991	25.71
5	2001	27.81
6	2011	31.16

Source: Compiled by the investigators based on the report of NIUA, New Delhi, India, 2011[18]

Table 3: India's cities transition today (2011) and tomorrow (2031)

S.No	Urban transition	in 2011	in 2031
1	People live in urban areas	377 millions	600 millions
2	Top ten cities have a population	93 millions	140 millions
3	Number of metropolitan cities	53	87
4	People live in metropolitan areas	160 millions	255 millions
5	Percentage urban share of GDP	52%	75%
6	Level of urbanization	31%	50%

Compiled by the investigators based on the report of NIUA, New Delhi, India, 2011[18]



Figure 1: Impacts of environmental stress and degradation on natural resource production capacity, social equity and security
Source: Compiled by the investigators



Figure 2: Galaxy Shape Plan Form

Source: Auroville Main website for overview, Tamil Nadu, India [2]



Figure 3: Matrimandir with its development Proposals

Source: Auroville Main website for overview, Tamil Nadu, India [2]

Demographic Transition and Scale of Urban Change in Indian Context

Urbanization a process characterized by more and more people living in the urban areas is one of the most important transformations the world has witnessed in recent decades. India is an integral part of the process. In 2010, India accounted for 11 percent of the world's urban population; the United Nations projects it to be 15 per cent by 2030. Urbanization in India will be much faster now; it's preferred and desirable for development. The country is now one of the leading nations among the developing countries and the progress has made the country leave behind many developed nations as well. As per recent United Nations development reports on urbanization, India has achieved 30 per cent urbanization in 2010. The urbanization in India increased from meager 10 per cent in 1901 to more than 30 per cent. However it was much lesser in terms of rank when compared to other nations that have achieved a higher rate of urbanization and much less below the world urbanization population of 50 per cent [21]. Urbanization implicates increase in population living in urban areas. An urban area, according to the Census of India definition, is one that has (i) a minimum population of 5,000; (ii) at least 75 per cent of the male working population engaged in non-agricultural pursuits; and (iii) a density of population of at least 400 per square kilometer (1,000 per square mile). With increase in population, the country's urban population also increased.

According to Census of India, 2011, Population growth during 2001-2011 was evenly divided between rural and urban settlements, with a marginal edge for urban settlements. From now on, population growth is expected to be largely an urban phenomenon. India is making a slow but steady shift from 'rural' to 'urban'. The number of towns has jumped from 5,161 to 7,935 between 2001 and 2011, a net addition of 2,774 towns. The bulk of the increase is due to the addition of 2,532 census towns, which are 'urban' by definition, but 'rural' in governance. Urbanization levels in India vary greatly across states. The five most urbanized states are Goa (62.17%), Mizoram (51.51%), Tamil Nadu (48.45%), Kerala (47.72%), and Maharashtra (45.23%) respectively. The five least urbanized states are Himachal Pradesh (10.04%), Bihar (11.30%), Assam (14.08%), Orissa (18.68%), and Meghalaya (20.08%) respectively. The number of metropolitan (million-plus) has risen sharply, from 35 to 53 during 2001-2011; out of which eight are 5-million plus. They now account for 42.6 per cent of the total urban population, up from 37.8 per cent in 2001. Out of the 18 new metros, 6 are in Kerala. Average size of towns (and cities) in India has grown from 33,624 in

1961 to about 61,159 in 2011[18]. The decadal population growth and urbanization level of India from the year 1961 to 2011 are presented in Table 1 and 2 respectively. Indian cities transition for the projected year 2031, as per the report on NIUA, India, 2011 are compiled and presented in the Table 3. Table 1 and 2 clear evident that there is phenomenal population growth and urbanization level of India.

The extension of urban areas offers benefits, allowing people more living space, single-family houses and gardens. But it can also create negative environmental, social and economic impacts for cities and countryside, in particular in the case of low density and scattered urban sprawl. These include increasing urban energy demand, human health problems and declining stocks of natural resources. From a social perspective, urban sprawl exacerbates social and economic separations. In order to address this complexity appropriate urban growth management strategies are inevitable requirement of an urban system. Urban growth management strategies consist of the various tools used to manage the amount, type, extent, rate, and quality of urban development. In other words, these tools can be used to manage how much growth occurs, what kind it is, where it occurs, how fast it happens, and with what impacts. Change is a constant in our world and not all communities are dealing with the issues of growth. Some communities must manage the issues that derive from decline. Many communities have neighborhoods that are in decline while other parts prosper. Still, growth management strategies can be used to help those that are struggling, for instance, by concentrating investment in distressed areas.

The focus of this paper is to determine appropriate strategies for urban growth management that can help to achieve a greater degree of community sustainability. In India, sustainability is founded on development as a qualitative concept, incorporating philosophy of improvement and progress, which includes *cultural* and *social*, as well as *economic* and *environmental dimensions*. It has been recognized that as Indian urban communities become increasingly diverse, culture plays an important role in building social cohesion, a sense of community and a shared value set that is rooted in local diversity. Cultural investments can reinforce place-based community development objectives related to employment and innovation, neighborhood revitalization and environmental sustainability. All our must work together to create a truly sustainable community, For example, a job is an important element of quality of life, and further, access to employment by all members of the community significant. The purpose of this study is to stimulate and inform discussion about the community role in

sustainable urban development and to broaden our understanding of the opportunities for sustainable community development activity for efficient urban growth management. Having the aforesaid knowledge, the investigators have made an attempt to explore the appropriate growth management strategies which navigate towards the sustainable community development of urban India. Further, the investigators have proposed to develop a general framework which contributes to sustainable community development and an understanding of the implications of sustainable development *per se* at the community level, pertinent to megacities of India.

URBAN GROWTH MANAGEMENT - WHY DOES IT MATTER?

Although urban growth is a local or regional phenomenon, it has impacts far beyond city boundaries. Globalization, Economic liberalization and shared policy framework depicts that urban areas are increasingly interconnected. Urban growth therefore raises questions at different levels of governance: (a) Where does urban growth occur? Was the development compact or sprawled? What trends are expected in coming years? (b) What are the drivers behind urban sprawl? Which can be controlled and at what level? (c) How sustainable is urbanization? What are the consequences beyond city boundaries?

One purpose is to achieve a balance between the amount of growth and the ability of natural systems to sustain it. These natural systems include food production, water quantity and quality, air quality, plant and animal habitat, and gradually more the climate itself. It is a scarcity for communities to purposefully limit their population in order to minimize their impact on natural systems. A more common purpose is to achieve a balance between the amount of growth and the ability to provide the transportation, energy, water and waste disposal, public safety, education, public health, and other services needed by human populations. Development can be metered out so that a community can maintain its ability to provide adequate services and to avoid some of the negative effects of boom and bust development cycles which can strain a community's ability to just absorb the sheer amount of change. Growth management strategies can also be used to affect the extent of development, i.e., where will growth occur? This can involve the protection of open space for habitat, recreation, protection of important scenic areas, separation of communities, or agricultural land preservation. Development can also be excluded from areas that represent a potential hazard, such as floodways, steep slopes, or fire danger, or directed to areas that can be more easily served, or that have service capacity. Affecting the

type of development maintains a particular community character for example exclusion heavy industry from a residential community, or maintains a balance of jobs and housing to minimize commuting, or favors development that is particularly lucrative from a local taxation perspective.

Drilling down to the focus on sustainable communities, the primary system that is implicated is the relation of land use to transportation. Where people live, work, and play affects their transport choices and options. Communities can be made more sustainable if they exhibit more of the qualities of compact, higher density, and mixed use development. This is because such development can reduce the amount of vehicle distance traveled as compared with low density sprawling patterns. In addition, reducing vehicle distance traveled has the benefit of reducing air pollution and localized urban heat island effect, including greenhouse gases, and reducing the overall amount of congestion on the roads. According to Cervero and Kockelman (1996) the three key elements of urban development patterns that impact vehicle miles traveled: *density*, *diversity*, and *design* respectively. Density relates to the number of people, jobs, or dwelling units in a particular area [5]. Diversity refers to the number of different land uses in a particular area and the extent to which they are balanced. Lastly the design refers to the street network characteristics in a particular area, whether it is fine grained allowing for many connections and the extent to which a friendly pedestrian environment is created.

SUSTAINABLE LAND USE AND URBAN GROWTH MANAGEMENT

“Two things are unlimited: the number of generations we should feel responsible for and our inventiveness. The first provides us with a challenge: to feed and provide for not only the present but all future generations from the earth's finite flow of natural resources. The second, our inventiveness, may create ideas and policies that will contribute to meeting that challenge” - Jan Tinbergen, Nobel Laureate in Economics (1992).

According to W.J. Forrester (1971), published three major works, *Industrial Dynamics*, *Urban Dynamics* and *World Dynamics*, each used simulation modeling to explore the interaction of system components and derive an understanding about the process of managing complex systems. [10]. In *World Dynamics* he joined the ranks of concerned environmentalists warning about potential food shortages, resource depletion and environmental pollution. He illustrated the dangers of existing policies and made recommendations about birth rates, rates of industrialization, and the use of natural resources to achieve world equilibrium.

