

ACHIEVING SUSTAINABLE URBANISM THROUGH THE USE OF ENVIRONMENTAL ASSESSMENT SCHEME: THE ROLE OF SUSTAINABLE URBANISM IN DEVELOPING COUNTRIES

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ABSTRACT

The world is urbanizing rapidly, with cities today concentrating more people prior to urbanization. Today it is estimated that more than half of the world's population resides in towns and cities. This population explosion has affected the development in urban areas. Such uncontrolled growth often results in the destruction of arable land vital food production, slums growth, uncontrolled and haphazard development with the spread of vast shanty towns. This perspective brings a pressing reality to the necessity to build tomorrow's world on sustainable principles. In view of the above subject matter, this paper will analyse, investigate and develop strategies on how sustainable urbanism can be implemented in developing countries by understudying various environmental assessment tools. This study will showcase a brief analysis and comparison of existing assessment tools across the globe.

Keywords: Urbanisation, Developing Countries, Sustainability, Sustainable Urbanism, Assessment Tools.

INTRODUCTION

The rate in which Urbanisation has transformed between 1900 till date has been disturbing, with cities now concentrating more habitants than it used to with the highest concentration of people living within urban environment. Countries in developing worlds have the highest rate of urbanisation because most people are in constant search of better jobs, livelihood, healthcare, education, and infrastructure. The World Bank predicts that by 2025, 80% of the population in these countries will be living in cities. Such uncontrolled growth often results in the destruction of arable land vital food production, with the spread of vast shanty towns which for a significant proportion of the world's population provide their first and only experience of urban living (UN-Habitat, 2007). Over the past 200 years, the average population of the world's 100 biggest towns has risen. By today's standards a city of 200,000 occupants is a medium-sized town. Such has been the vigor of urban growth that in the space of 30years man has built as much as in his entire preceding history. It has been estimated that over the next 40 years, further development will be needed equivalent to a thousand cities, each with 3million inhabitants most of this in developing countries. Implying that there would be high rate of rural to urban migration as well as population explosion would be uncontrolled (Gauzin-Muller, 2002; UNFPA, 2007; UN-Habitat, 2007).

The effects of population growth and urbanization have left developing countries with urban development problems. Informal settlement is a major problem facing developing nations as they transit into developed nations. The rate in which the number of people living in the urban spaces continues to grow is inevitable and to be able to achieve global sustainable development we would have to depend on transforming urban development in a sustainable manner. Urban growth that is properly managed and controlled could lead to economic enhancement, reduced poverty as well as improve quality of life for every individual. But for planning strategies to be adopted we would have to consider possibilities of problems and challenges to sustainable development agenda. Challenges might develop if this spaces are poorly managed urbanisation process might pollute the environment, affect natural resources, and it might increase the scale of poverty (Daramola, 2010). The need for sustainability within the built environment has increased the concerns which have led to quite a number of global summits arranged at levels of government and international agencies (United Nations). Specific examples are the Brundtland UN report 1987, Millennium Development Goals summit, the 2002 World summit in Johannesburg South Africa and the 2005 La-Havana UN-Sustainable cities programme. Professionals and policy makers in the industrialized countries must focus on ways of improving quality of life in cities which are already seeing extensive unemployment, ethnic, religious and social intolerance and violence (Gauzin-Muller, 2002). This perspective brings a pressing reality to the necessity to build tomorrow's world on sustainable principles.

BACKGROUND AND PURPOSE

The implementation of sustainability with the design of urban spaces and the pressing need to adopt sustainability in planning, environmental design and urbanisation gave rise to sustainable urban development. Sustainable urbanism is seen as a theory that emanates from various transformation of urban theories. Sustainable Urbanism, defined as “walk-able and transit-served urbanism served with high buildings and high-performance infrastructure” (Farr, 2007) affects a range of developments. E.g. how places should grow, means of transportation and how people could live in a more sustainable environment. Farr (2007) suggests that these developments can help future cities generate a realistic picture. The implication of these principles is representative of a utopic state and a prerequisite for social change contributing to the urban development of society (Ernst, 1986). This linkage between urbanism and sustainable planning poses beneficial impact for communities and built environment realization (Gauzin-Muller, 2002).

