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Transportation planning credits in green townships-A perspective

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Abstract

The IGBC Green Township rating system (Pilot Version) was launched in the year 2011 in India. The IGBC Green Townships Rating System is a tool which enables the designer to apply green concepts and criteria, so as to reduce environmental impacts that are measurable. A township is a combination of several communities; a community in turn is a combination of several sectors. Several townships form a city. Transportation Planning is a critical component of a green township that promotes a balance of economic and social benefits of transportation with the need to protect the environment. In cities traffic volumes have increased significantly, despite a great deal of urban transport planning. A major reason for the mounting air pollution woes is the increasing number of vehicles on the road. Increased pace of population growth coupled with increased need of transportation make the category Transportation Planning very important and crucial in Green Townships.

The present study entitled "Transportation Planning Credits in Green Townships Rating System" focuses on the technologies and strategies used and the catalysts and hindrances associated with achieving transportation planning credits under IGBC Green Townships rating system. The study was carried out in three green townships namely Wave City Centre, Wave Hi-tech City, both located in NOIDA and Savvy Swaraaj, located in Ahmedabad. Two of the green townships have been certified under IGBC Green Township rating system whereas one is under IGBC Green Township pre-certification. The owner/managers, architect/engineers and sustainability consultants of the selected townships were interviewed to take their perspective on the technologies and strategies used along with the catalysts and hindrances associated with transportation planning category. Further, their suggestions were also taken. Thus, the study gives a vision for making the transportation planning category credits easier to attempt and attain by green township developers. This would make it possible for the developers to attempt every strategy and earn all possible points under transportation planning category. As the transportation planning of any township is crucial in terms of better connectivity, social responsibility and wellbeing, the study shows a way forward to understand the problems faced during the attainment of transportation planning credits and ways to reduce these hindrances so that the projects target highest level of certification by earning all points under transportation category and thus help in accelerating the green building movement.

Keywords: IGBC green townships, transportation planning credits in green townships, accelerating the green building movement

1. Introduction

Construction is an essential part of any country's infrastructure and industrial development. India is witnessing tremendous growth in infrastructure and construction sector. The construction industry in India is one of the largest economic activities and is growing at an average rate of 9.5% as compared to the global average of 5% (Townships, 2010). Cities are the engines for social and economic growth of a country. The urban sector contributes nearly 50-60% to the nation's GDP. Cities have been pivotal in the creation of employment and the economic growth in the country. India is witnessing large scale urbanization which is a direct result of high economic growth of its economy.

Urbanization, however, is coming at a price. Rapid growth in urbanization has placed immense strain on land and other natural resources. The shortage of housing has led to creation of slums and unauthorized settlements. Rising pollution levels, traffic congestions and inadequate waste management have resulted in a deteriorated quality of life and environment in the urban areas. It is estimated that nearly 70 new cities with a population of greater than 500,000 would be added to the country's landscape by 2020 (census of India, 2015) [4].

Urbanization leads to pollution of air, water and noise. Air pollution results from overdependence on motorized transport and from burning of coal to supply energy. Water pollution results from poor sewage facilities and disposal of industrial heavy metals into waterways. Vast quantities of solid waste are produced in industries. Traffic congestion and noise pollution are major environmental impacts of large cities (Seto *et al.*, 2011).

The issues of pollution has an impact on health such as lung diseases, asthma, birth defects etc and also has various impacts on our environment such as traffic congestion, rising long distance commuting, lesser public transport availability and these factors ultimately leads to poor quality of life. Therefore these problems of urbanization arises the need of green townships which sustainable in every aspect, from design to functional stage.

The official launch of the IGBC Green Township rating system (Pilot Version) was done in the year 2011 (Kumar, 2015).

As on date, more than 30 pilot townships across India are going green with IGBC's Green Township Rating Programme (Singh, 2015). This new Green Townships Rating System by IGBC that is designed to address large developments like integrated townships and satellite cities says that at least 25% of the total built-up area in a township should be earmarked for residential use to qualify for certification (IGBC, India Environment Portal, 2010).