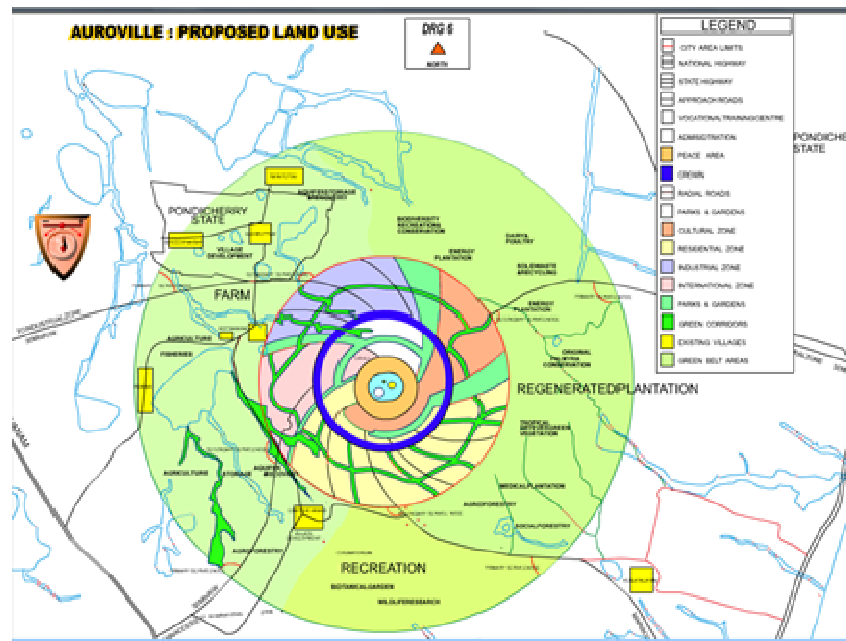


Figure 4: Proposed Land use map of Auroville Universal Township
Source: Web site of Auroville Master Plan, Tamil Nadu, India [2]

Table 4: Detailed Land use in City Area, 2025

S.No.	Land Use	Extent (in Ha)	Percentage (%)	Remarks
1	Residential	121	24.64	Residential Zone 80% other zones
2	Commercial	20	4.1	Mostly in Crown Area connecting the zones
3	Industrial	56	11.4	Industrial zone/manufacturing units
4	Public & Semi-public	159	32.38	
	a. Matrimandir	28	5.7	Peace Area
	b. Pavilions	38	7.73	International Zone
	c. Educational & Cultural	73	14.86	Cultural and Residential Zone
	d. Administration, Utilities & other uses	20	4.07	Industrial and other zones
5	Open spaces & recreation	46	9.36	To be provided in all zones
6	Transportation & Communication	89	18.12	To serve all zones
	Total	491	100	

Source: Compiled by the investigators based on information of Auroville Master Plan, 2000 [2].

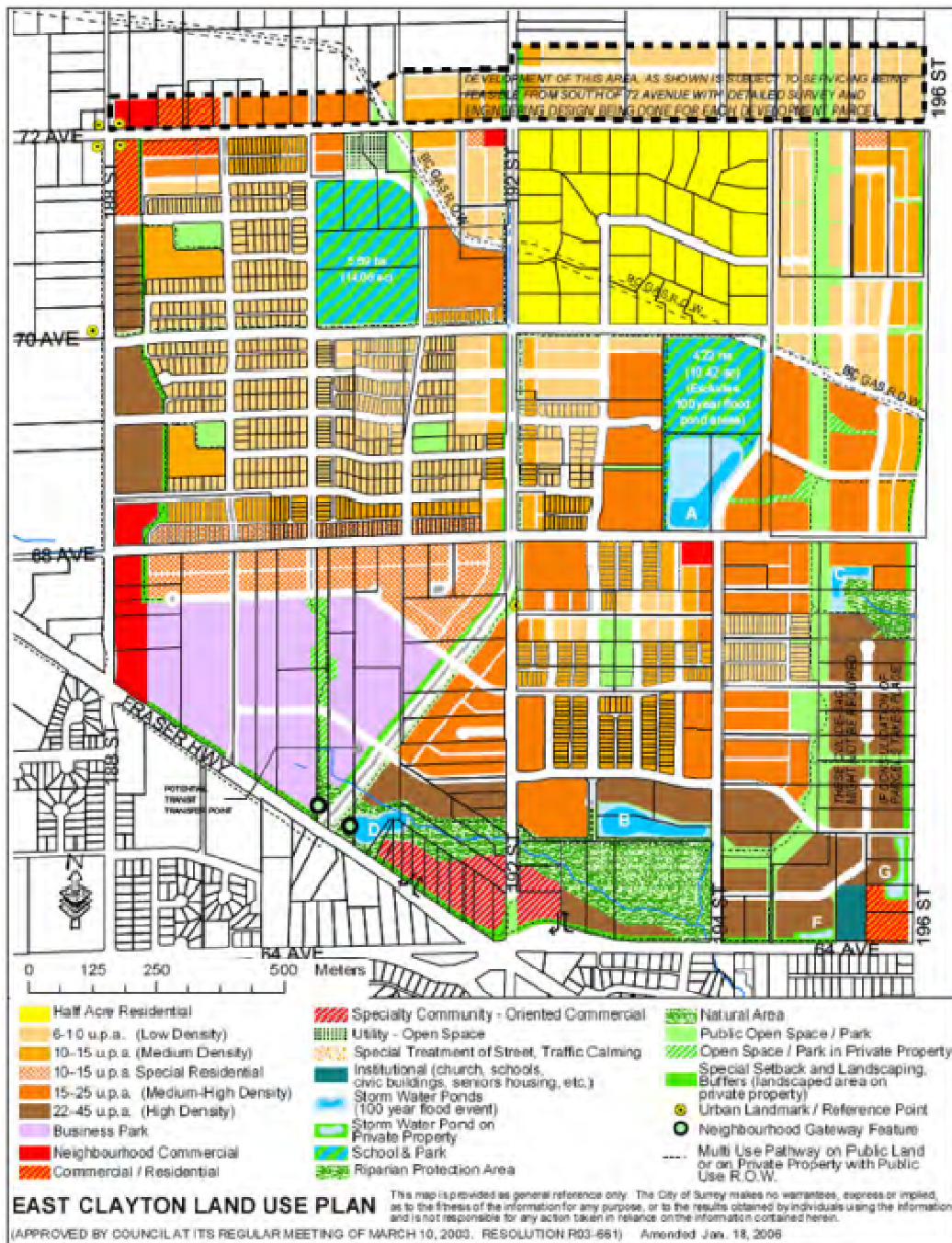


Figure 5: East Clayton Land Use Plan, 2006

Source: <http://www.surrey.ca/NR/rdonlyres/E6F3730A-7B32-4109-98E4-564099BB8C8B/0/EastClaytonNCP.pdf>
[19]

He suggested to not intuitively pursuing “obvious solutions” to social problems because system complexity and its misunderstanding might lead to wrong policy choices.

Similarly, in *The Limits to Growth* [15] the results of global computer analysis compared rates of population and industrial growth to declining natural resources. It concluded that modern industrial society might not survive this disparity within the next century. In *Beyond the Limits* [16] these concerns were further expanded and it was concluded that based on new trends and model simulation results: (a) the use of many essential resources and the generation of many pollutants had surpassed use rates that were physically sustainable and might eventually result in a uncontrollable decline in food output per capita, overall energy use and industrial output. (b) that decline was not inevitable if public policies were pursued that reversed population growth rates and growth in per capita material consumption, and were combined with a dramatic increase in the efficiency of energy and material use, and (c) that a sustainable society was still technically and economically possible if public policies were pursued that did not focus on continued economic expansion as a problem-solving strategy but rather a transition to a sustainable society that carefully balances short- and long-term goals with an emphasis on sufficiency, social equity and *quality of life* rather than *quantity of outputs*.

The notion of developing comprehensive policies that promote sustainable use of natural resources, maintain resource production capacity and prevent resource degradation. This is especially critically important to underdeveloped /developing nations with the least discretionary income to purchase essential food commodities, to prevent declining production capacity or reverse trends in environmental degradation. Therefore, it may be likely facing escalation effects of economic decline, as depicted in the Figure 1. On the *demand side*, concerns about population growth and its impacts were not only expressed at the aggregate national levels but also in terms of population distribution and dispersion. High population growth concentrated in metropolitan areas has, in many nations, caused crisis of food security and deteriorating conditions in urban agglomerations, where rapid population increases and service demands have outpaced even the most basic infrastructural needs, such as drinking water supply, sewage disposal and treatment, and general education, health care facilities and scarcity of land for various uses.

PLANNING SUSTAINABLE COMMUNITIES: CASE STUDIES

Auroville Universal Township, Tamil Nadu, India

Rationale

Auroville town exemplifies a number of the ‘new urbanism’ and ‘neo-traditional’ principles, while being located in a suburban location. The importance placed on walkability and car free city within the ‘new-urbanism’ approach is a shift from the more traditional suburban design which emphasizes the automobile and other ideas may be considered to contribute to ‘vitality’ in suburban settings and reflect societal valuing of a and ‘sense of community’ and a ‘sense of place’. The concept of sustainability provides the framework and grounding for all subsequent planning policy and design in Auroville Universal town. In terms of physical development, Auroville aims at becoming a model of the ‘city of the future’ or ‘the city the earth needs’. It wants to show the world that future realizations in all fields of work will allow us to build beautiful cities where people sincerely looking towards a more harmonious future will want to live.

Role of planning in Auroville is to ‘help create holistic environment which is conducive to facilitate the inner growth of mankind’. Auroville is one of the only unique examples in the world and the entire history of ‘human settlements’ where the founding work to start a township for 50,000 persons has essentially been “restoration of living environment”, in a community participatory way, and that makes it a special case of ‘Applied Ecological Research experiments and detailed studies are underway on natural Resources management, Mobility, Urban planning, Urban Design, Sustainable Infrastructure options, Green Building, collective facilities creation around principles of self governance and organization.

Context

Auroville is located 160 km south of Chennai on the east coast of India, just 6 km north of Pondicherry, India. Initially the site was a barren plateau traversed by dry canyons and gullied land with hardly any vegetation. Auroville Town is located in an impoverished rural area of Tamil Nadu, South India, the Auroville township is surrounded by 13 villages with a population of approximately 40,000 people, of which 4,000 are employed in Auroville. The urban development of the city, as envisioned in its Master Plan, goes hand in hand with the well being of its rural neighbours. As such, Auroville is not only a challenging meeting point between different cultures and nations. It is also a unique down-to-earth experiment in North-South co-operation and joint development.

Envisaged as a universal city for 50,000 people, Auroville is at present an emerging township of about 1,800 volunteers from India and from some 35 countries around the world. Its residents represent an amazing mix of languages and cultures, and a wide spectrum of educational and socio-economic backgrounds. The galaxy shape plan of Auroville and area earmarked for peace area namely *matrimandir* with development proposals are presented in Figure 2 and Figure 3 respectively.

Innovation

Auroville's ideals, innovative approaches and experiments in various fields of life have earned it a name synonymous to sustainable community living. In order to meet the requirements of the Act and to realize the vision of the township, the specific objectives of the Master Plan (Perspective: 2000-2025) [3] are: (a) Laying down broad policies and directions for growth in the principal zones. (b) Determining the hierarchy of roads and access ways. (c) Establishing the zoning of land use on all lands falling within a 20 sq. km. area of the Township. (d) Determining the standards for common facilities for education, health & social needs of the resident population (e) Identifying the social and physical infrastructure requirements of the township. (f) Identifying the need for conservation of historic, ecologically sensitive and aesthetically important areas. (g) Developing a mechanism for sustainable developments that harmonize both the needs of the environment and of development, as well as guidelines for such developments. (h) Identifying the requirement of investments (i) Suggesting policies for integrating the neighboring villages in the Master Plan so they may take advantage of and benefit from their proximity to Auroville for their economic betterment.

