

“Transition towards Sustainability” – *Opportunities and Challenges*

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Abstract— In defiance of representing only 2.7% of the world’s total surface area, the world’s cities are responsible for 75% of the world’s energy consumption. Hence it becomes essential to redesign the cities in the transition towards sustainability. As far as the planning and designing of the sustainable neighbourhoods is concerned it is not at all a simple task as there are no certain fixed agreements to state what the sustainable settlement should be and which system to be followed to achieve it. Besides this planners have to struggle hard to achieve a balance between financial, environmental and socio-cultural goals and must tackle with multiple role players and stakeholders and with contextual site-specific characteristics. The aim of this paper is to elaborate the key governing parameters – both opportunities and Challenges – identified in the process of designing and planning the sustainable neighbourhoods. It is observed that territorial, financial, legal and political are the most important governing parameters. The paper concludes with a finding that there is no one unique system to achieve urban sustainability since the design of neighbourhoods in different locations will lead to different outcomes.

Keywords: Urban Sustainability, Sustainable Transition, Sustainable Neighbourhoods, Sustainable Design.

1. INTRODUCTION

¹ Urban areas and environments are expanding worldwide and this ever increasing urban population is likely to become even larger. Old cities are being restored and new cities are emerging worldwide. ²With this unprecedented growth in urbanisation will lead to important impacts on Earth’s environment. Global sustainability is a major issue of urban sustainability - considering the impact that people living in cities have on the rest of the globe and the sustainability of life in the cities themselves. Hence managing the urbanisation is one of the most important practical challenges for sustainability.

¹ Moughtin, C., *Urban Design: Green Dimensions*, Architectural Press: London, 1996.

² Steele, J., *Sustainable Architecture: Principles, Paradigms and Case Studies*, McGraw-Hill: New York, 1997.

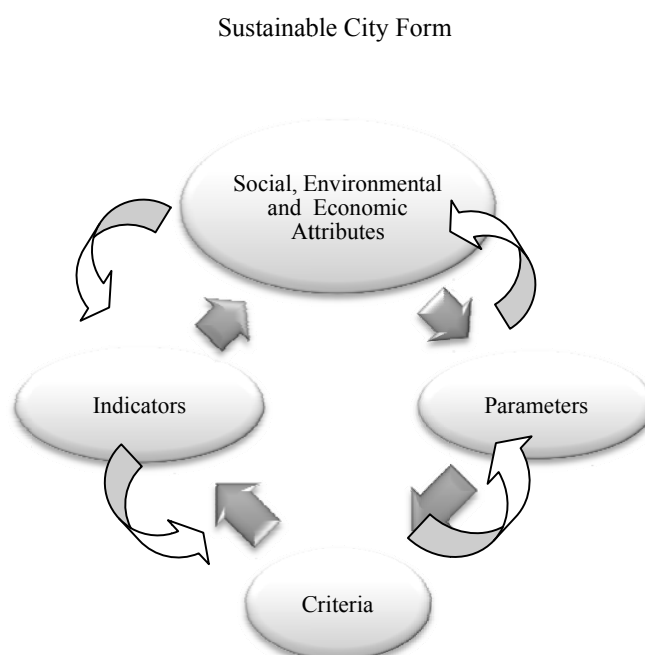


Fig. 1: The Dynamic Nature of Sustainable Urban Development Paradigm
(Source: Author)

Many efforts of urban design and planning have stressed on the need for more sustainable design on the city scale but some of this has recently shifted towards the design of neighbourhoods, which ultimately are the support systems of cities. The incorporation of sustainability principles into neighbourhood design is important because many of the problems encountered at the micro-city scale are in fact cumulative consequences of poor planning at the micro neighbourhood level. ³However, the design of sustainable

³ Leitman, J., *Sustainable Cities: Environmental Planning and Management in Urban Design*, McGraw-Hill: New York 1999.

neighbourhoods and cities is not a simple task since there is no agreement on how a sustainable settlement should be and what the system for achieving it is. The model for sustainable planning places the concern for environmental issues on the equal grounds with its traditional economic and social objectives. According to this, we define a sustainable neighbourhood as an urban settlement that is adapted to the local environmental characteristics and makes an efficient use of resource. Thus sustainable neighbourhoods encourage environmentally friendly planning, architecture and construction, co-operation and innovation, new technologies and knowledge sharing among people.

All in all, it is clear that to understand cities, we have to analyse their metabolism, a concept which was first proposed by Wolman and that has been widely supported and extended. The incorporation of the approach to the planning process may help to move away from the essentially linear nature of the metabolism of the modern cities, characterised by consumption of resources and dissipation of wastage to the environment without offering any resistance to the flow of resources through them. Furthermore, the planning process generally takes place in a complex institutional frame with a large number of public and private stakeholders. This paper tends to adapt and apply the methodology of eco-design at neighbourhood level. Besides this, a collateral outcome of the process is the obtaining of a set of governing parameters that need to be taken into account in the design of any neighbourhood. The focus of this paper is to detect and highlight the most important practical opportunities and challenges found in this process.

This whole eco-design process should be done within a stipulated time period to define neighbourhood planning proposal. Then it must be evaluated by the responsible local government. This procedure would result in feedback and will identify where the proposal should be adapted. Eventually the local government would give initial approval of the planning proposal. ⁴It must be kept in mind that the planning of a sustainable neighbourhood does not necessarily mean that the eventual neighbourhood will actually be sustainable. However a good planning proposal is the basis for the achievement of the sustainability goals and consequently the environmental performance of the neighbourhood is expected to achieve high standards. As an outcome of this whole design and planning process, several opportunities and challenges would get detected for the selected city. From them a list of governing parameters to be considered in the design and planning of sustainable neighbourhoods would be obtained.

