Research Paper

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Green Stratergies in Gated Community

Environment

KEYWORDS : Sustainable Living, Green Gated community, Eco-Friendly Construction.

S. Preethi — Research Scholar, Department of Resource Management, Faculty of Home science, Avinashilingam Institute for Home Science and Higher Education for women, Coimbatore: 641043

Dr. (Mrs.) A. Venmathi — Professor and Head, Department of Resource Management, Faculty of Home science, Avinashilingam Institute for Home Science and Higher Education for women, Coimbatore: 641043

ABSTRACT

The twentieth century saw a tremendous development of a materialized civilization and rapid urbanization all over the world including India As a result, unfortunately there has been the emergence of various global problems, such as global warming, the destruction of the earth's eco system, over use of natural resources, and accumulation of waste. In this regard, we now have to recognize the urgent need to realize a sustainable society, by preserving the global environment while maintaining the health and safety of the human beings at the same time.1 Green concepts and techniques in the residential sector can help address national issues like handling of consumer waste, water efficiency, reduction in fossil fuel use in commuting, energy efficiency and conserving natural resources and has a carbon foot prints.3 Gated communities are no mean a New Phenomenon. Gated communities, scattered all around the world, differ from country to country, with respect to their characteristics and in particular with respect to different reasons for development in relation to security, ethnicity and prestige2. Most importantly, these concepts can enhance occupant's health, happiness and wellbeing.

INTRODUCTION

"House" refers to an object, possession, or measurable space, while "home," an "emotionally based and meaningful relationship between dwellers and their dwelling places."Architecture itself is not self-defining, and must be viewed within the context of its region as well as the global environment. Therefore, the basic objectives for the 21st century must be the endeavor to create architecture that must be based on longevity, harmony between the social and natural environments, conservation of energy and resources, cyclicity and succession).[3]Green building is a multifaceted concept that lends itself to many interpretations. .

India is witnessing tremendous growth in infrastructure and construction development. The construction industry in India is one of the largest economic activities and is growing rapidly. As the sector is growing rapidly, preserving the environment poses a host of challenges. To enable the construction industry environmentally sensitive, CII-Sohrabji Godrej Green Business Centre has established the Indian Green Building Council (IGBC). IGBC is a consensus driven not-for-profit Council representing the building industry, consisting of more than 1,150 committed members. The Council encourages, builders, developers, owners, architects and consultants to design & construct green buildings thereby enhancing the economic and environmental performance of buildings[1].

Gated communities are no mean a New Phenomenon. Gated communities, scattered all around the world, differ from country to country, with respect to their characteristics and in particular with respect to different reasons for development in relation to security, ethnicity and prestige. The earliest forms of gated communities were built by the Romans around 300 B.C[3].

Gated communities are defined as residential objects with more than two detached residential apartment or family house units. These objects are separated from the outer environment by gates or walls. The entry to such housing objects is prohibited to everyone who is not entitled to living in such a housing object or who doesn't have the access permission into this housing complex. The physical separation is one of the characteristics of a gated community[4]. Gated communities represent an extreme form of residential boundaries. Gated communities are a type of residential housing with restricted access. The public space in Such community is under regular circumstances privatized .These communities are security developments usually surrounded by walls or fences. The access to gated communities is secured and controlled, so that the penetration by non-residents is prevented. They can be associated with rich as well as poor neighborhoods. Gated communities don't belong to high-density or multi-unit apartments[3].

These Green Gated communities are characterized as islands that are privately controlled. Green Gated Communities ensures an effective contribution in the fight against global warming as it utilizes fewer natural resources and has a small carbon footprint. In the future we would have clusters of these new age, futuristic homes generating their own energy, reusing and recycling every drop of water they use, producing no waste at all and most importantly leaving a positive environmental foot print. (Times of India, 4th July 2011). As there is paucity of research data available related to Green Gated Communities sand its importance in making the residential spaces proficient and efficient, this triggered a keen interest of the investigator to take up this Study on "**Green Strategies in Green Gated Community**" to investigate the depth in residential areas of this vast subject with the following objectives.

AIM AND OBJECTIVES

- To Green Material and Techniques used by Architects and Real estate promoters in Green Gated community.
- To Elicit Information on the views and Impact of Green Gated Community from the Occupants.

METHODOLOGY

Two different surveys have been conducted - one to collect information from Real estate promoters and Architects and second to collect information from Tenants.