IGBC Green Townships Rating System is a tool which enables the designer to apply green concepts and criteria, so as to reduce environmental impacts that are measurable. The rating system is designed to address large developments and it is mandatory to include residential development as part of the township. Some typical examples of large scale developments are integrated townships, satellite cities, gated communities, campuses with multiple buildings etc. However, it is to be noted that the rating system is not applicable for individual buildings and land parcels (IGBC, India Environment Portal, 2010).

Application of IGBC Green Township rating system in large developments would address national priorities leading to benefits, such as efficient land use, habitat preservation and restoration, effective transport management, efficient use of resource and enhanced quality of life for the occupants.

2. Methodology

The present study focuses on IGBC rated Green Townships in India which are pre-certified under IGBC Green Townships rating System. The population size of the townships certified under IGBC Green Townships rating System is very limited in North India. Three townships had been selected for the study focusing on the credits of Transportation Planning.

Two of the townships namely Wave City Centre and Wave Hi-tech city are located in Delhi NCR so several visits were made to have interactions with the stakeholders but the third township, Savvy Swaraaj is located in Ahmedabad, Gujarat. Therefore to carry out the research and to collect information on the project visits were made to Ahmedabad. Interactions were held with the owner/manager, architects/engineers and the sustainability consultants of the three selected townships.

The above mentioned townships are developed as case studies for understanding the catalysts and hindrances associated with IGBC Green Townships rating System and to assess the technologies and strategies used for the Transportation Planning credits.

From each selected township the sample consisted of 1

township managers/owners, 2 architects/engineers of the township and 4 sustainability consultants who have worked in these townships in order to take a wider view of the catalysts and hindrances they faced while going for IGBC certification. There are 3 such townships so a total of 21 stakeholders formed the sample.

To collect the data, questionnaire and interview schedule were used. Two different questionnaires were prepared for the township owners/managers/architects/engineers and sustainability consultants.

The data collected was coded and tabulated for quantitative and qualitative assessment keeping in mind the objectives of the study. The data collected from the three green townships was developed in the form of case studies. A code sheet was devised for all the responses by first converting the open-ended questions into closed-ended questions. After this, a master sheet was made in which the data was entered. Percentages were calculated and inferences were made. Conclusions and inferences were drawn as per the objectives of the research.

3. Results and discussions

Cities are the engines for social and economic growth of a country (FICCI, 2012). In this increasingly urban world, cities have become the center of society's most pressing economic, social and environmental challenges. They also offer the greatest potential to drive growth and opportunity, large-scale innovation and sustainable solutions (Scher, 2015) ^[16]. By adopting green building strategies, we can maximize both economic and environmental performance. Green construction methods can be integrated into buildings at from the earliest stages of a building project (U.S. Environmental Protection Agency, 2013).

The urban sector contributes nearly 50-60% to the nation's GDP. According to projections, India's urban population will grow to over 600 million by 2030-31 out of a total population of 1.4 billion (FICCI, 2012). Despite of so much growth in the urban sector, still the building construction sector is poorly regulated. Building cannot be treated as a low-impact sector.

All the IGBC rating systems are voluntary, consensus based, market-driven building programmes. The rating systems are based on the five elements of the nature (Panchabhutas) and are a perfect blend of ancient architectural practices and modern technological innovations. The ratings systems are applicable to all five climatic zones of the country. IGBC rating programmes have become National by Choice and Global in Performance.

The official launch of the IGBC Green Township rating system (Pilot Version) was done in the year 2011 (Kumar, 2015). As on date, more than 30 pilot townships across India are going green with IGBC's Green Township Rating Programme (Singh, 2015). This new Green Townships Rating System by IGBC that is designed to address large developments like integrated townships and satellite cities says that at least 25% of the total built-up area in a township should be earmarked for residential use to qualify for certification (IGBC, India Environment Portal, 2010).

