IGBC

Confederation of Indian Industry

IGBC's NEST

Ecofriendly Self-developed Tenements

Pilot Version
Reference Manual
October 2022

IGBC

Confederation of Indian Industry

IGBC's NEST

Ecofriendly Self-developed Tenements

Pilot Version
Reference Manual
October 2022

Copyright

Disclaimer

None of the parties involved in developing the IGBC's NEST – Eco friendly Self-developed Tenements abridged guide, including the Indian Green Building Council assume any liability or responsibility, to the user or any third parties for any injuries, losses or damages arising out of such use.

Indian Green Building Council

C/o Confederation of Indian Industry
CII – Sohrabji Godrej Green Business Centre
Survey No. 64, Kothaguda Post
Near Kothaguda Cross Roads, Ranga Reddy (Dt)
Hyderabad - 500 084
INDIA

Acknowledgements

The IGBC's NEST – Ecofriendly Self-developed Tenements has been made possible through the efforts of many dedicated volunteers, staff members and others in the IGBC community. The Abridged Reference standard was developed by the IGBC's NEST – Ecofriendly Self-developed Tenements Technical Committee and many other members. Indian Green Building Council places on record its sincere thanks to the participating companies and individuals who enthusiastically volunteered during the committee meetings.

IGBC would like to thank the following for their participation and contribution in developing the rating programme. We also thank members for agreeing to participate in future development of the rating programme.

Technical Core Committee Members

- Mr Sanjay Joshi, Chairman, IGBC's NEST – Ecofriendly Self-developed Tenements, Senior General Manager & Head -Technical, Affordable and Green Housing HDFC Ltd
- Mr K Sriram, Co-Chairman IGBC's NEST – Ecofriendly Self-developed Tenements, Managing Director, Tapovan Estates
- Ar Ankoor Sanghvi, Principal, Ankoor Sanghvi Architects
- Ms Anushma Malpani, Green Value Partner - Deputy Manager, IIFL Home Finance Ltd.
- Mr Bobby Olari, National Technical Manager, Tata Capital Housing Finance Limited
- Mr Jayasankar Kentinkara, Sr. Vice President Technical, Ultratech Cement Ltd.
- Ms Megha Goel, Co-Founder, Entelechy Fund
- Mr Rajarshi Mitra, Brand Manager, Homefirst finance company
- Mr Rishabh Kasliwal, Managing Director at Kamal Cogent Energy Pvt. Ltd
- Mr Santhosh Ramkumar, Green Value Partner – Lead, IIFL Home Finance Ltd.
- Mr S Leela Dinesh, Marketing Manager, Homefirst finance company

Indian Green Building Council Technical Team Members

- Mr Naveen Akkina, Senior Counsellor, IGBC
- Ms Pallavi Bhallamudi, Engineer, IGBC
- Ms Satya Aruna, Executive Officer, IGBC
- Ms Nivedita Dileep, Associate Counsellor, IGBC
- Mr Dhiraj Katari, Associate Counsellor, IGBC

Foreword from the Indian Green Building Council (IGBC)

The rapid rise in population and income over the past decades has resulted in an increase in demand for housing. The housing shortage is larger in rural areas and among low-income groups. Over 93 million people live in sub-standard or congested dwellings without adequate access to clean water, sanitation and basic amenities. The existing housing construction practices also adopt frugal measures by design because of the size of individual unit (which is limited), lack of proper framework, awareness and budget constraints. During construction, the projects utilise conventional products and materials which in turn leads to increased carbon emissions on account of higher embodied carbon. This also affects the quality of living of the occupants and leads to further increase in resource consumption during occupancy. Against this background, CII-IGBC has developed an approach and methodology to address the element of sustainability in self-developed individual housing sector.

The objective of IGBC's NEST – Ecofriendly Self-developed Tenements framework is to drive and facilitate an integrated approach for greening self-developed & affordable residential projects in the country.

This would bring awareness and drive the individual owners to build a sustainable home with no or meagre additional cost. The approach is to encourage the owners to adopt green measures that are simple and have profound impacts in addressing resource efficiency and occupant's health and wellbeing. The framework throws light on building envelope, water & energy efficiency and harnessing solar energy. Also, the GreenPro Ecolabel launched by CII facilitates in selection of appropriate green products and materials for construction. This framework would support as a ready reckoner in providing sustainable solutions for Ecofriendly Self-developed Tenements.