⁴ Jenks, M., Burton, E. & Williams, K (eds.). *The Compact City: A Sustainable Urban Form?* E and F N Spon: London, 1996.

2. ECO-DESIGN AND PLANNING PROCESS

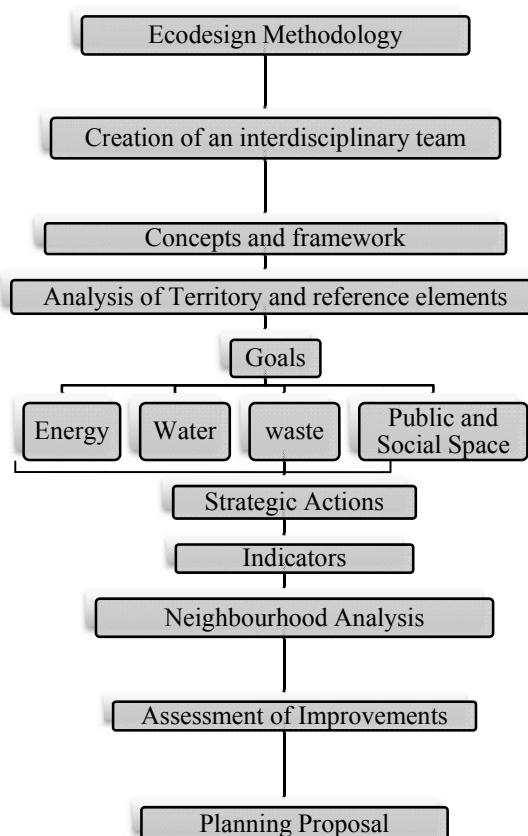


Fig. 2: Diagram of eco-design and planning methodology
(Source: Author)

3. RESULTS AND DISCUSSIONS

This section determines the key governing parameter categorised into 6 groups i.e. territorial, financial, technical, methodological, political, legal and socio-cultural. The process of designing and planning a neighbourhood is initiated in each location from a certain starting point. Depending on this, each governing parameter may be considered as an opportunity and challenge. It may be helpful to consider and or asses them in order to help in design and planning of sustainable settlements. Although a universal model for a sustainable city cannot be found nor implemented, it may be useful to consider these aspects in the designing of any neighbourhood. These are the standard parameters that are identified for most of the generalised cases. These can be further studied and modified so as to generate case specific solutions for sustainable neighbourhood. These case specific solutions will obviously

depend on the context of neighbourhood and surrounding urban fabric as the solutions must be sustainable and highly workable so as to achieve the desired results. Table below shows the governing parameter categorised into 6 groups.

Table 1: Governing Parameters (Source: Author)

Territorial	<ul style="list-style-type: none"> • Urban forms, urban fabrics and density • Spatial scale of planning • Availability of local resources • Social surrounding factors
Financial	<ul style="list-style-type: none"> • Hierarchy among the sustainability pillars • Environmental externalities • Temporal Development
Methodological	<ul style="list-style-type: none"> • Design team composition • Availability of environmental data for decision making • Objectives setting • Time lag between planning and operation • Life cycle approach
Political	<ul style="list-style-type: none"> • Local government’s wish and leadership • Current trends in environmental policies
Legal	<ul style="list-style-type: none"> • Regulatory parameters (zoning regulations and legal specifications) • Legal framework to support an integrated manager of the neighbourhood’s resources
Socio-cultural	<ul style="list-style-type: none"> • Society’s values and evolution • Community participation process • Social surrounding factors

4. CONCLUSIONS

About the designing and planning of sustainable neighbourhoods

Global sustainability is increasingly an issue of urban sustainability. In order to set in place a framework to contribute to the design of more sustainable urban settlements, the eco-design methodology can be successfully applied to the design of a neighbourhood. The process of urban eco-design differs from a conventional process of urban design due to the incorporation of environmental criteria among the whole life cycle of neighbourhood, the highly interdisciplinary team, the initial analysis of reference elements and the integration of metabolism approach. Among these aspects, the first one is of particular relevance since the incorporation of the life cycle approaches in the early design of a neighbourhood encourages urban environmental prevention and guarantees the achievement of urban sustainability goals.

The list of governing parameters has been derived which are grouped into 6 categories i.e. territorial, financial, technical, methodological, political, legal and socio-cultural. The consideration and or assessment of this set of parameters may be helpful in order to promote the design and planning of sustainable settlements. It has been observed that these parameters condition the possibilities of a certain territory to give rise to a sustainable neighbourhood. Therefore the design of neighbourhoods in different locations will lead to different

results, without the existence of unique system to achieve urban sustainability or a uniform solution. The challenge that lies ahead is to take full advantage of many opportunities and turn the challenges into opportunities.

5. CONCEPTUAL PROPOSAL

Following are the several key concepts whose fulfilment is necessary for the achievement of sustainable neighbourhood.

- Circular metabolic flows and trend towards self sufficiency (trying to close the flows of materials, water, energy, food, developing synergies within the neighbourhood and with the surrounding areas, environmental protection)
- Neighbourhood for people (streets for pedestrians, healthy environment, environmental education, participative process)
- Mixed land-use (Agriculture as an urban land-use, vertical integration of land-use, multi-functionality of spaces)
- Biodiversity (protection of characteristic local elements, creation of new biotopes related to water management and or to buildings)

6. PROPOSED ACTIONS TO BE TAKEN

- To minimise the energy demand of Buildings
- To use local renewable energy sources and a district heating network
- To maintain as much as possible the agricultural mosaic of the area
- To diversify the water sources, adapting the quality of water to its uses
- Local resources management

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