Auroville town will be a Research and Development Station for the Planet. Due to its location and character, Auroville is a micro-cosmos of all major problems the world is faced with today. Population explosion, environmental degradation, economic disparity, water scarcity, air, noise and traffic pollution, and declining human values are just a few examples of the present global crisis, which threatens the very survival of the human species itself. In this context, Auroville is a research station, a living laboratory, where experiments, replicable models and solutions are being worked out for the benefit of the surrounding area, India and the world. Auroville's mission of international understanding, peace and planetary transformation is based on future-oriented ecological, social, economic and spiritual values. Its residents freely join this experiment as voluntary workers, who are dedicating their work and life to the vision Auroville stands for. All assets, such as land,

houses, farms, businesses, etc. are held in trust for humanity as a whole. The Auroville residents are only stewards of the emerging township and have no individual property or inheritance rights. Keeping in view the basic ideals of the township and the innovative approaches being developed in Auroville, the land-use structure is based on the following premise: (a) The built-up area, consisting of buildings and developments for residential, cultural, manufacturing, commercial and utility uses, international pavilions and open spaces, would evolve around the **Matrimandir** with its gardens in the centre of the township (Figure 3). (b) The largely un-built part consisting of agricultural uses, regenerated forests, tanks, water bodies, channels and a number of green activities linked to the promotion of sustainable development, would encircle the built-up area and also act as interface between the City and its bio-region.

The vision behind Auroville's planning and development right from its conception to the present day is that there will be an intense and close interrelationship between the City Area and the outside rural area, including the Green Belt, which will be of a synergic nature. Each would complement the other, and support the activities in the 'urban' and 'rural' sectors, thus reducing the urban and rural divide that has crept into urban planning so far, and encouraging a rural - urban continuum.

Density and Distribution of Population: It is proposed that the Residential Zone be delineated into ten sectors of approximately 10 ha each. Each of these sectors will be developed at densities varying from 100 persons/ha to 640 persons/ha, particularly in high-rise building blocks in a wide range of urban forms. The net size of residential areas would be about 100 ha, which would provide a residential floor space of 1,500,000 Sq.m. (FAR 150), that could accommodate the entire 40,000 persons at an average floor space of 30 Square meters / person. The proposed land use map of Auroville universal town is presented in Figure 4 and detailed land use analysis are furnished in Table 4 respectively.

Analysis

(a) Situation at the beginning of Auroville town, it was a completely barren land that has been transformed into a lush green forest within a small period of 20 years thus recharging the ground water and creating a habitable environment for all. (b) Within the Galaxy context, development strategies seem appropriate when considering marketability, overall efficiency, and provision of services. Based on the population growth, the development appears to be both environmentally attractive and economically feasible from the developer's perspective. However, connectivity to Pondicherry from the residents'

perspective is questionable. (c) In terms of environmental sustainability, Auroville Universal town, innovative practices relating to alternative energy generation, energy efficiency, water conservation, rainwater harvesting, material reuse, landscaping with native plants, local food production, etc. have been implemented and seem to have been a priority in this development. (d) Auroville town does not appear to achieve the 'work, live, play' balance promoted by the 'complete communities' concept. Auroville town does not provide a sufficient number or diverse jobs for the locals nor does it realize the level of housing density to support public transportation infrastructure. (e) A stronger sense of community may also be considered an innovative approach to land use planning. (f) Over past four decades Integrated Planning and Development have been observed, Auroville, has been dedicated in a wide range of development programmes, in many of which it has impressive achievements. Programmes carried out in the following fields of activity: (i) Art & Culture (ii) Educational Research (iii) Environmental regeneration Handicrafts and Small Scale Industries (iv) Health & Healing (v) Innovative Building Technologies (vi) Integrated Urban Planning (vii) Organic Farming (viii) Renewable Energy and, (ix) Rural Development (x) Collectivity and Community Participation are key elements of way of life in Auroville town.

East Clayton, the City of Surrey, British Columbia

Rationale

The project is designed as a demonstration of sustainable development principles and performance standards [8]. This is especially notable in the environmental measures in concerns to water management.

Context

East Clayton is based in Surrey, British Columbia whose proximity to sensitive waterways and productive agricultural land led to the need for a storm water management system that mimicked natural, pre-development infiltration rates. The development showcases green infrastructure and environmental design on a 250- hectare site with a projected population of approximately 13,000 at build-out. The land use plan for the East Clayton development is presented in the Figure 5. [19]

The community has 6 key objectives: (a) Alternative transportation methods such as walking and public transit are encouraged for the health of the community. (b) Increased densities allow for more vibrant streets providing residents with greater route

choices and destinations and more opportunities for walking and cycling. Additionally, compact development is cheaper to service in the long run. Open space is preserved because living and working environments are intermingled. Close neighbors naturally create relationships of friendship and trust. (c) Mixed-Use Centers mix commercial and residential uses create lively streetscapes and vital centers. The provision of jobs within the community reduces the need for travel to other areas of the city, reducing congestion and air pollution. (d) Increased Social Interaction with open spaces and recreational opportunities which allow for unplanned as well as planned meetings of people on walks or partaking in sports. Open spaces provide the opportunity for personal oriented needs such as relaxation or play areas for children. Sidewalk widths should be a minimum of 1.5 m to allow for comfortable use and passing. (e) Mix of Housing variations in housing style, type, tenure, and cost creates a community that does not exclude certain socio-economic or ethno cultural groups. These criteria foster social well-being and create a more viable local economy [9]. (f) Environmental Preservation of natural areas and habitats. Compact community planning has the benefits of reducing construction waste and energy use.

The land use and development concepts outlined are based on seven principles of sustainability: Increase density and conserve energy; provide different dwelling types; dwellings should present a friendly face to the street; car storage and services are located at the back of dwellings; provide an interconnected street network and public transit; provide narrow, shaded streets; preserve the natural environment and promote natural drainage systems.

Innovation

East Clayton's proximity to sensitive waterways (Serpentine, Nicolmekle and Fraser Rivers) and productive agricultural land led to the need for a storm water management system that mimicked natural, predevelopment infiltration rates. East Clayton utilizes an innovative natural drainage system that eliminates downstream flooding and protects waterways from suspended solids and harmful runoff [11]

Pervious surfaces and materials, such as driveways and back lanes, reduce the amount of runoff generated by the development, and reducing the infrastructure needed to handle storm water.

Each property is equipped with on-site filtration devices. The devices are buried in the front yard of each property and allow precipitation to readily infiltrate into the ground.



Figure 6: Aerial View of Kronsberg (2002)
Source: City of Hannover, 2004



Figure 7: Location of Curitiba in Parana State, Brazil
Source: <http://www.achetudoeregiao.com.br/PR/curitiba.htm>[12]



Figure 8: A Panoramic view of Curitiba
Source: <http://www.achetudoeregiao.com.br/PR/curitiba.htm>[12]



Figure 9: Map of Curitiba, with the neighborhoods and boroughs
 Source: <http://www.achetudoeregiao.com.br/PR/curitiba.htm>[12]

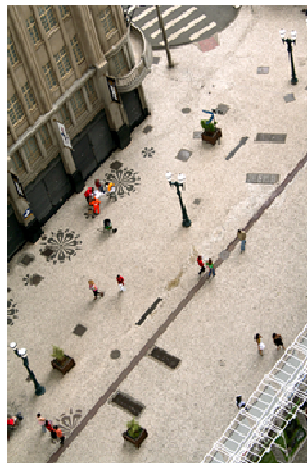


Figure 10: 15th of November Street (Street of Flowers) the first major pedestrian streets in Brazil
 Source: <http://www.achetudoeregiao.com.br/PR/curitiba.htm>[12]



Figure 11: Rapid Transit Bus Tubes throughout the city as the local bus stops

Source: <http://www.achetudoeregiao.com.br/PR/curitiba.htm>[12]



Figure 12: Pedestrian Mall in 2008

Source: <http://www.achetudoeregiao.com.br/PR/curitiba.htm>[12]

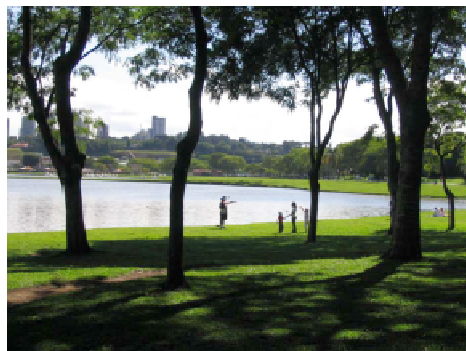


Figure 13: Natural Flood Control Park

Source: <http://www.achetudoeregiao.com.br/PR/curitiba.htm>[12]

To further reduce runoff directed to Storm water sewers, guidelines demand a system of grassy swales to accept runoff from impervious surfaces such as roadways. Elimination of the traditional curb and gutter system allows runoff to travel directly to grassy swales where up to 48mm/day (24mm/day in winter conditions) of runoff will be absorbed (ACT, 2003, p.22) [1].

Additionally, a naturalized wetland on the site provides habitat and retention/biofiltration capabilities. The wetland is designed to easily accept a 5-year storm with adjacent playing fields accepting overflow in the case of a 100- year storm event (ACT, 2003, p.22) [1]. Smaller neighborhood parks are equipped with deep well infiltrators to convey peak flows to regional groundwater aquifers.

A mix of housing types and tenures provide each street with a unique appearance, enhancing the pedestrian experience. Additionally, "all dwellings present a friendly face to the street to promote social interaction" (Surrey, 2000, p.34). Placement of lanes and garages behind houses further enhances the streetscape and prevents building fronts from being obscured by garages. It is expected that the community commercial area will become one of the most important destinations for residents in the area.

The community is ordered around a fine-grained, modified grid street system that provides various routes to a number of destinations (ACT, 2003) [1]. The interconnected road network disperses traffic congestion while ensuring convenient routes for public transit. The design principles also call for street widths for local and collectors to range from 6m to 11.3m. Narrow streets reduce construction and maintenance costs, decrease the amount of runoff and create "a greener and friendlier environment" (ACT, 2003, p.11) [1].