A township is a combination of several communities; a community in turn is a combination of several sectors. Several townships form a city. A city typically has an administrative, legal, or historical status based on local law. A township, however, may not fall under the purview of the local government. Township ranges in sizes and land uses. Townships are typically mixed-use in character (Townships, 2010).

IGBC Green Townships Rating System is a tool which enables the designer to apply green concepts and criteria, so as to reduce environmental impacts that are measurable. The rating system is designed to address large developments and it is mandatory to include residential development as part of the township. Some typical examples of large scale developments are integrated townships, satellite cities, gated communities, campuses with multiple buildings etc. However, it is to be noted that the rating system is not applicable for individual buildings and land parcels (IGBC, India Environment Portal, 2010).

In today's scenario development has become synonymous with physical expansion or growth. Application of IGBC Green Township rating system in large developments would address national priorities leading to benefits, such as efficient land use, habitat preservation and restoration, effective transport management, efficient use of resource and enhanced quality of life for the occupants (Townships, 2010).

In cities traffic problems have increased significantly, despite a great deal of urban transport planning. There is a growing realization that perhaps planning has failed. Rather than estimate traffic increases and then provide capacity to meet the expected growth, it is now accepted that what is required is better management of the transport system through new approaches to planning (Slack, 2015).

'Green Townships' rating system addresses these issues by encouraging effective and efficient Transportation management strategies. Such strategies include increasing opportunities for bicycling, encouraging pedestrian friendly network; reduction in the number of automobile trips, promoting public transportation and use of alternative vehicles (Township, 2010).

Increased pace of population growth coupled with increased need of transportation make the category Transportation Planning very important and crucial in green townships. Transportation Planning category under IGBC Green Township rating system hold great importance in a green township and has been selected as the area of the study. The transportation planning category has significant number of credits and provides owners an opportunity to earn 30 possible points.

The study intends to look at the technologies and strategies used by the selected case studies to attain credits under the

transportation category. Further it intends to take a detailed account of the catalysts and hindrances faced in taking these credits. The study titled "Transportation Planning Credits in Green Townships Rating System- A Perspective" was conducted with the following objectives:

- To assess the credits earned by selected IGBC rated Green townships with reference to Transportation Planning Credits.
- To take a detailed account of technologies and strategies used to implement the transport planning credits in selected IGBC Green Townships.
- To understand the catalysts and hindrances associated with the transportation planning credits in selected townships.
- To take suggestions from the selected stakeholders to make transport planning credits easier to attempt and attain.

The study was carried out in three green townships namely Wave City Centre, Wave Hi-tech City and Savvy Swaraaj. The township's owner/manager, architect/engineer and sustainability consultant provided data on the technologies and strategies used along with the catalysts and hindrances associated with transportation planning category. Further, they also elicited information about suggestions to make credits under transportation planning category easier to attempt and attain.

From each selected township the sample consisted of 1 township managers/owners, 2 architects/engineers of the township and 4 sustainability consultants who have worked in these townships in order to take a wider view of the catalysts and hindrances they faced while going for IGBC certification. There are 3 such townships so a total of 21 stakeholders formed the sample.

For the purpose of data collection, questionnaires were used. Two different questionnaires were prepared to elicit different information from the various stakeholders. The data collected and analyzed quantitatively and qualitatively keeping in mind the objectives of the study. Inferences and conclusions were drawn as per the objectives of the study.

3.1 Salient findings of the research

3.1: Profile of the Townships

Name of the township	Wave City Centre, Noida	Wave Hi-tech City, Ghaziabad	Savvy Swaraaj, Ahmedabad
Name of the developer	The Uppal Chadha	The Uppal Chadha	Savvy Group
Name of the architect of the township	Nostri Architect, New Delhi	Bentel Associates	Kapadia Associates
Built up area of the township	2785287 Sq.mt	3786.98 Acres	4 lakh sq. ft.
Certification status	Under IGBC pre-certification Gold rated	IGBC pre-certified Platinum rated	IGBC pre-certified Gold rated
Name the sustainability consultant	AECOM, AAROP	Aecom, Kalpakrit	SGS
Year when certification of green township process started	2012	2011	2014
Year of getting IGBC green township certification	Under pre-certification process	2014	2015
Applied for other ratings of IGBC	Yes, applied for Green Building certification for individual buildings	No	No