Contact:

Indian Green Building Council
C/o Confederation of Indian Industry
CII – Sohrabji Godrej Green Business Centre
Survey No. 64, Kothaguda Post, Near Kothaguda Cross Roads,
Ranga Reddy (Dt), Hyderabad - 500 084, INDIA
Ph: +91 40 4418 5111, Fax: +91 40 44185139
Email: igbc@cii.in, Web: www.igbc.in

Contents

I. Introduction:

The building sector in India is growing at a rapid pace and contributing immensely to the growth of the National economy. The sector has embraced sustainable design & construction practices in the past decade and enabled India to be in the International map of green buildings and built environment. While the concept of green was initially adopted in commercial buildings, it is now extending to varied types of residential buildings and communities. This augurs well for a country where the sector is expected to grow four-fold in the next two decades.

The green concepts and techniques in the building sector can help address National concerns like water management, energy conservation, reduction in fossil fuel use, handling of consumer waste and conserving natural resources. Most importantly, these concepts can enhance occupant's health and well-being, which is assuming greater importance. Today the self-developed individual affordable housing is a significant consumer of resources. It also presents tremendous opportunities to enhance efficiency of resource consumption coupled with enhancing the quality of life.

II. Benefits of IGBC's NEST–Ecofriendly Self-developed Tenements

- 20-30% reduction in Energy cost
- 30-50% reduction in Water requirement
- Improved health & wellbeing of occupants

III. National Benefits:

The sustainable aspects of Self-developed individual homes are addressed in the IGBC's NEST – Ecofriendly Self-developed Tenements Rating framework under the following and can also result in substantial National benefits:

- Site planning
- Water Management
- Handling of House -hold Waste
- Energy Conservation
- Reduced Use of Fossil Fuels
- Reduced Dependency on Virgin Materials
- Resident Health and Well-being

Certified level of green building certification is awarded based on meeting all the mandatory requirements and a minimum of 20 credits points.

IV. Scope:

The IGBC's NEST – Ecofriendly Self-developed Tenements framework is designed to address the specific measures of EWS, LIG and MIG homes developed by owner with a maximum built-up area of 150 sq. m.

V. IGBC's NEST – Ecofriendly Self-developed Tenements Registration

Owners interested in IGBC's NEST – Ecofriendly Self-developed Tenements certification must first register with IGBC. Projects can be registered on

- IGBC website (www.igbc.in) under 'IGBC's NEST – Ecofriendly Self-developed Tenements Rating System.
- IGBC App linked with partner institutions

  Registration is the initial step which helps to establish contact with IGBC and provides access to online framework, integrated app, important communications and other necessary information.

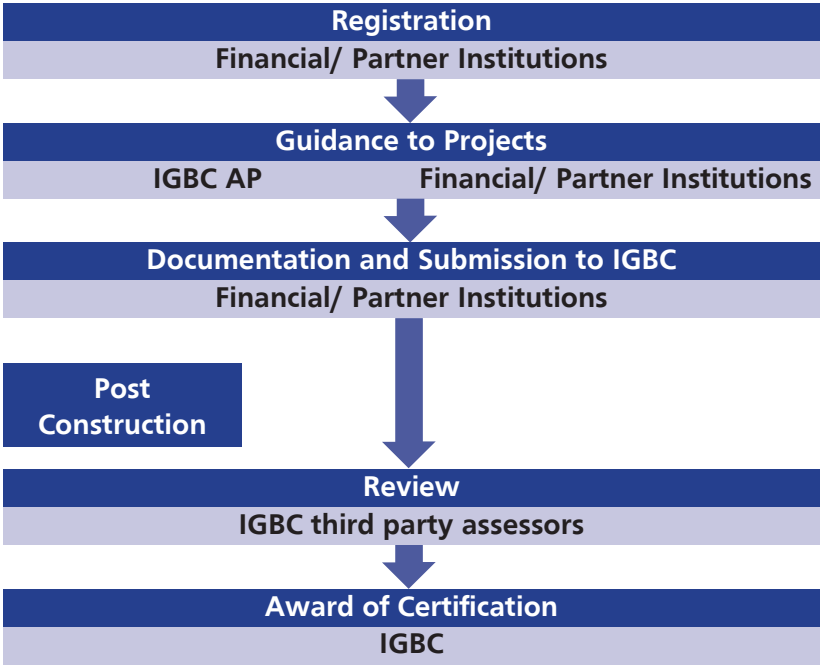
VI. IGBC's NEST – Ecofriendly Self-developed Tenements Certification