The necessity in in-cooperating sustainable urbanism in the planning and design of future cities has giving birth to adaptation of various urban planning assessment tools. At the moment there are three main tools used in America, UK and Australasia. LEED is used in the United States, BREEAM is used in United Kingdom and lastly Green star has just been initiated within areas with hot climate conditions mostly in Australia but now New-Zealand, and South Africa have embraced the assessment scheme (Alqahtany, 2013). The paper seeks to contribute to the increasing knowledge on how sustainable urbanism can be achieved using various building environmental assessment scheme.

DESIGN AND METHODOLOGY

The research approach is principally inductive and will involve the use of qualitative methods and interpretivism as my theoretical perspective. It will involve the collection of primary and secondary data. This will include an extensive review of vast literatures, journals, articles and documentary analysis of a wide range of materials on various assessment tools used within the globe. Each showing its distinct features and characteristics also comparing it amongst others.

Sustainability Theory

Sustainable development which is an aspect of sustainability is still pursuing a set of goals in order to achieve the ultimate result or most sustainable communities. Based on this academics at both local and international level are looking in achieving a more improved sets of policies, goals and standards (Ayre and Callway, 2005). Sustainability ensures that present generation can enjoy a satisfactory quality of life which aims to fulfil current needs without compromising the plans of the future generation. This principle is based on whole life cycle of the building materials, use of raw materials, renewable energy source, minimizing the materials, energy use, raw materials production and recycling of waste. Also considering its impact of such development to the society as well its economic benefits and cost in actualizing such projects (Dominique, 2002; Slone,2008). The theories focuses on three main tiers or sections of sustainability which includes social/cultural, economic and environmental. The relationship between this set of aspects can be shown graphically using a Venn diagram which is the composition of three overlapping circles with each circle indicating a separate dimension (O'Riordan, 1998). In recent times this sets of dimension has given birth to various indicators which is now used to in developing environmental assessment tools used in designing sustainable communities.



Fig 1: Venn Diagram on Sustainability

AN OVERVIEW OF MODELS AND ASSESSMENT METHODS FOR SUSTAINABLE COMMUNITIES

The emergence of assessment tools is as a result of a need to achieve sustainable urbanism across the globe. The measures are seen as significant because it is an important process that is used to tackle wide range of issues such as environmental degradation, implementation of sustainability, resource depletion and socio-economic issues (Uwasu and Yabar, 2011). As mentioned earlier the most utilised assessment tool across the globe are Leadership in Energy and Environmental Design (LEED) designed and developed by the U.S Green Building Council and it is been used across the entries states. BREEAM which stands for Building Research Establishment Environmental Assessment Methodology. BREEAM is the UK's foremost environmental assessment tool for building assessment which has been launched since 1990. And lastly Green Star was designed by the Green Building Council of Australia (GBCA) and it has been established as a national guide in Australia, New Zealand and South Africa is a for evaluating environmental design and building assessments (Ya Roderick et al, 2009; Alqahtany, 2013). The design of each assessment tool is based on a rating of system which involves a wide range of sustainability indicators that is associated and applicable to individual regions within a wide range of building typology both new and existing. Areas covered while designing the tools includes environmental, social and economic issues which is the three main tiers of sustainability. Sub criteria's are building materials, energy usage, water, pollution, indoor environmental quality, building site amongst others.

This three assessment models has been chosen due to their good reputation and recognition in their use to assess the design of sustainable communities. The sections below will describe a brief highlights on their key indicators, concepts, aims and features which makes them very important in most communities.

LEED for Neighbourhood development

LEED is the most recognized tool used in most environmental assessment projects. It is been used in more than 20 different countries worldwide to measure and assess designs used in producing building design and urban planning. LEED-ND was developed by US green building council in collaboration with the congress for New Urbanism (CNU) and the natural Resources Defence Council for National use and emphasis Environmental Considerations (USGBC, 2011). It was founded in 1999 and since then it has been the neighbourhood scale countries foremost leaders of green building industry (Yudelson, 2004). LEED is based on a set of prerequisites indicators. Each set of indicators refers to one of the following aspects which includes materials and resources, energy usage, atmosphere, sustainable sites, innovation & design process and environmental quality. One point is normally given to each indicator when the requirements is met depending on how much performance improvement it has achieved. There are up to 69 points used to measure each schemes based on the points awarded. They are also four levels or categories which each design should fall which are (26-32 points) certified, (33-38 points) silver, (39-52 points) Platinum (Yudelson K. 2004; Ya. Roderick, 2009). In overall LEED was designed and intended to develop high performance sustainable buildings that have the following purposes which are creating a common standard, integrated design practices, creating a strong face in the building industry, instigating competition, creating consumer awareness of green buildings and transforming the building market (USGBC-LEED, 2004; Ya. Roderick, 2009).