Table 3.1 shows overall profile of the townships in terms of name of developers, sustainability consultants, built up area, year for applying and getting certification. The above table shows that two townships are located in Delhi NCR and one

is located in Ahmedabad. Wave Hi-tech city has the largest built up area among the three. Wave Hi-tech City and Savvy Swaraaj are recently pre-certified in year 2014-15 but Wave City centre is under the process of IGBC pre-certification.

3.2.2 Compilation of the credits earned/not earned by the townships

Table 3.2: Combined credits earned/not earned by the selected townships

Credits under Transportation Planning	Max. points	*WCC	**WHC	***SS
Long Term Transportation Plan	MR	+P	++E	E
Design for Differently Abled	MR	P	E	E
Public Transportation Facilities	6	P	6	6
Eco- friendly Transportation Services	6	P	6	2
Road and Street Network	6	P	6	2
Bicycle Lane Network	6	P	6	4
Pedestrian Network	6	P	6	4
Total	30	30	30	18

*WCC- Wave City Centre, **WHC- Wave Hi-tech City, ***SS- Savvy Swaraaj, ++E- Earned +P- Pending

Table 3.2 shows that the max. points for transportation planning credits are 30. Even though Wave City Centre has tried to attempt every credit but since it is under pre-certification process so its credits are pending. Whereas Wave Hi-tech City has achieved full points in its transportation category and has followed all the strategies under it. But even though Savvy Swaraaj has attempted all the credits under the transportation planning category but has achieved only 18 points out of a total of 30. So it is reflected that this township has not followed various strategies of transportation planning. Such as they have not provided re-fueling stations of eco-friendly fuels within the township, in road and street network credit they have not given the documentation for interconnected road network.

On analyzing the strategies and technologies being used in the three townships, it was seen that there were some strategies and technologies that have been adopted by all three of them like provision of eco-friendly public bus shuttle service and provision of streetscape elements within the township. The use of such technologies and strategies in all three townships shows that they were easy to implement while some of the technologies and strategies were only adopted by one of the townships like provision of refueling stations based on eco-friendly fuels, intersection intervals at specified length and bicycle tracks in commercial areas. Thus, indicating that these strategies were difficult to implement.

The study also revealed the catalysts and hindrances associated with attaining credits under transportation planning category. Some of the major catalysts were improvement in level of congestion on roads, better road and street network, promotion of eco- friendly transportation and improving the prestige and image of the builder and the township. Enhancement of connectivity, social responsibility, less transportation needs and wellbeing of the occupants emerged as some minor catalysts. The major hindrances in the process were found to be high implementation costs for several strategies, complex documentation, stringent guidelines and time lines and requirements for long term transportation planning. Some minor hindrances were taking measures to mitigate the impacts due to vehicular emissions and to design pedestrian network. The study also highlights the suggestions of stakeholders towards making credits under transportation planning category easier to attempt and attain. Some of the suggestions were to make the documentation simpler and easier, provision of public private partnership to reduce or share capital investment, better pre-planning at every stage so that the costs can be built into the project cost and funds raised accordingly and policy level changes by the government.

4. Conclusion

The study has thus thrown light on some of the catalysts and hindrances associated with each credit under Transportation Planning. Combining responses from all the case studies gives insight to the credits attempted and earned by the townships as well as the strategies which were more acceptable as compared to the rest. This study gives a vision for making the guidelines in future easier in terms of transportation planning category so that more number of green townships employ the technologies and earn all possible points under transportation planning category. As the transportation planning of any township is crucial in terms of better connectivity, social responsibility and wellbeing, the study shows a way forward to understand the problems faced during the attainment of transportation planning credits and ways to reduce these hindrances so that the projects target highest level of certification by earning all points under transportation category accelerating green building movement.

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