IGBC Green Place of Worship

IGBC Green Place of Worship Rating System

Pilot Version

Abridged Reference Guide

July 2017

Confederation of Indian Industry
CII-Sohrabji Godrej Green Business Centre

Foreword from the Indian Green Building Council (IGBC)

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 at a rapid rate in the past 10 years. As the sector is growing rapidly, preserving the environment poses a host of challenges. To enable the construction industry become environmentally sensitive, CII has established the Indian Green Building Council (IGBC) in 2001. IGBC, is a consensus driven not-for-profit Council, represents the building industry, consisting of more than 2,050 committed member organisations. The Council encourages, builders, developers, owners, architects and consultants to design & construct green buildings, thereby enhancing the economic and environmental performance of buildings. Thus far, the Council has been instrumental in enabling 4.43 Billion sq.ft of green building projects in the country. The Council's activities have enabled a market transformation with regard to green building materials and technologies. IGBC continuously works to provide tools that facilitate the adoption of green building practices in India. The development of IGBC® Rating system for Green Villages is an important step in the direction of greening the Rural India.

IGBC Membership

IGBC draws its strength from its members who have been partners in facilitating the Green Building Movement in India. The local chapters led by individual champions and committed members have been instrumental in reaching out the vision of the IGBC at the regional levels. IGBC is today seen as a leader in spearheading the Indian Green Building Movement. The Council is member driven and consensus-based.

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1. Introduction

A place of worship is a specially designed structure or consecrated space where individuals or a group of people such as a congregation come to perform acts of devotion, veneration, or religious study. A building constructed or used for this purpose is sometimes called a place of worship. Temples, churches, mosques, monasteries, etc are examples of structures created for worship.

All religions push the idea of a greener earth. Worship of the natural elements like the earth, sun, moon, stars, flora and fauna indicates that preserving the mother earth and its elements is a prime concern for all religious groups. To promote the concept of green to the very root of humanity, greening the place of highest sanctity is a stepping stone in the big green movement.

A green place of worship will save energy, water, use eco-friendly materials, maintain hygienic and healthy indoor conditions and use the natural resources of sunlight and fresh air to the optimum.

I. Benefits of Green Places of Worship

The green places of worship will adopt a holistic approach to sustainability and will set an example for the places of worship in the country to adopt green principles. The conversion of existing place of worship to ***green place of worship*** would result in multifold benefits.

Tangible Benefits

- Reduced water demand (20-30% Water savings)
- Reduced power demand (30-40% Energy savings)
- Better handling of waste

Intangible Benefits

- Access to public transport, universally designed
- Hygiene, access to safe drinking water & sanitation

II. IGBC Green Places of Worship Rating System

The sustainable aspects of green places of worship are addressed in the rating system under the following modules:

- ❖ Site Preservation
- ❖ Water Conservation

- Energy Efficiency
- Health & Hygiene
- Innovation

The guidelines detailed under each credit enables any existing places of worship to implement and enhance the green planning & design principles. IGBC Green Places of worship rating is applicable to all existing and new places of worship in India. The place of worship authority can evaluate all the possible points to apply under the rating system using the IGBC Green Place of worship checklist.

IGBC® Green Places of Worship Rating System– Registration:

You need to register manually. The Fee for rating the project would be Rs 50,000/- and extra taxes as applicable. The project would be certified and 10 copies of certificates would be given to the project. There is an additional cost of Rs 20,000/- plus taxes for the plaque if the project desires to opt for it.

Rating Level:

There is one rating level - 'IGBC REVERENT'. Project need to achieve 40% of total points in either New or Existing Place of Worship.

Certification Process:

Project to submit submittal as per the Place of worship check list.