BREEAM for sustainable urban communities

BREEAM was the first foremost environmental assessment tool for the buildings and infrastructure designed by the building research establishment LTD in the United Kingdom and was developed in 1990 (Grace, 2000). The model concentrates on deriving a tool that mitigates the impact of development projects on the built environment (Haapio and Viitaniemi, 2008a). It establishes a focus in which enables all the stakeholders involved in the decision making to be determine key issues in regards to how sustainable development requirements could be achieved within urban spaces. BREEAM looks into eight major categories of which one set of these categories has an extended assessment indicators criteria (Appu, 2012). The categories of credits or indicators falls according to the building impact on the environment which are management, health and well being, energy, transport, water materials, wastes, land-use, ecology and pollution. The scoring is calculated based on the total credit scheme similar to LEED which falls under categories and weighing factor. The general performance of the building overall ratings are categorized as unsatisfied (<30), pass (≥ 30), good (≥ 45), very good (≥ 55), excellent (≥ 70) and outstanding (≥ 85) (Ya. Roderick, 2009).

Green star

Green Star is a building assessment tool used to measure sustainability in Australia. It is used for both individual building assessment to entire communities. It was designed by the Green Building Council of Australia in 2003 and it still remains the only assessment rating systems for buildings and community designs. It has also been adopted in New Zealand and South Africa because of the similar climatic zone and weather condition which the both share (GBCA, 2008). Green Star is almost similar to LEED and BREEAM, but uses the credit rating system based on the point allocated to each credits in other to determine the overall scoring and level of certification (Ya. Roderick, 2009). The scoring of the project is achieved based on each category rating the percentage of points obtained against the points for that category. The credits are arranged according to the categories which are management, transport, land-use & ecology, emissions, pollution, indoor environmental quality, energy, water, materials and innovation. The certification is awarded according to the numbers of stars calculated: 1-3 Stars (10-44 points; not eligible for formal certification), 4 Stars (45-59 points; Best Practice), 5 Stars (60-74 points; Australian Excellence) and 6 Stars (≥ 75 points; World Leadership) (GBCA, 2008; Reed et al, 2011; Ya. Roderick, 2009).

Comparison of Smart Codes

Most countries and organisation in places where environmental assessment tools has been developed have designed this tools based on their needs and purposes, context and environment focussing on sustainability which has resulted to a number of similarities and differences (Ya. Roderick, 2009). Due to this there has been limitations because some categories and criteria's has been emphasized while some remain dormant or not a priority. Recent criticism on this assessment tools has shown that BREEAM communities places emphasis on place making and transportation with little emphasis on buildings and businesses within the community. While LEED-neighbourhood design emphasises on two main categories which are green infrastructure and buildings design and lastly Green Star focuses more on the natural environmental quality, place shaping and green infrastructure (Alqahtany, 2013). In line of this above brief analysis it is clear that a robust, credible and well structured

assessment tool will be needed in developing countries and Nigeria to be specific, analysing the countries needs and purpose as well as designing a tool aligned to sustainable development. In other words with the level of poverty and underdevelopment in Nigeria priority will be placed on achieving sustainable communities that can meet both economic sustainability (affordability), environment sustainability and social/cultural sustainability.

CONCLUSION AND RESEARCH IMPLICATIONS

The adaptation of various assessment tools across the globe has shown it has been successful in its implementation as well as how the built environment has developed within this places. But the use of sustainable smart code for the design of futures spaces in Africa and areas like Middle-East and Asia has been discussed as well as there has been an expression of interest and this will be the next big boost for developing countries. This research will introduce a new paradigm for decision-making in the planning, urban renewal and development of cities within the country and commit to sound economic policies and management. And also creating opportunities for implementing sustainability codes in architecture/urban design in Nigeria.

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