Analysis

Environmentally, the neighborhood succeeds in truly managing the sensitive water issues that affect the neighborhood. Other areas have yet to prove successful and result in questioning of the development's sustainability: (a) Transit to the neighborhood is extremely limited and this is unlikely to change (b) Currently, housing types do not differ dramatically as it is primarily single-family homes and town homes (c) Due to consumer pressures, the community has relaxed a number of the street-frontages and garage requirements, allowing some houses to have front-facing garages. (d) A commercial area is yet to be established.

Kronsberg, City Of Hannover, Germany

Rationale

Although in a suburban setting, Kronsberg has become a model community for global replication. The development has followed the key principles outlined by United Nations Agenda 21 as a model sustainable development [7]. Kronsberg demonstrates that sustainable developments, even within a suburban setting are environmentally and socially feasible. The primary innovations which have been implemented in Kronsberg are in the ecological realm.

Context

Kronsberg was built for the 2000 World Exposition on a 1,200 hectare site located in the southeast city limits of Hannover, Germany [6]. At a total cost of €2.2 billion, the project aimed to build an ecologically-sound suburban community with the hopes of inspiring worldwide replication [7]. Once built-out, Kronsberg is expected to have a total population of 15,000 residents and approximately 6,000 dwelling units. As of 2004, approximately 3,000 dwellings have been built with a population of nearly 6,600 residents [7]. Kronsberg is projected to have a maximum net density of 108 people per acre or 44 dwelling units per acre (UPA). At present, the net density is approximately 48 people per acre or 22 UPA. The Aerial view of Kronsberg is presented in Figure 6.

Kronsberg is comprised of predominantly high-density apartment style dwellings with no single-detached dwellings which is presented in the figure 06. Three train stations within the community link Kronsberg to the city centre and ensure train service is no more than 600 meters walking distance for residents [7]. Transportation is a vital aspect of the development since Kronsberg is located 30 to 40 minutes by car from the central city and 20 minutes by rail. Overall, Kronsberg offers a full range of services within the community such as daycares, schools, healthcare facilities, shopping, and jobs in order to minimize the need for travel.

Innovation

Kronsberg's environmental and ecological targets are the community's most innovative feature: (i) *Reduce CO₂ emissions and household energy consumption by 60-80 per cent*: (a) Use of wind turbines [6]. (b) Use of passive heat recovery methods [6] International Energy Agency (c) Offer incentives for the use of energy efficient appliances (d) Adjust building heights, orientation, and density according to area's natural contours in order to (e) maximize sunlight [7] (f) Use of photovoltaic solar panels (g) Manage water so the area's natural water balance remained the same

after development: (h) Natural absorption of rainwater through storm (i) water ponds and drainage ditches [6] (ii) *Incorporate the naturally surrounding woodland and countryside into the community for recreational and amenity purposes* [7]: (a) Natural 'commons area' maintained by grazing sheep (b) Mandatory tree planting based on construction (ie: parking spaces, paved area, built area). For example, one tree for every five parking spaces [7]. (iii) *Reduce household waste by 50 per cent*: (a) Mandatory waste collection sites for each building which encourage users to sort waste and recyclables [6] (b) Private and communal compost sites [7] (c) On-site community recycling depot and containers [6]. Socially, Kronsberg aimed to achieve a strong balance characterized by diversity and the development of social infrastructure [7]: (d) Attract young families by designating housing specifically for their needs and setting an upper price limit. (e) Provide a public forum and meeting places through the Kronsberg Arts and Community Centre, public library, youth agency, meeting rooms, community hall, and workshops/studios [7]. (iv) *Fully integrate minority groups into the community*: (a) Create a housing project for disabled persons by providing specially designed apartments which are distributed among regular housing and remain close to a central care point. (b) Create an international housing project with the intention of achieving social harmony between German and foreign residents. One third of all residences are reserved for immigrants while ten percent of all residences are designed according to Islamic beliefs [7].

Economically, Kronsberg attempted to incorporate ecological features which would ultimately result in cost savings based on economic viability and feasibility models. Another economic initiative lies in the strong live-work component within the development, as there are a significant number of jobs in the immediate vicinity. The retail shops and service industries in the district provide local jobs while nearby banking and data centres provide approximately 3,000 office jobs in close proximity [7].

Analysis

Overall, the innovations implemented through policies and design was successful in comparison to conventional developments, especially ecologically. Due to these innovations, the development achieved: (a) A 74 per cent reduction in CO₂ emissions per resident; (b) Savings of €4 million due to environmental credits based on water management; (c) A 30 per cent reduction in domestic waste production [6];

It is important to note that domestic electricity reduction aims encouraged through the voluntary use

of efficient appliances has not been considered a successful program. This suggests that there can be ineffectiveness when creating targets based on non-mandatory enforcement. The most significant issue in regards to sustainability lies in the high number of grants and subsidies required to not only implement such innovations, but also continue sustaining them. Much of the technology used throughout Kronsberg was subsidized [7].

Kronsberg is a truly world-class community and readily serves as a model for future developments. Transferability to other communities was a key concept when Kronsberg was developed. While many aspects can certainly be replicated, the overall duplication of a community such as Kronsberg is economically questionable. This is due to the high amount of government subsidies used throughout the development process as well as the continued reliance on funding to keep certain elements operational. Kronsberg benefited from strong government support as a result of the World Exposition, which is an advantage not available to most cities.

Curitiba, the Capital State Of Parana, Brazil

Rationale

Curitiba is 220 miles south-west of Sao Paulo, and is the capital of Parana State which is one of the prime agricultural states in Brazil. Like all Latin American cities, Curitiba grew rapidly in the second half of the twentieth century, from 150,000 people in the 1950s to almost 2.4 million inhabitants in 2010 and the total population of its metropolitan area was 3.2 million. It is interesting to note that the population growth rate within Curitiba has been consistently higher than that for Brazil as a whole. A panoramic view of Curitiba city is presented in Figure 8.

Curitiba, perhaps the best planned city in Brazil and an international model for sustainable development, is more than simply the result of a few successful projects. The city's achievements are the result of strategic, integrated urban planning. This overarching strategy informs all aspects of urban planning, including social, economic and environmental programs. Curitiba's strategy focuses on putting people first and on integrated planning, and these influences are apparent in all aspects of the city. The strategy is what underpins the individual projects system-wide that improve the environment, cut pollution and waste, and make the quality of life in the city better. The underlying goal of Curitiba's integrated urban planning strategy and the objective toward which the city's branches and institutions work is to improve the life of Curitiba's citizens. Undertake a series of integrated urban planning actions based on valuing the individual that have

resulted in a model ecological, people-centered city. The geographical location of state capital Curitiba in Parana state, Brazil is earmarked in Figure 7.

Context

Curitiba is more than a city that has a number of outstanding projects: in fact, the key to its success is the underlying, cohesive strategy, with a focus on improving life for residents and on integrated planning that underpins all of its projects. The strategic vision that informs all aspects of Curitiba is articulated by its visionary former mayor, Jaime Lerner, architect and urban planner, who led the city's transformation: "There is no endeavor nobler than the attempt to achieve a collective dream. When a city accepts as its mandate its quality of life; when it respects the people who live in it; when it respects the environment; when it prepares for future generations, the people share responsibility for that mandate, and this shared cause is the only way to achieve that collective dream." Lerner, now governor of the State of Paraná, was involved in the city's 1965 Master Plan as an architect; helped found and worked for the Urban Planning Institute of Curitiba (IPPUC); served as the city's mayor three times; and was president of IPPUC for many years. IPPUC's creation is a second key element that ensured long-term implementation of city plans. In 1965, Lerner and his colleagues realized that continuity would be a problem and established IPPUC as an independent agency to supervise and implement planning.

The combination of core values expressed in the city plan and IPPUC's creation allowed planning for efficiency and sustainability even in difficult circumstances (i.e., during the military dictatorship, times of economic crisis in Brazil, despite high numbers of poor migrants flowing into the city). A clear strategy and vision of the future in Curitiba and creation of an agency to make sure it was implemented has meant that smaller decisions made over the course of years and in many individual programs have added up to a city that's a model of ecological, people-centered urbanism. Although Curitiba is known internationally as a sustainable, ecological city, it calls itself "the city of all of us." In almost any area of Curitiba's urban planning over the years, it is possible to see how consideration has been given to people in the big picture and also to see the associated, system wide sustainability benefits of integrated planning. The map showing the geographical limits of Curitiba, with the neighborhoods and boroughs is presented in Figure 9.

Innovation

Curitiba has a long tradition of innovative and integrated urban planning geared toward the strategic

imperative of making the city a better place to live, as outlined in the city's Master Plan of 1965. In the 1970s and 1980s, physical, economic and demographic growth was rapid and the city became an important industrial and commercial center. Urban planning focused on building the city and decentralizing it. From the 1990s until today, the city's main planning focus has been on sustainable development and integration of Curitiba's metropolitan region.

Integration of traffic management, transportation and land-use planning in the 1970s allowed the city to meet strategic objectives which sought to minimize downtown traffic, encourage social interaction by providing more leisure areas and pedestrian zones in the center of the city, and encourage the use of public transport and cycling in order to achieve an environmentally healthy city.

The urban transportation system is one of Curitiba's best-known planning successes, a model for cities around the world that want to implement eco-efficient transportation networks that are well-integrated with urban form and produce environmental benefits. The rapid transit bus tubes and acts as the local bus stops in the city, which is presented in Figure 11.

The city pioneered the idea of an all-bus transit network with special bus-only avenues created along well-defined structural axes that were also used to channel the city's growth. The transit system is rapid and cheap, and is currently being integrated with the metropolitan region.

Its efficiency encourages people to leave their cars at home. Curitiba has one of highest rates of car ownership in Brazil, and high population growth. Yet auto traffic has dropped substantially; Curitiba has the highest public ridership of any Brazilian city (about 2.14 million passengers a day), and it registers the country's lowest rates of ambient pollution and per capita gas consumption

In addition, an inexpensive "social fare" promotes equality, benefiting poorer residents settled on the city's periphery. A standard fare is charged for all trips, meaning shorter rides subsidize longer ones. One fare can take a passenger 70 kilometers.

Curitiba is referred to as the ecological capital of Brazil, with a network of 30 parks and wooded areas. In 1970, there was less than 1 square meter of green space per person; now there are 52 square meters for each person. Residents planted 1.5 million trees along city streets. Builders get tax breaks if their projects include green space.