A presentation consisting of all the credits attempted with supporting photographs, calculations, cutsheets etc., (in one submission)

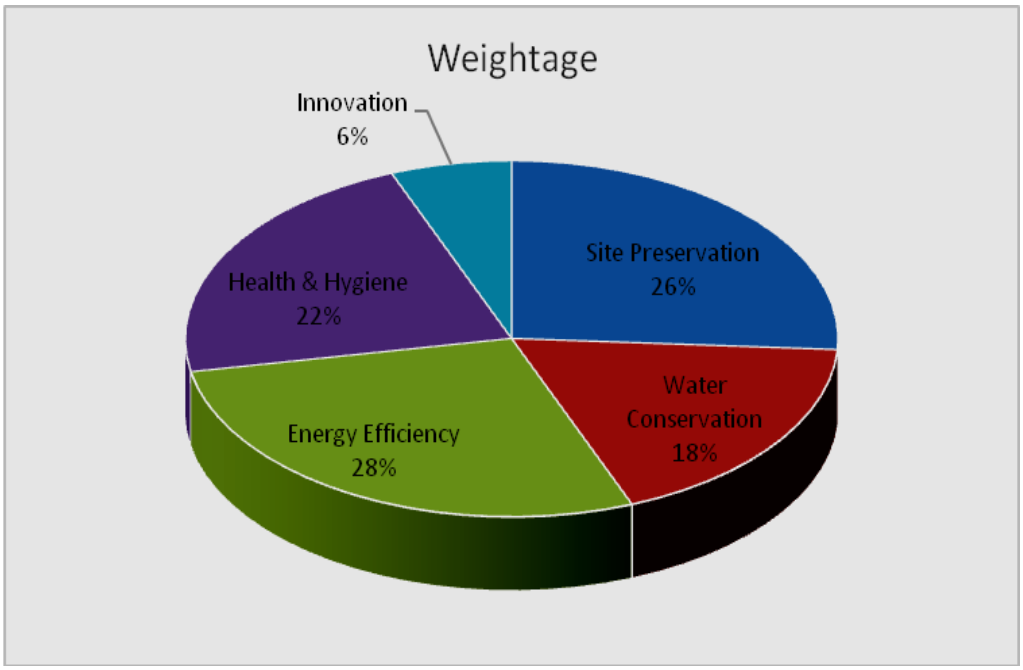
IGBC team shall visit the project after submission and carry site visit and release the review.

Checklist for IGBC® Green Place of Worship Rating		Points Distribution	
Modules		**New**	**Existing**
Site Preservation(SP)		**13**	**12**
SP Mandatory Requirement 1	Local Building Regulations	Required	Required
SP Credit 1	Greenery within Site	1	1
SP Credit 2	Preservation of Local bio-diversity	2	2
SP Credit 3	Preservation of Top Soil	1	NA
SP Credit 4	Universal Design	2	2
SP Credit 5	Access to Public Transport	1	1
SP Credit 6	Heat Island Reduction, Non-roof	2	2
SP Credit 7	Heat Island Reduction, Roof	2	2
SP Credit 8	External light fixtures	1	1
SP Credit 9	Signage's /Display on Green Education	1	1
Water Conservation(WC)		**9**	**9**
WC Credit 1	Rainwater Harvesting, Roof & Non-roof	3	3
WC Credit 2	Water Efficient Plumbing Fixtures to meet UPC	4	4
WC Credit 3	Water Efficient Landscaping	2	2
Energy Efficiency(EE)		**14**	**10**
EE Credit 1	Energy Efficiency	6	6
EE Credit 2	On-site Renewable Energy	4	4
EE Credit 3	Off-site Renewable Energy	2	2
EE Credit 4	Solar Hot Water System, Solar Cooking System	2	NA

Health & Hygiene(HH)		11	11
HH Credit 1	Segregation of Dry & Wet Waste	1	1
HH Credit 2	Hygiene Facility	3	3
HH Credit 3	Exhaust Systems	1	1
HH Credit 4	Fresh Air Ventilation	2	2
HH Credit 5	Daylighting	2	2
HH Credit 6	On-site Organic Waste treatment & Reuse	2	1

Innovation(IN)		3	3
IN Credit 1.1-1.3	Innovation	2	2
IN Credit 2	Involvement of IGBC AP in Team	1	1

Total Available Points		50	45



Site Preservation

Local Building Regulations

SP Mandatory Requirement 1 **Mandatory Requirement**

Intent:

Ensure that the building complies with necessary statutory and regulatory codes.