Among Real Estate promoters and Architects

Chennai was selected for the study .Chennai leads in India in terms of the number as well as the total volume of certified green building space. Out of the 17 Leadership in Energy and Environmental Design (LEED), a green building rating system developed by the US Green Building Council" certified buildings in the country; Chennai alone is the home to eight of them. This account for 67.3 per cent of the total green building space in India (Hindustan Times February 19, 2008). Hence Chennai was selected.

Twenty five Real Estate Promoters and Architects were selected for the study. Face-to-face contact with the persons from whom the data are to be collected using a structured questionnaire to sample of individuals drawn, so as to be representative of defined population.

The Interview schedule was prepared to obtain the data on general information of the firm, their investment, economic details Green strategies adapted and the conflicts faced with clients if any. A pilot study was conducted among five green architects, which helps in checking the adequacy of the tool and possibility of conducting the survey, necessary modifications were made and the schedule was finalized.

An appointment was fixed with Real estate promoters and Architects before approaching them .Questions were asked informally and necessary information's were gathered.

After the transcription of data is over, the data should be summarized and arranged. Thus the tabulation is the process of summarizing raw data and displaying them on compact tables for further analysis and interpretation, the collected data were consolidated and tabulated.

b. Among the Tenants:
Survey was conducted among One fifty clients belonging to high and upper middle income families residing in Chennai city who have dwelled in Green Gated community who have dwelled in Green Gated community. In order to obtain required information for the study.

Randomness was introduced to select the sample for the study for the particular purpose. A framed schedule for the study consisted of general information of the residents-ownership, their interest towards green techniques implemented, budget allocated and problem faced if any with the Builders and Real estate promoters. The prepared schedule was pretested in five residences for its ambiguity and the schedule was modified.

The needed data were collected from the selected clients. The data thus collected were consolidated and tabulated. The tabulated data were analyzed, discussed and presented in result and discussion.

RESULT AND DISCUSSION
The finding of the study on "**Green Strategies in Gated Community**" is discussed under the following headings:

A) Information Obtained on Green Building
a) Architects and Interior designers.
As Green Gated Community is gaining popularization, investigator showed interest to gather information from the Real Estate promoters and Architects. Ninety Seven per cent of the Real Estate Promoters and Architects were men but 3 per cent of women. Forty six percent of them were above the age of 45 and remaining was within 25-45 years. The basic qualification was B.E., Civil Engineering (34 per cent), B.Arch (28 per cent), M.E., Civil Engineering(12 per cent), and M.Arch (13 per cent).Only 7, 5 and 1 per cent were B.sc. ID, Dip. Civil and others. It could be contingent that along with the qualification, interest, in the field and creative thinking helped the selected Real Estate Promoters and Architects. to survive and withstand in the field.

The surveyed Interior designers and Architects revealed that 42 per cent had an experience of 10-15 years, 28 per cent between 5-10 years in the field followed by 22 per cent above fifteen percent and only 8 per cent had experience up to five years.

Table I indicates the information on Location and Type of building, Built-up area, Ownership, Project Details and Green Techniques adopted.

TABLE I
GENERAL AND TECHNICAL INFORMATION OF THE FIRM

Details	Percentage (N=25)
Location • Heart of the city	 100
Type of building • Rented apart • Rented house • Owned apart • owned house	 17 34 39 10
Year of establishment • 1995-2000 • 2000-2005 • 2005-2011	 48 32 20
Buildup area • Below 500sqft • 500-750sqft • 750-1000sqft • Above 1000sqft	 9 10 61 20
Ownership • Sole proprietorship • partnership	 16 84
project Details • **Number of projects undertaken** • First Project • 2 -10 • Above 10 • **Preferred site for the project** • Heart of the city • Sub Urban • Urban • **Preferred clients** • High income • Upper middle income • Middle income	 8 64 28 7 72 21 54 36 10
Green Techniques Introduced • **General** • Fencing & Roofing • water & Waste management • Energy utilization(renewable) • Indoor climate management • **Civil Works** • Structures (Gravel replacement/fly ash/ hollow block/M-sand/cement) • **Carpentry** • Doors (UPVC/Glass/skinned & Recycled wood/Metals) • Windows (UPVC/Glass/skinned & Recycled wood/Metals) • **Painting** (low VOC /No VOC paints) • **Electrical** (Renewable energy /Recyclable switches & wires). • **Landscaping** (New & Retained -trees & plants/open area/ kitchen gardens)	 92 98 100 98 100 89 100 100 89 100

Cent per cent of selected Real Estate Promoters and Architects firm were located in heart and had registered and insured their firm. Nearly 50 per cent of them started their business between 1995-2000.