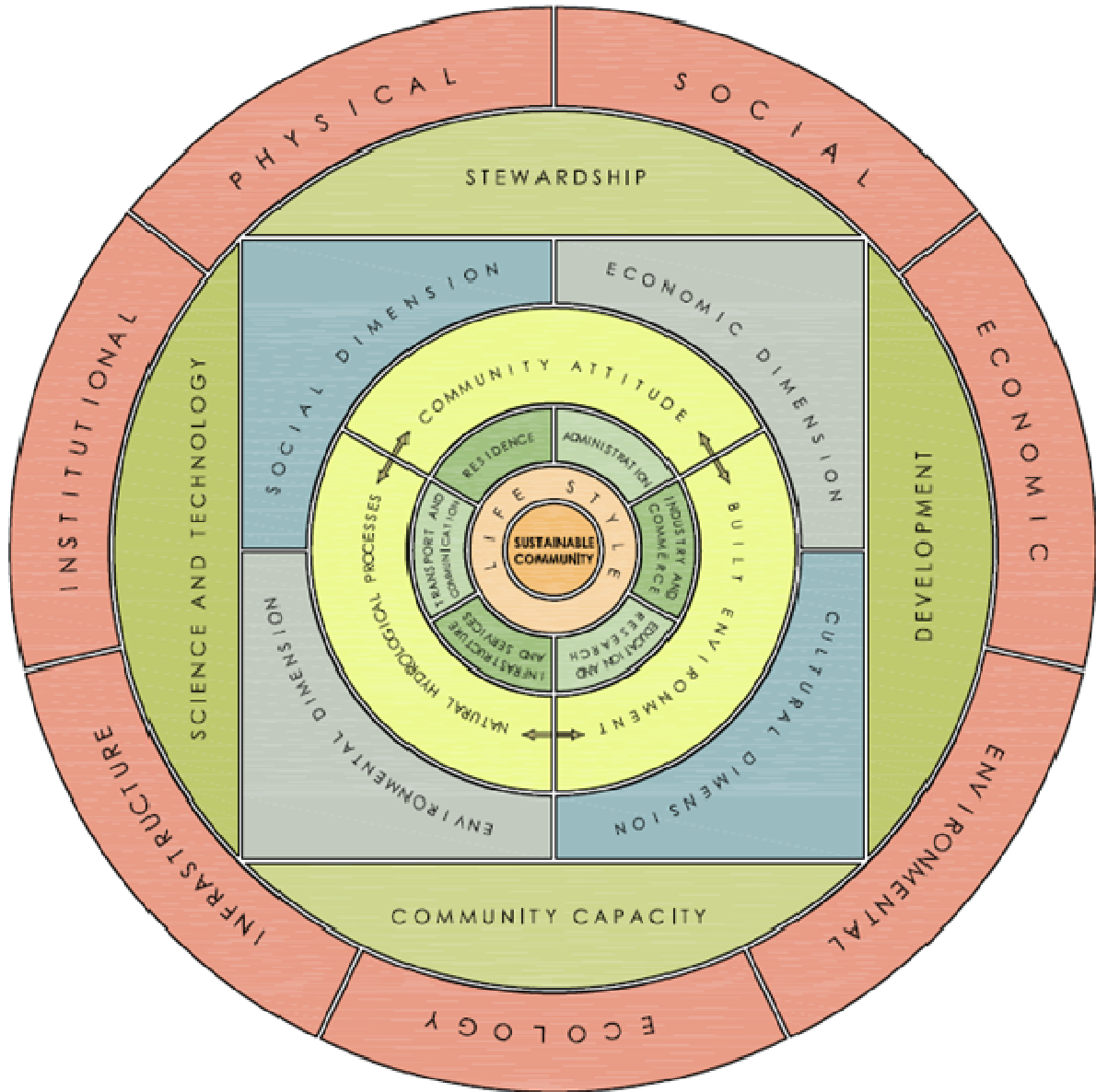


Figure 14: Integrated Model- Concept for Sustainable Community of an Urban System

Source: Compiled by the investigators based on the Global report on Human Settlements, 2011[22]

Flood waters diverted into new lakes in parks solved the problem of dangerous flooding, while also protecting valley floors and riverbanks, acting as a barrier to illegal occupation, and providing aesthetic and recreational value to the thousands of people who use city parks. A view of natural flood control park is presented in Figure 13.

Downtown areas were transformed into pedestrian streets, including a 24-hour mall with shops, restaurants and cafes, and a street of flowers with gardens tended by street kids. The Figure 10 and 12 clearly represents the pedestrian oriented approach in the system.

The “green exchange” employment program focuses on social inclusion, benefiting both those in need and the environment. Low-income families living in shantytowns unreachable by truck bring their trash bags to neighborhood centers, where they exchange them for bus tickets and food. This means less city litter and less disease, less garbage dumped in sensitive areas such as rivers and a better life for the undernourished poor.

Under the “garbage that’s not garbage” program, 70% of the city’s trash is recycled by its residents. Once a week, a truck collects paper, cardboard, metal, plastic and glass that has been sorted in the city’s homes. The city’s paper recycling alone saves the equivalent of 1,200 trees a day.

The “capacity building job line” was created to generate a better quality of life for people in the region surrounding a new economic development axis of Curitiba. Specifically, the goal is to provide jobs and income for the unemployed among 400,000 people living in 15 peripheral towns, and to structure and develop the region according to integrated planning principles.

Analysis

The result of the strategy, which put people at the center and emphasized integrated planning, is that the city has become a showcase of ecological and humane urbanism, with ongoing improvements over the past 47 years to social, economic and environmental conditions for its residents. Curitiba has become the most sustainable of cities, in the process proving that applying a city strategy with strong values and a focus on integrated systems can harness the actions of planning departments to meet common strategic objectives.

Articulation of strong, local core values in a city plan.

Integrated planning processes structured to assure that planners in all areas know the strategy and are working with a shared vision and developing their plans together. This way, many problems of unlinked development can be avoided.

70% of the city’s trash is recycled. Residents who live in shantytowns get free groceries and bus tickets in exchange for their bags of garbage, and have access to social programs and health services funded by recycling programs.

Nearly one-fifth of the city is parkland, and volunteers have planted 1.5 million trees along the streets. The city has 200 kilometers of bike paths, and 52 square meters of green space per person.

There’s a model, inexpensive, speedy transit service used by more than 2 million people a day. There are more car owners per capita than anywhere in Brazil, and the population has doubled since 1974, yet auto traffic has declined by 30%, and atmospheric pollution is the lowest in Brazil.

Much of downtown is a vibrant pedestrian zone. Tourism generated US\$280 million in 1994, 4% of the city’s net income. Per capita income is 66% higher than the Brazilian average.

Future expectations relate to Curitiba’s metropolitan area, where the city’s strategy is being applied to improve the lives of people in the surrounding region.

IPPUC was effective in ensuring planning continuity and success regardless of political, economic and social challenges, and made substantial contributions as a laboratory for finding creative, integrated solutions to urban planning problem.

Commitment to local values such as accessibility, transparency, social justice and poverty reduction and efficient resource management are what resulted in Curitiba’s sustainable development, which is more than simply “environmental.”

The integration of different elements of urban development avoided problems associated with piecemeal development such as pollution, traffic congestion and unsustainable fuel consumption rates. For example, integrated transportation and land-use was the key to the city’s development, controlling growth, cutting pollution and enhancing the life of residents.

Establish a close relationship between public transportation and land-use legislation as a guidance and development tool. Cities’ environmental quality and economic efficiency are highly dependent on transportation systems that are well-integrated with urban form because this lets them avoid weak transportation systems and unsustainable dependencies on private cars.

Developing new models that provide inexpensive, creative urban solutions and reflect local values are an alternative to standard, often higher- cost approaches.

Sustainable developments that have taken place in Curitiba at a glance: (i) **Environmental**

(a) Minimizing damage to the environment, e.g. reducing pollution and waste (b) Preventing the depletion of natural resources, e.g. using renewable energy, less reliance on fossil fuels, a compact city to minimize travelling distances (c) Developing a green city environment, e.g. Green space initiatives (ii)

Economic: (a) Providing adequate and secure livelihoods and/or Access to income via a range of employment (iii) **Social:** (a) Provides a reasonable quality of life, e.g. affordable housing (b) Provides opportunities to maximize personal potential, Example, education, medical services (c) Provides political freedom, Example, equal opportunities and community involvement in the decision-making process (iv)

Major reasons observed for the success of these developments; which includes (a) Integrated nature of planning of practical problem solving (b) Emphasis on sustainable green growth, linking both environment and economy (c) Involvement of people at all stages in planning (bottom up) (d) Emphasis on help for all, even the very poorest people (equality) (e) Dynamism of leader, readiness to go for workable medium cost solutions

INTEGRATED SUSTAINABLE COMMUNITY PLANNING: A SYSTEM'S APPROACH

Perhaps one of the greatest challenges of the Integrated Sustainable Community Process is to foster integration in the planning process. This means that decision-making processes should include consideration of a broad range of environmental, social, cultural and economic impacts. The division of responsibilities in local governments (transportation, housing, economic development) is usually based on traditional sectors and has little relationship to ecosystem, societal or economic sustainability. The separation of functions within a municipal organization often results in a decision-maker in one area overlooking impacts that would be readily apparent to people in other areas. It is very much essential that respective stakeholders from different sectors of society actively participate in reaching basic a consensus on the path to take towards sustainability. In using an integrated approach for community planning, key to define problems and issues in ways that recognize the inter-sectoral relationships between the factors contributing to the problem. This way, solutions are more easily crafted in ways that simultaneously address different factors, such as the underlying social and economic challenges related to housing and homelessness issues.

Urban System Concept

The following sub-systems are linked together and form an urban system. They are physical, social, economic, ecology, environment, infrastructure, and institutions. All these subsystems are interlinked and interdependent to each other functioning as a whole. Urban system is purely a dynamic system since it is always functioning. "A system functions as a whole with the interaction of several sub system. All the subsystems of the systems are interlinked and inter dependent on each other". If one of the sub systems of the system defunct its effect can be seen in the whole system. Similarly, if one of the subsystems takes a lead role or has advanced functions in the system, its effects can also be observed in the whole system". In this present investigation the whole region is considered as system, since it has several subsystems and all the sub-systems are interlinked and interdependent to each other, and function as a whole. Urban system has different subsystems, such as, physical, social, economic, ecology, environment, infrastructure, and institutions. These all subsystems are interlinked and interdependent on each other and functions as a whole.