Requirements:

- ❑ Submit approved site plan (and/ or) building plans for construction, as applicable

Or

- ❑ Submit status of completion or Completion certificate signed by Architect/Engineer/Owner or Third party Commissioning Authority (OR) Occupancy certificate from Local Authority

Or

- ❑ Submit historical Evidences for temples which are centuries old

Greenery within the site

SP Credit 1 **Points: 1**

Intent:

Encourage greenery within the site, thereby providing habitat and promoting biodiversity.

Requirements:

- ❑ Demonstrate through photographs at least 15% of site area to be vegetation.
- ❑ Submit calculations as per the template

Kodi Mosque

Preservation of Local bio-diversity

SP Credit 2 **Points: 2**

Intent:

Encourage retaining the site features to minimise site damage and associated negative environmental impacts.

Requirements:

Demonstrate that the project complies with at least one of the following measures:

(1 point for each measure; maximum 2 points)

- ❑ **Water Bodies and Channels:**

Retain 100% of water bodies and channels existing on the site.

- ❑ **Existing Topography / Landscape:**

Retain at least 10% of the existing topography / landscape, without any disturbance whatsoever.

- ❑ **Existing Trees:**

Design to integrate trees with new development, so as to preserve 75% of existing trees.

- ❑ **Natural Rocks:**

Retain at least 50% of natural rocks (by surface area), excluding building footprint.

- ❑ **Flora and Fauna:**

Preserving the native flora and fauna of the place, so as to maintain the ecosystem

Kodi Mosque

Preservation of Top Soil

(Applicable for new construction)

SP Credit 3

Points: 1

Intent:

Control soil erosion and sedimentation, thereby, reducing negative impacts to the site and surroundings.

Requirements:

Please submit the following:

- ❑ Photographs of the fertile topsoil to be stockpiled prior to construction, for future reuse or donation.
- ❑ Develop appropriate measures to address soil erosion, after occupancy.

Note:

- ❑ *If the top soil (10-20 cm) in the project is not fertile (or) suitable for preservation, in such a case the project may provide relevant justification.*

Universal Design:

SP Credit 4 **Points: 2**

Intent:

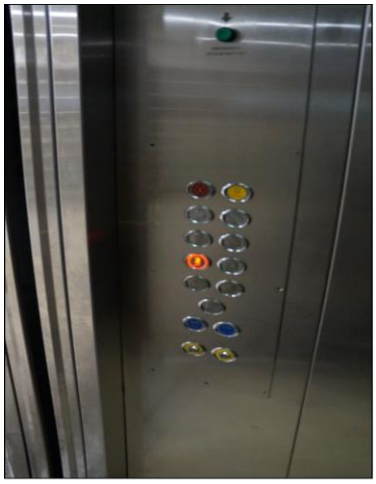
Ensure that the project design caters to differently abled and senior citizens.

Requirements:

Ensure that following provisions for differently abled people are incorporated

(2 point for every 2 measures):

- ❑ Photographs of non-slippery ramps with hand rails on at least one side at all entrances
- ❑ Photographs of rest rooms (toilets) in common areas designed for differently abled people
- ❑ Photographs of braille and audio assistance in lifts for visually impaired people
- ❑ Photographs of designated parking facility near lift lobby
- ❑ Photographs of permanent seating spaces in the campus



Shree Siddhivinayak Temple, Mumbai

Access to Public Transport

SP Credit 5 **Points: 1**

Intent:

Encourage use of public transport, so as to reduce negative impacts caused from automobile use.

Requirements:

- ❑ Photographs of the bus stop, metro station, shuttle service within 800 meters walking distance from the project

Or

- ❑ Shuttle Service: The project can operate or have a contract in place for shuttle services (from / to the nearest intra-city railway station or bus-stop), for atleast 25% of the devotees.

Heat Island Reduction, Non-roof

SP Credit 6

Points: 2

Intent:

Minimise heat island effect so as to reduce negative impact on micro-climate, human and biodiversity.