Certification of project will be carried out by IGBC team. The certification will comprise of three stages – Documentation, Assessment & Building audit.

Documents (input data) and geo-tagged photographs taken at various stages of construction shall be uploaded. These credits are not awarded until the documents are verified by IGBC team.

IGBC will recognise Ecofriendly Self-developed Tenements that achieve certified level with a formal certificate.

VII. IGBC Certification Process



VIII. Documentation required for Rating

The project must satisfy all the mandatory measures and minimum number of credit points. The project team should provide supporting documents during the submission.

The following are the documents required:

1. General information of project
2. Checklist
3. Input data, Drawings, Photographs, Purchase Invoice, etc., for all credits, as applicable.

IX. Audit

Before award of rating, the IGBC team would audit the implementation of the green measures.

X. Fee

Registration and Certification fee details are available on IGBC website (www.igbc.in) or projects can write to IGBC (igbc@cii.in)

XI. Updates and Addenda

This is the Pilot Version of IGBC's NEST – Ecofriendly Self-developed Tenements Rating system. As the rating system continues to improve and evolve, updates, addenda and errata to the Reference Standard will be made available through the IGBC website. These additions will be incorporated in the next version of the rating system.

CHECKLIST

Checklist

Points		35
Certified: ≥ 20 points		
Site Selection	**Possible Points:**	7
1	Local Building Regulations	M
2	Topsoil Preservation	1
3	Setbacks	2
4	Vegetation	2
5	White finish/Vegetation over Roof	2
Water Efficiency	**Possible Points:**	5
6	Rainwater Harvesting	M
7	Enhanced Rainwater Harvesting and Reuse	2
8	Water Saving Fixtures	2
9	Water Saving Appliances	1
Energy Efficiency	**Possible Points:**	8
10	Wall	1
11	Glass for Window	1
12	Sunshades/ Chajjas	1
13	Solar Power: 1 kW (And/Or) Solar Hot Water System	4
14	Energy Saving Appliances	2
Materials and Resources	**Possible Points:**	9
15	Wet and Dry Waste Bins	M
16	Kitchen waste composting	1
17	Green Construction Materials	4
18	Certified Green Products	3
19	Odourless Paints	1
Resident Health and Well-being	**Possible Points:**	6
20	Window openings - Daylighting and Ventilation	1
21	Exhaust System	2
22	Cross Ventilation	3

Project Brief

Provide a brief of the project including the following data.

Project Registration Number	
Name of Owner	
Project Location	
Permission Authority	
Housing Finance Institution	
Number of floors	
Number of occupants	
Total site area (sq. m)	
Vegetation area (sq. m)	
Total Built-up Area (sq. m)	
Number of two-wheelers (nos.)	
Number of four-wheelers (nos.)	

1. Local Building Regulations

MANDATORY

Ensure that the building complies with necessary statutory regulatory codes.

Measures:

Obtain approval of building plan (or) site plan from local authority

Documents Required:

- Approved plan from local authority

2. Topsoil Preservation

1 POINT

Preserve excavated topsoil and reuse later for landscaping applications, thereby, reducing negative impacts on the site.

Measures:

- Preserve and stockpile top 150 - 200 mm soil during excavation
- Cover stockpiled topsoil with tarpaulin to reduce its exposure to air borne dust from construction activities.

Note: Stockpiled soil shall be reused later on-site for landscaping or donate for off-site use.

Documents Required:

- Photographs showing topsoil stripping, topsoil stockpiled & reused for landscaping

3. Setbacks

2 POINTS

Provide setbacks around the building thereby, increasing open area and enhance the wellbeing of occupants.