Generic Interrelation and Interaction Of Subsystems Of An Urban System

Physical Subsystem

Physical subsystem consists of the land, topography, availability of water resources, vegetation, minerals and climatic conditions. The growth of any settlement can be controlled by these factors on one hand, and the physical subsystem consists of the danger of fire and flood, extreme climatic conditions, storms, the possibility of natural disasters such as earthquakes, Tsunami and volcanic eruption on the other. These are the factors which are highly influence the people and also determining factors in deciding whether to settle or move to different sites. The study area is located on the sea front and features of the coastal area are unique, compared to other cities in India. In olden days, many villages were located on the sites that offered some natural protection, site such as elevated terrain, islands and peninsulas; otherwise they would have to build some artificial protection around their settlement. The larger early urban areas, with some exception, are found where the climate is relatively moderate. Geographic studies reveal that the most of the urban settlements are located on relatively flat terrain. Physical conditions derive the type of settlement, architecture, food, clothing, culture and civilization. For example in hilly regions of North-East of India , prefer sloping roofs of their houses, so that in heavy rains the water could drain out of the roof. The people wear thick cloths for prevention from cold. Abundant water resource and fertile land encourage people to cultivate rice and

hence rice has become the bread basket of this region. Similarly, in Rajasthan State, where the terrain is relatively flat, and rainfall and vegetation are less because of water scarcity, people go for flat roof, stone jails in their buildings and preferred to wear colorful cloths.

Physical subsystem decides the boundaries of a particular settlement. Riverside cities are linear and somewhere hills and ponds define the boundaries of the city. City's physical subsystem consists of housing, public buildings, market and offices, parks and playgrounds, roads, flyovers and bridges etc. Man's intervention converts natural environment into built environment. Urbanism brings about many changes in surrounding environment. Building occupying formerly open land, pavements on streets, smoke from vehicles and factories, can alter the climate. Solid and liquid wastes from housing, industries, market can destroy the natural environment. Environment and health are important for the masses and need to be preserved and conserved. This conservation requires health facilities and can be taken in use with the capital investment. Important thing is that all the functioning of subsystems of the city, i.e., physical, social, and economic, ecology, environment, infrastructure and institutions are interlinked with each other.

Social Subsystem

Social subsystem can be observed in the behavior pattern of the people, religion, caste-system, tradition, culture and civilization. Man is a social animal and society has been built by the hands of natural forces. The fear from animals, and natural calamities, inspired people to live in groups and hence they formed society. Communities are the part of nature and people have suffered from many evils they have inflicted on the environment. They have faced the necessity to improve economic security, correct social maladjustments, discard mass superstition, or resist seizure of power by autocrats bent upon personal glory and self-aggrandizement. The main distinguisher of urban and rural system is the social and political organization. Social advancement lies in the people but can make permanent aesthetic changes. For example, the Romans built their cities complete with temple, theatre, stadium, great bath, and villas, etc. The built environment of Rome indicates the strong social, political and administrative structure of the city. The built environment of Orissa State of India indicates the religious and architectural development of society, as there are so many temples built in stone and with a special style of architecture. Social advancement promotes education, administration and economy. Ancient times there were Religious schools, like Madarsa of Islam, Buddhist school and Ashrams of

Hindus and these were there for religious education. However, in Gurukuls and Ashrams the lessons of physical training, meditation (Yoga), war, music, dance and drama were also taught. Rest of the culture was being transferred by old generation to next generation in the houses only. This education was restricted to a special caste of the society and boys only. Girls were taught in houses only. Nowadays with the consequence of social transformation the educational parameters are expanded, and education has become open to all the sectors of the society, and for both the genders. Field of education is also expanded from religion, war and arts to technology, marketing, advertisement, industrial training and several other sciences. Social gatherings, religious functions, sports conventions, fashion shows, theatre, cinema, marriages, etc., are such parts of social subsystem which have major role in economic subsystem.

Economic Subsystem

People are engaged in economic activities to lead a comfortable life. The whole emphasis of activities is given on gaining and spending wealth. People want to upgrade their lifestyle, and this greed results in the multidimensional growth, in terms of economic activities. Money is required first to fulfill the basic needs (physical), and then to fulfill the demands (luxury and comfort). Economic development is dependent over availability of natural resources, human capital, education, technological advancement, public health, healthy social conditions and availability of market and customers. As the economic conditions are improved, more and more people are shifted from primary sector of economy (agriculture, forestry, fishery, horticulture and allied activities) to secondary sector (manufacturing units), and tertiary sectors (service, administration and education) and as the economy is developed, the GNP in primary sector would be decreased.

A high average level of real income per head is always associated with high proportion with working population engaged in tertiary sector. Primary sector of economy lies in the rural settlements and urban economy lies in secondary and tertiary sectors. Manufacturing sector, i.e., industries is associated with the production of processed materials and goods. More the number of industries require more number of skilled and unskilled manpower. This gives rise to housing requirement, market, health services, schools, and safety and security measures and in this way the tertiary sector of economy is naturally developed. The physical subsystem is affected by the economic subsystem in order to develop the industries and the other requirement of industries, i.e., housing, amenities and other infrastructural services. Secondary sector of economy requires a

well developed infrastructure, i.e., water, electricity, sewerage system, roads, transportation, and market (commercial area; economic subsystem). This means that economic subsystem must be well supported by physical subsystem for its proper functioning. Industrial activities are very much essential for the development of the economy. The consequences of proper functioning of economic subsystem are the increase in the income and saving and improvement of lifestyle on one hand, and environmental degradation on the other. Industries produce smoke, dust, solid waste, waste water, chemicals, etc, which cause environment pollution. In this way the environmental subsystem is disturbed. If the balance between industrial production and environment is to be maintained, it also requires technological advancement to control pollution and also the assets to afford the applied the applied technologies. Economic growth then becomes necessary to sustainability, as it alone can provide the necessary financial resources and technological capacity required to deal with environmental problems. There is a strong relationship between economic, institutional, and social subsystem too. Whenever there is commercial, industrial or educational development, it attracts the people from different areas for employment opportunities. As the people from different places accumulate at a place, they bring different culture and this amalgamation of different cultures brings an altogether different culture. The social stratification which was done according to religion, cast and community is done over the basis of occupation and economic status.

Ecological Subsystem

Ecology and economics both the words are derived from a same root, which deals with "housekeeping" in the sense of management of man's works. Extending economic cost-accounting to include the natural environment, as well as manmade structures and developments is an important step in redressing dangerous imbalances between these two necessary components of man's total environment. The ecological subsystem consists of many bio-systems. System is a regularly interacting of interdependent group of items forming a unified whole. The communities (human and animal) and non-living environment function together as an ecological system or ecosystem. Urban subsystem contain human population, birds and animal population, large number of trees substantial area of grass and shrubs, and in many cases, lakes and ponds-so they do have a autotrophic components or green belt. This large system can be compared with a large, mature forest, like a large elephant which have a tremendous metabolism and requires a large flow of energy to sustain it. There is no such thing as steady thing as a large stone, but the circulation of energies within the

body, be it a city, forest or body of an elephant. Sometimes elephant may not get food, or forest may not get rains, but they have ability to sustain for some time, even without fulfillment of all the needs. Natural ecosystem has this ability. Whatever the hazards occur, nature has ability to come back into its own, original and healthy state, but this ability is rarely found in the urban system, as the urban system is the fuel-powered ecosystem, or industrial system. Here, highly concentrated potential energy of fuel replaces, rather than merely supplements, sun energy. The other sources of energy are non-renewable and hence non-sustainable.

The organic production (energy) of the city's green belt does not contribute appreciably to the support of people and machines that so densely populate the urban-industrial area. The urban forests and grasslands do have an enormous aesthetic value and they do contribute indirectly to pollution abatement by reducing noise, carbon dioxide, and other waster products of fuel consumption, but fuel and labor expanded in watering, fertilizing, pruning, removing wood and leaves, and other work required to maintain the city's private and public green belts, adds to the energy cost (money) of living in the city. The natural water resources available should be prevented from all kinds of pollution and also much attention must be given to maintain its ecological balance in the system.

Environmental Subsystem

Natural environment cannot provide the comfortable living conditions to mankind; it has to be molded in such a way that the resultant built environment can give safety from harsh natural conditions and animals. Built environment consists of buildings, barricades, roads, parks, playgrounds, etc. Cities themselves are unique from of natural, built and cultural environment. As a natural environment, cities have their own distinctive properties, such as the urban heat island, wind tunnels created by large buildings, and air intervention effects, etc. Yet the natural environment is molded into artificial environment, but in the absence of favorable built environment human health may suffer a lot. The functions of natural environmental subsystem are: (a) There are natural resources for production and consumption, principally raw materials and energy. (b) The natural environment operates as a sink for society's waste products, and (c) It provides a series of free services; like fresh air, water and vegetation.

The relation between physical, and economic subsystem can be understood. If the physical subsystem is not built properly then the human physical and mental health is badly affected and to get rid of this difficulty, the support of social and institutional subsystem (health services) and

economic subsystem (funds for availing the health services) is required. Urban environmental subsystem is not just the built environment, but the social, economic and political environment. Social, economic, and political environment determine the quality and growth of the physical environment. Environment means physical conditions, not psychological. The total environment of the city consists of this entire environment. Urban sprawl can pose particular problems by eating into valuable natural habitats, whilst cities also pass on some of their impacts, making intensive demands on the natural resources of their hinterlands, such as quarries for building materials. Estimation of economic value of the natural resources is never ever done before its over-exploitation, however the commodities which are made out of these natural resources, or with the help of these resources have their own market price. One can conclude based on the above that there is a strong relationship and interdependency among the environmental, physical, economic and ecological subsystems.

Infrastructural Subsystem

Urbanization and the phase of its acceleration is the foremost important aspect in deciding the level of the kinds of infrastructure requirement in the urban system, for its development. The features of urban population are changing not only as a result of its dynamism, but also the national development in which it belongs. Cities, towns, and urban agglomerations are expanding faster in most of the regions of the world than the overall growth of the population, due to availability of infrastructure services in the particular system. Infrastructure is divided in to three types, which include physical, economic and social infrastructure. (i) **Physical:** water, drainage, sewerage, solid waste management system, roads, rails, gas, airways, and waterways, etc. (ii) **Economic:** All kinds of work centres, workshops, industries, trade and commercial centres, banks and financial institutions, advertisement institutions, legal firms, broker office, online transaction centres etc. (iii) **Social:** parks, nurseries, water bodies, accessibility to internet connection, e-governance, education and health institutions, Police and defense services, Economic back-up and institutional framework readily available at the time of floods, earthquakes, or any other natural calamity, etc.