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Requirement

Provide one or combination of the following, for at least 50% of exposed non-roof impervious areas within the project site:

- ❑ Shade from existing tree cover/ newly planted saplings within 5 to 8 years of planting
- ❑ Photographs of the Open grid pavers or grass pavers

Percentage of Non-roof area covered with shade of trees/ open grid pavers/ grass pavers	Points
> 50%	1
> 75%	2

Heat Island Reduction, Roof

SP Credit 6

Points: 2

Intent:

Minimise heat island effect so as to reduce negative impact on micro-climate, human and local biodiversity.

Requirements:

Please submit photographs of at least 50% of exposed areas (roof) must be covered with or in combination of the following:

- ❑ White colored china mosaic tiles
- ❑ Painted white
- ❑ Vegetation

Roof garden

China Mosaic tiles installed on the roof

Kodi Mosque, Kodi

External light fixtures

SP Credit 7 **Points: 1**

Intent:

Reduce light pollution to increase night sky access and enhance the nocturnal environment.

Requirements:

- ❑ Photographs of the external lighting fixtures installed with a dome/cover to reduce light pollution into the sky
- ❑ Photographs of the installed Bollard fixtures with a height less than 3 feet

Note:

In case the place of worship do not have any external lighting fixtures and its only lit using oil lamps, the requirement can still be met using oil lamps.

Signages /Display on Green Education

SP Credit 8 **Points: 1**

Intent

To educate the visitors and help to maintain the green features in the project.

Requirements:

Provide permanent signages educating the visitors on green features implemented in the project.

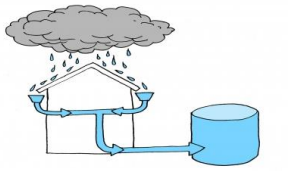
Water Conservation

Rainwater Harvesting, Roof & Non-roof

WE Credit 1

Points: 3

Intent:



Enhance ground water table and reduce municipal water demand through effective rainwater management.

Requirements:

- **Case 1:**

- Provide rainwater harvesting system to capture at least 25% of runoff volumes from roof and non-roof areas.

A table showing the Percentage of minimum rainwater to be harvested for a given total site area, to achieve credit points is provided below:

Percentage of Rainwater Harvested	Points
> 25 %	1
>50 %	2
> 75 %	3

- **Case 2:**

  In areas where the Central/ State Ground Water Board does not recommend rain water recharge (or) if the groundwater table is less than 8 m

Water Efficient Plumbing Fixtures

WE Credit 2 **Points: 4**

Intent:

Enhance efficiency of plumbing fixtures, thereby minimising potable water use

Requirements:

Use water efficient plumbing fixtures (as applicable) whose flow rates meet the baseline criteria in aggregate. (Choose any 4 and submit photographs and calculation)

- ❑ Water closet 3/6 LPF – 1 Point
- ❑ Taps with aerator – 1 Point
- ❑ Health Faucet with aerator – 1 Point
- ❑ Urinal 4LPF – 1 Point
- ❑ Kitchen Sink tap with aerator – 1 Point

Kodi Mosque, Kodi

Water Efficient Landscaping

WE Credit 3 **Points: 2**

Intent:

To reduce water demand for landscaping through water efficient management systems and techniques

Requirements:

Provide photographs of highly efficient irrigation systems incorporating the features mentioned below: (Minimum two features)

- Central shut-off valve
- Turf and each type of bedding area must be segregated into independent zones based on watering needs
- At least 75% of landscape planting beds must have a drip irrigation system to reduce evaporation
- Sprinkler Irrigation systems
- Time based controller for the valves such that evaporation loss is minimised and plant health is ensured
- Use of treated waste water for irrigation
- Any other innovative methods for watering

Kodi Mosque, Kodi

Energy Efficiency

Energy Efficiency

EE Credit 1 **Points: 4, 6**

Intent:

To conserve and harvest energy using passive and active energy conservation measures.