A Majority of them were running only Big firms between 750-1000 sq ft .Eighty Four per cent of them were running the firm under partnership. Plans for their projects were drafted using only Auto cad (99 per cent) and rest of them were doing it either manually or using AutoCAD, 3ds Max, Archie Cad, Rivet etc. whichever is preferred by the clients.

Cent percent of the selected Real Estate Promoters and Architects did fulltime consultancy and execution of the project. Majority of 82 percent adopted Green concept in construction for job security/latest trends. Majority of 72 and 64 percents preferred project site to be in sub urban. Ninety percent of Real Estate Promoters and Architects prefer High income and Upper middle income people as their target group for their proceedings and convenience, while 10 percent prefer middle income group.

Cent percent implemented Renewable energy utilization in general, Gravel replacement /fly ash/ hollow block /M-sand / cement in Civil works, UPVC/ Glass/ Recycled wood/ Metal windows in carpentry, low VOC /No VOC paints in painting and Landscaping. Ninety eight percent adopted Indoor climate, waste & water management Systems. Ninety Two percent utilized cooling and temperature control techniques in roofing and fencing. Nine percent of them used recycled materials in doors, switches & wires.

Place of purchase of material for green construction depends on the site requirements, quality, quantity and the cost. Most of the materials were purchased locally, where as materials like accessories, lighting fixtures, fashionable rugs were all imported or

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brought from Delhi, Bangalore and Mumbai. All Real Estate Promoters and Architects took much effort to complete the project successfully as this could fetch good name and more clients in future.

Majority of Seventy eight percent of selected Real Estate Promoters and architects had obtained clients through advertisements, 12 percent through previous clients and 6 percent through previous projects and others.

Among them 97 per cent of them were taking up both residential and commercial projects .The selected Real Estate Promoters and Architects took up the projects locally as well as areas nearby cities and Some popular Real Estate Promoters and Architects took projects Country wide

Nearly 62 per cent of the firm appointed above 45 employees, and meager 5 per cent employed below than 30. While selecting employees 99 per cent of the proprietors considered their software skills like auto Cad, 3ds Max, Archie Cad, Rivet etc.,34 per cent expected them to have practical knowledge and 48 per cent capacity to tackle problems.

To update their knowledge on innovative Green materials and techniques of construction Real Estate Promoters and Architects visit exhibitions, read civil magazines, meet dealers and representatives, attend seminar and conferences.

Selected Real Estate Promoters and Architects, states that their special features of their firm were job perfection, innovative ideas and of client satisfaction .Other than this they also expressed on selection of materials, quality of the product, cost efficiency, aesthetic appeal, client's preference and availability and its efficiency. Effective marketing techniques are used by cent per cent and web services by 98 per cent of the firm. Ninety three per cent in newspapers and just dial were the other marketing tools.

Fee structure of the firm among the selected respondents, cent per cent of the fee structure was on total contract, they also expressed that they will stick on the contract at the maximum and Ninety eight per cent of selected Real Estate Promoters and Architects signed an agreement with the client before starting their project. About 35 per cent of Real Estate Promoters and Architects prepare their plans according to vastu and feng shui. 23 five per cent of them who design according to vastu and feng shui also mentioned that they design only on the demand of client, others revealed that they don't believe such superstitions.

B) Tenants

Hundred and fifty selected clients were surveyed included details such as

Family type, green techniques and materials utilized, facilities provided and cost of the building.

The selected clients highly favored nuclear families (88 per cent) .Among them 72 per cent were residing in apartments and the rest in individual houses. Majorly Seventy Four percent of Gated communities were built only after 2005 and rest before 2005.This shows the rapid growth in real estate and construction industries. Majority of 68 per cent area of the house is 1000-3500 sq.ft, while meager four percents had below 1000sq. ft

Every selected household feels Gated communities are cent percent safe and also relived that they have zero percent of robbery and carjacking in their communities. 34 percent, 28 percent and 30 percent of Tenants are living in Gated communities for about 6-10 years, 1-5 years and less than a year.