These entire three infrastructures are very much essential for the development of any urban system. In India, the urban system which has more infrastructure services developed further, and continuously growing with higher intensity, whereas the urban system has less infrastructure services grows with less intensity. Provision of required amount of infrastructure services to the Indian urban system becomes a

mirage, due to the functions of population explosion in the urban system on one hand, and the Government of India and the respective State Governments attitudes on the other. Further, it has been also observed from various studies that whatever infrastructure is made available in the urban system by the Government of India and by the respective State Governments, turning into a drop in the ocean, due to the functions of population explosion, in the urban system. Various studies proved that there is strong nexus between infrastructure services and economic development in the urban systems. According to United Nations, "Cities are the engines of economic development" "but, according to the investigator's view, without required amount of infrastructure services in the urban system, the cities cannot be the engines of economic development.

The population of the Indian cities is growing and there is rapid growth in demand. Indeed, there is a wide gap between demand and supply as because of migration large number of people is coming towards city, the demand for infrastructure is more and supply is less. There is lack of resources, and even the financial resources are less. Institutional parameters show that there is lack of public and private partnership for the development of infrastructure. The use of ineffective and obsolete technologies is also the governing factor for poor infrastructure development. Even if the physical infrastructure is built, the lack of maintenance pulls it behind and leaves in unusable state.

Institutional Subsystem

Integrated functioning local governing bodies, working for planning, development and maintenance of the region are required for the holistic development of the city or region.

Integrated Model Concept for Sustainable Community

Overview of the integrated model concept, indicating broadly the players that influence community sustainability has been illustrated in Figure 14. The human settlements components comprise the following components: (a) **Community:** This primarily represents the individuals or members comprising the community and their characteristics, such as population size, gender divisions and income levels. (b) **Community Lifestyle:** This represents the community's way of life and associated practices, including water and sanitation practices, and waste disposal. (c) **Community attitude:** This represents the prevalent attitudes of the members in the community towards various objects, issues and activities in the living environment. (d) **Built Environment:** This represents the physical environment created by the community to accommodate its lifestyles. It includes

features and characteristics of the built facilities, including construction modes, pavements and drainage systems. (e) *Community Sustainability*: This represents the assessment of the community's sustainability. It involves the selection of suitable indicators that will form the basis for sustainability assessment.

The link between the components and the interactions between the built environment and natural environments are to be examined to understand their functional integrity of an urban system, which are summarized below: (a) The attitude responses obtained from the community, addressing issues that threaten its sustainability. It includes the community's responses to varying scenarios that it is likely to face. This information is crucial in forecasting the sustainability of the specific community. (b) The influence of community attitude on their life and practices, attributed to the lifestyles it pursues. (c) Influence of community's attitude on the built-environment to accommodate its lifestyle. This also includes the built-environment features attributed to the community's response to the widespread natural environment and its processes. (d) Interaction between community lifestyle and community represents the specific community under study. (e) Interactions between community and built-environment indicate the specific community under study and its built-environment, considered in association with the widespread natural environment and its processes. (f) Interactions between the built-environments and natural environments attributed to the lifestyles that the community pursues. The nature of these interactions would reveal the likely scenarios in the living environment, which has a strong influence on the sustainability of the community. (g) Interactions between community and Community sustainability indicates of suitable criteria, based on the specific community under study, to assess its sustainability.

To summarize the integrated model concept, the built environment interacts with natural environment, indicating the likely future scenarios in the living environment, which has a direct impact on the sustainability of the human settlement. The urban lifestyle indicates that community activities such as Residence, Administration, Industry and Commerce, Education and Research, Infrastructure and services, and Transport and Communication which are interacting with built and natural environments. The community attitude, Community lifestyle, community activities, built environment and natural environment and their common linkages and causal relationship have to be visualized in four dimensions, such as Environmental, Social, Cultural and Economic dimensions respectively. The sustainable community

is the center concern for achieving sustainable development of an urban system, through systematic examination by employing urban system concept to understand and establish their functional linkages for arriving plausible solution

Vision of Four Dimensions of Sustainability

In India, sustainability is founded on development as a qualitative concept, incorporating philosophy of improvement and progress, which includes *cultural* and *social*, as well as *economic* and *environmental dimensions*. It has been recognized that as Indian urban communities become increasingly diverse, culture plays an important role in building social cohesion, a sense of community and a shared value set that is rooted in local diversity. Cultural investments can reinforce place-based community development objectives related to employment and innovation, neighborhood revitalization and environmental sustainability.

Environmental Sustainability

It is the capability to equitably meet the vital human needs of the present without compromising the ability of future generations to meet their own needs, by preserving and protecting the area's ecosystems and natural resources. In this sense, sustainability describes a condition in which human use of natural resources, required for the continuation of life, is in balance with Nature's ability to replenish them. Planning for sustainability requires a systematic, integrated approach that brings together environmental, economic, cultural and social goals and actions directed toward the following four objectives: (a) Reduce dependence upon fossil fuels, extracted underground metals and minerals. (b) Reduce dependence on chemicals and other manufactured substances that can accumulate in Nature. (c) Reduce dependence on activities that harm life-sustaining ecosystems. (d) Meet the hierarchy of present and future human needs fairly and efficiently

Social Sustainability

Social Sustainability emerged as a fundamental component of sustainability, with the recognition that environmental sustainability is unattainable without accompanying social justice. Community social sustainability is a process of community development, supported by policies and institutions that ensure harmonious social relations, to enhance social integration and improve living conditions for all citizens. The redistribution of resources, as well as equal access to the means by which to fulfill basic human needs, including housing, employment, public facilities and services that are all central to social sustainability.

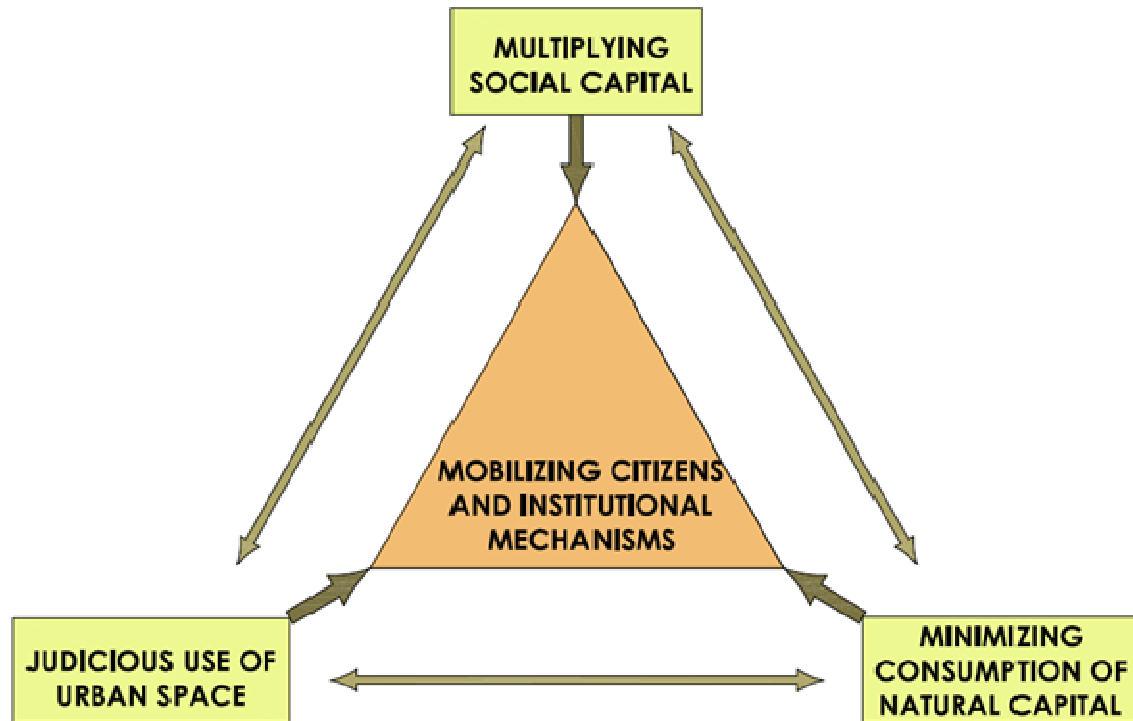


Figure 15: A Generic Framework for Sustainable Community Development
Source: Compiled by the investigators

Social sustainability can be defined as the highest attainable level in living standards measured against the lowest negative impact on the environment, culture and the economy, with the following objectives: (a) The basic needs of citizens with respect to food, shelter, education, work, income and safety are met; (b) Access to opportunities are distributed equitably and fairly across society; (c) There is an environment of conviviality, wherein citizens live together harmoniously and in mutual support of each other; and (d) Individuals have the opportunity and are encouraged to participate in civic processes.

Cultural Sustainability

When compared to the other three dimensions of sustainability, cultural sustainability objectives are probably the least defined and, to a large extent, are the least booming with decision-making leaders facing more immediate pressures such as infrastructure, transit and housing. Despite increasing diversity in communities, the longer-term benefits of culture in terms of promoting community identity and

cohesion are difficult to quantify and therefore less evident to municipal decision-makers. Many cities and communities have invested in arts and heritage as an important element of their revitalization and renewal strategies. Cultural tourism is also on the rise and is increasingly linked with community branding and economic development initiatives.

Economic Sustainability

There are several facades to economic sustainability. On one level, it focuses on development, not simply growth. This implies the economic activity that is conducive to, as well as supports, sustainable community development. It also requires that the use of appropriate technologies encourages the use of renewable resources and inputs to production, actively discourages the generation of externalities arising from economic activity, such as air, water and soil pollution.

In addition to the above, it is pertinent to point out here that *time* is also important player since the sustainable community development is a dynamic

process which emphasizes on long-term perspective, however excludes natural disasters. Under these circumstances, the proposed integrated model concept for sustainable community development may require some modifications with relevance to real time scenario.

A FRAMEWORK FOR SUSTAINABLE COMMUNITY DEVELOPMENT

The city can also be imagined as an ecosystem. Such a concept provides a tool to understand the complex relations between human activities and the environment, and how communities can organize their activities to both meet human needs and benefit the environment. The general framework under discussion here is presented visually in Figure 15.