Requirements:

Provide photographs of any six features of the following: (Each feature carries 1 point)

- ❑ More openings on North & East
- ❑ Shading devices
- ❑ WWR of 40-60%
- ❑ Thick Wall Insulation
- ❑ Flyash or AAC block or equivaent
- ❑ Insulation for Roof
- ❑ LPD 1W/sq.ft (or) T5 & LED
- ❑ BEE 3 star Unitary AC
- ❑ BEE 3 star Ceiling Fans
- ❑ BEE 3 star Refrigerators

Kodi Mosque, Kodi

On-site Renewable Energy

EE Credit 2 **Points: 4**

Intent:

Encourage the use of on-site renewable technologies, to minimise the environmental impacts associated with the use of fossil fuel energy.

Requirements:

Demonstrate through photographs and calculations of on-site renewable energy generation for at least 5% of total annual energy consumption of the place of worship.

Points are awarded as below:

Percentage of On-site Renewable Energy Generated to the Total Annual Energy Consumption	Points
> 5%	1
> 10%	2
> 15%	3
> 20%	4

Notes:

- *Renewable energy sources include solar energy, wind power, biomass, etc.*
- *Solar hot water systems cannot be considered as power generation source and cannot be subtracted from the total annual energy consumption of the proposed case.*

Shree Siddhivanayak Temple, Mumbai

Off-site Renewable Energy

EE Credit 2 **Points: 2**

Intent:

Encourage the use of off-site renewable technologies, to minimise the environmental impacts associated with fossil fuel energy use.

Requirements:

Demonstrate that the project has purchased Renewable Energy Certificates (RECs) equivalent to at least 25% of the total annual energy consumption .

Notes:

- *The RECs purchased shall be valid for a period of two years.*
- *The RECs can be either solar or non-solar or both.*

Points are awarded as below:

Percentage of Renewable Energy Certificates (RECs) Purchased	Points
> 25%	1
> 50%	2

Notes:

- *Type of renewable energy source shall be in compliance with the Ministry of New and Renewable Energy (MNRE), Government of India and respective State Regulatory Commissions.*
- *Off-site renewable energy so generated shall be counted only once.*
- *Hydro power projects with 25 MW or lesser size shall only be considered under this credit.*
- *For credit calculations, RECs purchased in the last 6 months of building operation can also be considered, to show compliance.*
- *In case, the Project purchases RECs through an authorised Agency of exchange, then a legal contract should exist between the authorised Agency and the Project.*

Solar Hot Water System, Solar Cooking System

EE Credit 2 **Points: 2**

Intent:
Encourage use of alternative sources of energy for water heating applications and / or solar cooking system, to minimise the environmental impacts of using fossil fuels.

Requirements:

Please submit photograph of the installed solar water heating system and /or solar cooking system to meet hot water requirement for domestic purposes.

Points are awarded as below:

Percentage of Solar Hot Water System and / or Solar Cooking System	**Points**
> 25%	1
> 50%	2

Notes:

The minimum hot water requirement for domestic purposes should be considered as 20 liters per person per day.

Health Hygiene

Segregation of Dry & Wet Waste

HH Credit 1 **Points: 1**

Intent:

Facilitate segregation of site waste at source so as to prevent such waste being sent to land-fills.

Requirements:

- ❑ Provide photographs of separate bins to collect dry waste (paper, plastic, etc.,) and wet waste (organic)

Approach and Methodologies:

Allocate suitable space on-site for sorting out dry and wet waste. Examine the scope for recycling of waste collected from the project. Identify local dealers to collect and dispose waste material such as paper, plastic, metals, glass, cardboard, organic waste, batteries. Educate residents about various recycling methods.

Shree Siddhivanayak Temple, Mumbai

Hygiene Facility

HH Credit 2 **Points: 3**

Intent:

Facilitate hygienic sanitation and drinking water facility in the project, so as to enhance the health and well-being of visitors

Requirement:

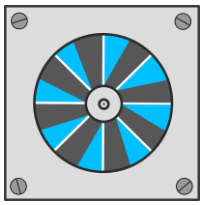
Please provide photographs of:

- ❑ Separate and clean toilets for ladies and gents
- ❑ Separate toilets for differently abled people
- ❑ Treated drinking water available 24x7
- ❑ Cleaning the common areas using hot water or any other sterilizing agent

Shree Siddhivanayak Temple, Mumbai

Exhaust Systems

HH Credit 3 **Points: 1**



Intent:

Facilitate exhaust systems within the project, so as to enhance the indoor environment quality.