It is cheering to note that cent per cent of the clients have opted for green techniques such as maximum natural light and ventilation, rain water harvesting, utilization of grey water, use of energy efficient equipments, and lamps.cent per cent of them used wood, natural stone as flooring materials, glass windows for maximum utilization of daylight and cross ventilation, replaced gravel in the form of crushed concrete, had given special care to local weather conditions and planned to natural and cross ventilation,98 percent of homes were designed with a high amount of "free heat" designed with natural/ Hybrid ventilation and used Thermal mass as a basis for storage of solar gains, 92 per cent used recycled bricks for construction and organic materials for insulation, 72 percent minimized air conditioning/cooling systems and the buildings were completed with a documented level of thermal mass as a basis for storage of solar gains.

Ninety Six percent used materials with environmental certification, 88 per cent avoided using of Foam materials of CFC and HCFC and 86 per cent followed low "not renewable" energy consumption material and 89 per cent of them had Water installations without PVC. cent per cent of them had installed rainwater harvesting, Balance ventilation, cross ventilation, Natural energy utilization, low-energy consumption, usage of solar water heaters, and Proper provision for waste disposal. 98 and 78 per cent use rainwater for gardening/toilets and Utilize of Grey Water. Eighty two per cent installed Individual water meter.

Ninety six per cent of the selected clients used Indoor material with climate certification, Installed Individual consumption displays and had limited Hot water taps . Eighty eight per cent maintained noise level below 25db and User-activated specific lighting. while eighty six percent treated the waste before disposal.

Cent per cent of the surveyed clients realized the environmental impact of waste on air, water, soil and revealed that the Government, NGO'S and other organizations must focus their attention towards protection of the environment. The specifications are depicted in the table II

TABLE II
SPECIFICATIONS OF THE BUILDING

Details	Percentage (N=150)
Water ,Rainwater	
Rainwater harvesting facilities	100
Use age of Rainwater (gardening &toilets)	98
Individual water meter	82
Utilization of Grey Water	78
Indoor Air Climate	
Balanced ventilation	100
Cross ventilation	100
Indoor material with climate certification	96
Noise insulation (below 25db)	88
Energy Utilization	
Natural energy utilized	100
Installed Individual consumption displays	96
Usage of solar water heaters	100
Hot water taps -limited	96
Low-energy consumption lighting	100
User-activated specific lighting.	88
Waste Disposal(solid and waste)	
Proper provision for waste disposal.	100
Treatment before disposal.	86

Cent percent of the selected gated communities had Super markets, ATM's, Generator support, fire alarm, power cut management system in lifts ,fire extinguisher, 24 hrs ambulance service ,play grounds. Ninety eight percent had Banks , Hospitals / clinic/Dispensary ,fire exit stairs, Automated water sprinklers and alerter, Gym Spa /Beauty Parlor, swimming pool and Parks/ Gardens. While 96 percent of them had Stationary shop, piped gas lines, club house, gaming arcade, and restaurant/cafeteria. Eighty eight percent of the selected gated communities had Doctors available for 24hrs and party hall, 48 percent had Bar, 46 percent had Diagnosis centre and 38 percent had Meditation

which is depicted in table III .

Among the selected clients, more than 50 per cent have spent 30 - 50 lakhs for their house, whereas 34 per cent have spent above 50 lakhs and 16 per cent below 30 lakh Expected budget for 48 per cent were below 30 lakhs, for 40 per cent it was 30-50 lakhs and for 12 per cent the amount expected was above 50 lakhs. That actual budget has increased for 52 percent than expected one, while for 4 percent it has decreased and the rest has fallen on the exact budget expected.

TABLE III
FACILITIES PROVIDED IN CLIENTS HOUSE

Facilities	Percentage (N=150)
General facilities	
Super Markets	100
Stationary	96
Banks	98
ATM's	100
Safety facilities	
Piped LPG Gas lines	96
Generator support	100
Fire exit stairs	98
Fire alarm	100
Automated Water sprinklers and alerter	98
Power cut management in lifts.	100
Fire extinguisher	100
Medical facilities	
Hospitals /clinic/Dispensary	98
Diagnosis centre	46
Doctors available 24hrs	88
Ambulance availability 24 hrs	100
Recreation facilities	
Club House	96
Gaming arcade	96
Bar	48
Restaurant / Cafeteria /	96
Theater	82
Gym	98
Spa /Beauty Parlor	98
Meditation hall / centers	38
Party hall	88
Swimming Pool	98
Parks/ Gardens	98
Play Grounds	100

REFERENCE

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