Social capital refers to the stock of civic virtues, shared norms of reciprocation, gift-sharing, volunteerism, mutual aid, and engagement in community/ public issues and group problem-solving skills. Global resource depletion and pollution are forcing recognition that existing patterns of development and resource use are not sustainable. *Natural capital* refers to any stock of natural assets that yields a flow of valuable goods and services into the future. For example, a forest, a fish stock or an aquifer can provide a harvest or flow that is potentially sustainable year after year. The forest or fish stock is "natural capital" and the sustainable harvest is "natural income."

The total stock of environmental assets that comprise this natural capital may usefully be divided into three categories: (a) non-renewable resources, such as minerals and fossil fuels; (b) the finite capacity of natural systems to produce "renewable resources" such as food crops, forestry products and water supplies, which are renewable only if the natural systems from which they are drawn are not overexploited; and (c) the capacity of natural systems to absorb the emissions and pollutants which arise from human actions without side effects which imply heavy costs passed onto future generations

The critical resource for enhancing social capital is not money; rather, the critical resources are trust, imagination, the relations between individuals and groups, and time, the literal currency of life. Many of the social issues that people relate to most intimately family, neighborhood, community, decompression from work, recreation, culture, etc., depend on these resources at least as much as money. This is not to say that economic security is not important, but focusing solely on money to provide security is using 19th century thinking to address 21st century challenges. We must explicitly aim to care for and multiply social capital in order not only to preserve our stock of natural capital but also to improve our

economic and social well-being. Government and corporate decisions should be reviewed for their effects on both natural and social capital. Programs and policies need to be effected at every level to insure that natural and social capitals are considered properly.

The unprecedented increase in the population in the Indian cities continues to put pressure on the existing housing facility. The inability of the housing delivery to cope effectively with the housing need has succeeded in pricing out majority of the low income-earners from the housing market. Most affected groups are the immigrants from the rural hinterland that prefer to settle at the suburbs of the cities. Cities and urban spaces present unlimited socio-economic opportunities, particularly in area of landed property development. The operations of the economic forces in the supply of land for commercial development within the city centre are encouraging the acquisition of land at the suburb of the city for residential property development. This has sufficiently pushed the greed for land speculation and noticing at the suburbs. The urban space become scarce resource due to accumulation of population and sprawled development. Cities in India are ridden with urban sprawl; there is urgent need of people-oriented strategy for judicious use of space at addressing the problem of urban sprawl and associated environmental chaos. In summary, applying the concept of sustainable development to the communities begins with unprecedented and simultaneous emphasis on the *judicious use of urban space*, on *minimizing the consumption of essential natural capital*, on *multiplying social capital*, and on *mobilizing citizens and their governments* toward these ends.

POLICY INSTRUMENTS AND PLANNING TOOLS

Policy Instruments

There are many ways to mobilize citizens and their governments toward sustainable communities, but there are also many barriers and obstacles that hamper our progress in this direction. In recent years there has been increasing interest in the use of "economic instruments" in environmental policy. These tools influence the behavior of economic agents by providing financial incentives to environmentally improved behavior, or disincentives to damaging behavior.

Policy instruments are divided into four broad categories, according to Jacobs [14], although many instruments could actually fall into more than one category. The first is traditional *regulations* such as permits and licenses that have a legal basis. A second category is *voluntary mechanisms* or actions taken that generally do not require expenditure. Third

comes direct government *expenditure* such as money spent on improved infrastructure. Lastly, there are *financial incentives* such as taxes, subsidies, tradable permits, and rewards. Financial incentives do not require people to change their behavior or values, and do not usually require as much enforcement as regulations.

Planning Tools in Action

In June 1992, the United Nations Conference on Environment and Development established *Agenda 21*, a sustainable development action plan for the 21st century. In response, ICLEI has established the *Local Agenda 21 Initiative* of International Council for Local Environmental Initiatives (ICLEI, 1993) to provide a common vehicle for local governments to strengthen local environmental planning and, thereby, to aid in the implementation of *Agenda 21*. [13]

Agenda 21 supports local government in developing and introducing a sustainable development planning framework at the local level. ICLEI proposed a common planning framework based on four basic planning elements now in use, individually and in various combinations, by dozens of municipalities around the world. The four planning elements are: (a) *Community Consultation Processes*, such as Round Tables, to achieve input and participation from every sector. (b) *Sustainable Development Auditing*, to provide sound information about current conditions. (c) *Setting Sustainable Development Targets*, both near- and long-term, for quality of life, environmental quality, resource consumption, and human development. (d) *Development and Use of Indicators*, to inform the community about the impact of its programs and investments upon the sustainable development of the community

THE SUGGESTED PLANNING STRATEGIES

This paper has described the Indian public policy response to growing concern about the social and environmental impacts of sprawling development patterns. The importance of holistic approaches and the reality that managing urban growth and protecting open space are two sides of the same coin are increasingly recognized. The following embryonic city planning strategies were evolved and recommended for the efficient management of urban growth, through the guiding principles of community sustainability.

Encourage a diversity of population while targeting younger people to live and work in the area

Desired Outcomes

(a) A positive climate for business (b) A range of housing types (c) Strong linkages locally, interstate and overseas (d) Learning and training opportunities

for local, interstate and overseas people (e) A culturally diverse and vibrant place to live

Strategies

(a) Employment and Economic Development: (i) Increase Workforce Population (ii) Increase Business Investment and Employment Opportunities (iii) Improve the Range of and Access to Services (iv) Improve Reputation and Business Climate (v) Expand into New and Larger Business Markets (b) Population and Housing: (i) Increase Provision of Affordable Housing (ii) Increase Housing Diversity (iii) Increase Proportion of Permanent Residents (c).Connectivity: (i) Improve Information Communication Technology Services (ICT) (ii) Improve Regional Transport Connections (iii) Integrate Transport Services and Land Use Planning (Transit Oriented Development) (iv) Promote Safe and Legible Road, Cycle and Pedestrian Networks (v) Improve Public Transport Services (d) Community: (i) Expand Options to Access Higher Education and Skills Development (ii) Encourage the development of a child and family friendly community (iii) Encourage the Development of an Environment that Supports Positive Ageing (iv) Support Youth Participation

Achieving the sustainable provision of physical infrastructure and community services

Desired Outcomes

(a) Effective Management of Urban Growth (b) Sustainable Development that Minimizes Dependence on Valuable Resources (c) Move toward Self-Sufficiency in Water, Wastewater, Hard Waste and Energy (d) Efficient and timely provision of Community Services

Strategies

(a) Physical Infrastructure: (i) Stage Release of Residential Land ahead of Growth and in line with Staged Service (ii) Establish Critical Mass for Effective Recycling (iii) Encourage Storm water Retention/Detention and Reuse (iv) Improve Quality of Receiving Waters (v) Maximize Reuse of treated Wastewater (vi) Reduce Energy Consumption through Energy Efficient Design and Construction (vii) Encourage use of Sustainable Energy Sources (b) Community: (i) Develop Community Meeting Places responsive to Community Needs (ii) Facilitate the effective Provision of and Access to Health and Community Services (iii) Create Safe Neighborhoods through Defensive Urban Design (iv) Plan for the Appropriate Location of Children's Services, Facilities for the Aged, Recreation and Sporting Facilities and Education Facilities. (v) Improve Disability Access and Information (vi) Ensure Parks, Reserves and Open Space Provided and Maintained

Balance the pressures of a high level of growth by safeguarding the environment, lifestyle and prosperity

Desired Outcomes

(a) Landscapes, Townscapes and Natural Environment protected, conserved and enhanced (b) Ecologically Sustainable Urban Design and Development (c) A Sense of Community Ownership and Involvement

Strategies

(a) Environment: (i) Protect Ecological Values and Biodiversity (ii) Protect Landscape and Townscape Values (iii) Encourage a Compact Urban Form (iv) Respond to Impacts of Climate Change (v) Curtail sprawled development (vi) Encourage High Density and Mixed use development. (b) Community: (i) Encourage a Vibrant Community Culture (ii) Encourage Community Interaction (iii) Urban Design to Recognize the Impacts of Wild Fire and Flooding

CONCLUSION

The antecedent case studies on sustainable communities stimulate the countries or residential areas which lack in sustainable community development's concrete experience and knowledge, to plan improvement schemes and develop fresh ideas for better urban growth management. Especially, the precedence cases that prove the holistically approached planning is realistically possible would perform a role of converting a way of thinking and an attitude in Indian society where an overall demolishing method and a top-down approach method have been interspersed. With this viewpoint, Jaime Lerner, architect and urban planner, Curitiba case, this has enough potential to become globally renowned and emerged as a leading experimental case was analyzed. In particular, the characteristics of how this case's long-term effort had run on were systematically identified in order to present to the countries which are unfamiliar with holistic planning approach, in an uncomplicated way with four dimensions; social, economic, cultural and environmental for attaining sustainable community development in the system. In general, it is expected that it encourages to think creatively and to reduce errors that might occur in the future regeneration projects by suggesting ways of thinking on integration of community and directions of specific project ideas for managing contemporary urban growth and to navigate towards sustainable community development. For further studies, as citizens were actively participated in the city development process, if the process on how citizens were involved and how urban planning progressed along with citizen participation were analyzed, it would be a great help to embody built environment

within the citizen leading society, which prevails in the contemporary urbanized world.

The challenges planners and policy makers' face in managing urban growth and protecting open space in the 21st century are daunting. One basic factor that is essential to successful implementation of planning project is to embrace sound planning practice that is based on evolving principles. It is time for city dwellers particularly in India and other developing countries to note that government resources are limited and its areas of attention are unlimited. This has made the need for collaboration between government, NGOs and the public in curtailing urban sprawl. Therefore, the strategy of planning with the communities in a bid to check urban sprawl as suggested would go in no small measure at enlisting the support of the developers. In the context of India, the perspective, detailed in this research paper can be viewed as illustrative of values that are prerequisite for a sustainable society. Sustainable community development initiatives themselves serve not only as points of intervention, but also as processes for social learning by which communities can mobilize positive change toward a sustainable society. Developing a sustainable society requires both shifting away from values which encourage unsustainable behaviors and also shifting toward values which promote sustainable practices. As depicted by these initiatives, active social learning programs, attempts through social experimentation to change social behavior can be effective not only in preventing a host of environmental and related social disasters, but also in creating healthy, sustainable communities which will be more pleasant and satisfying for their residents than the communities we live in today. Sustainable communities will not, therefore, merely "sustain" the quality of our lives, they will dramatically improve it.

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