Requirements:

- ❑ Submit photographs of the installed exhaust systems within the project especially in the prayer room and toilets:

Location	Minimum Airflow	
Kitchen	For < 9.3 sq.m (100 sq.ft) floor area	100 cfm
Toilets	For < 4.64 sq.m (50 sq.ft) floor area	50 cfm

Kodi Mosque, Kodi

Fresh Air Ventilation

HH Credit 4 **Points: 2**

Intent:

Avoid indoor pollutants affecting indoor air quality by providing adequate outdoor air ventilation.

Requirements:

- ❑ Provide photographs to demonstrate openable windows or doors to the exteriors, in all occupied spaces and bathrooms. The verification will be done during the site audit by the IGBC team.

Daylighting – 50%, 75%

HH Credit 5

Intent:

Ensure connectivity between the interior and the exterior environment, by providing adequate daylighting.

Requirements:

- ❑ Provide photographs to demonstrate at least 50% of the occupied spaces with ample daylighting. The verification will be done during the site audit by the IGBC team.

Notes:

Daylighting for the garba griha area is exempted from the calculation.

On-site Organic Waste treatment & Reuse

HH Credit 6 **Points: 2**

Intent:

Ensure effective organic waste management, post-occupancy, so as to prevent waste being sent to land-fills.

Requirements:

- ❑ Please submit photographs and calculation of the installed on-site waste treatment system for treating 75 % organic waste generated from the place of worship. The output from such systems like manure, power, etc., should be reused in-situ.

Percentage of On-site organic waste treated & reuse	Points
> 75%	1
> 95%	2

Notes:

- *Organic waste includes kitchen and garden waste.*
- *Default kitchen waste quantity per person per day can be considered as 0.25 kgs or as prescribed by the local bye-law, whichever is more stringent.*

INNOVATION IN PRACTICES

Innovation in Practices
IP Credit 1

Point(s): 2

Intent:

Provide an opportunity to be awarded points for innovative practices

Requirements:

- ❑ *Demonstrate the innovative strategies or measures not covered by the rating system and the project has done and documented its importance.*

IGBC Accredited Professional

IP Credit 2 **Point: 1**

Intent:
Support and encourage involvement of IGBC Accredited Professional in societies, so as to integrate appropriate design measures and streamline certification process.

Requirements:

- ❑ Identify an IGBC Accredited Professional who has expertise in IGBC rating systems and green building concepts and submit the IGBC AP certificate.

About CII
(Confederation of Indian Industry)

The Confederation of Indian Industry (CII) works to create and sustain an environment conducive to the development of India, partnering industry, Government, and civil society, through advisory and consultative processes.

CII is a non-government, not-for-profit, industry-led and industry-managed organization, playing a proactive role in India's development process. Founded in 1895, India's premier business association has over 7,200 members, from the private as well as public sectors, including SMEs and MNCs, and an indirect membership of over 1,00,000 enterprises from around 242 national and regional sectoral industry bodies.

With 64 offices, including 9 Centres of Excellence, in India, and 7 overseas offices in Australia, China, Egypt, France, Singapore, UK, and USA, as well as institutional partnerships with 312 counterpart organizations in 106 countries, CII serves as a reference point for Indian industry and the international business community.

About IGBC
(Indian Green Building Council)

The Indian Green Building Council (IGBC), part of Confederation on Indian Industry (CII) was formed in the year 2001. The vision of the council is to enable Sustainable Built-Environment for all, and to make India, one of the world leaders in Sustainable Built-Environment by 2025.

The council offers a wide array of services which include developing new green building rating programmes, certification services and green building training programmes. The council also organises Green Building Congress, its annual flagship event on green buildings.

The council is committee-based, member-driven and consensus-focused. All the stakeholders of construction industry comprising of architects, developers, product manufacturers, corporate, Government, academia and nodal agencies participate in the council activities through local chapters.

IGBC Green Building Rating Systems
National by Choice
Global in Performance

indian green building council

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For more information on Green Buildings, please contact

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