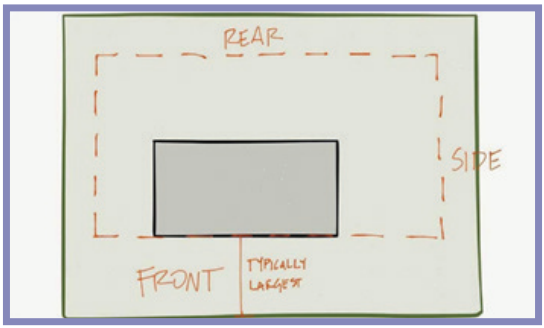
Measures:

Provide setbacks with a minimum of 2 feet on at least

- 2 sides (1 point)
- More than 2 sides (2 points)

Documents Required:

- Site plan showing the width of setbacks
- Photographs of setback area



4. Vegetation

2 POINTS

Minimise disturbances or restore the site to reduce long-term negative environmental impacts, thereby promoting habitat and biodiversity.

Measures:

- Retain existing trees on-site, if possible
- Provide vegetation for at least
  - 1 tree for every 1,500 sq. ft of Built-up area (1 point)
  - 1 tree for every 750 sq. ft of Built-up area (2 points)

Select plants and trees which are local or adaptive to the region.

Documents Required:

- Photographs showing trees on-site

5. White finish/ Vegetation over Roof

2 POINTS

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

Measures:

Cover the exposed roof areas with reflective materials and vegetation to reduce heat island

- Use materials with china mosaic, light colored paint/ reflective coating (1 point)

  (And/Or)

- Provide vegetation (permanent planter boxes) to cover exposed roof (1 point)

Documents Required:

- Photographs showing roof area covered with china mosaic, light colored paint/ reflective coating or permanent planter boxes

6. Rainwater Harvesting

MANDATORY

Implement Rainwater management systems to enhance ground water table and thereby reduce dependence on potable water.

Measures:

Provide rainwater harvesting system (recharge/storage) to capture at least 500 liters of runoff volume for entire site area.

Documents Required:

- Calculations indicating site area of project and capacity of rainwater harvesting system
- Photographs showing rainwater harvesting system provided in the project.

7. Enhanced Rainwater Harvesting and Reuse

2 POINTS

Implement rainwater management systems and reuse to reduce dependency on municipal water demand.

Measures:

- Provide rainwater harvesting system to capture at least 750 liters of runoff volume for entire site area.
- Reuse applications (1 point)

Documents Required:

- Calculations indicating site area of project and capacity of rainwater harvesting system
- Photographs showing rainwater harvesting system provided in the project.
- Provide details of rainwater reuse application

8. Water Saving Fixtures

2 POINTS

Enhance efficiency of plumbing fixtures, thereby minimising potable water use.

Measures:

Install water efficient fixtures as:

- Tap and Showers with aerators (1 point)
- Dual flush cistern for Commode/Toilet seat (1 point)

Documents Required:

- Photographs of aerators in taps and showers
- Photographs of Dual flush cistern for Commode/Toilet seat

9. Water Saving Appliances

1 POINT

Reduce water demand through water efficient management systems and techniques.

Measures:

Install water saving appliances as:

- Automatic water level controllers for Overhead tank

  or

- Water metering

Documents Required:

- Photographs of automatic water level controllers for overhead tank (or)
- Photographs of water metering

10. Efficient Wall

1 POINT

Implement efficient wall for building envelope to improve the energy efficiency.

Measures:

- Use Fly ash-based blocks/hollow blocks for external wall assembly

The project must ensure that the overall U-value of the wall assembly shall meet the baseline criteria of 2.5 W/m^2K

Documents Required:

- Photographs of external wall assembly during construction
- Manufacturer details of the brick/blocks.

11. Efficient Glass for Windows

1 POINT

Implement efficient glass for window to improve the energy efficiency.

Measures:

- Use 5 mm glass for windows

The project must ensure that the overall U-value of the glass shall meet the baseline criteria of 5.7 W/m^2K

Documents Required:

- Photographs of window glass
- Details of glazing along with the list of manufacturers and respective specifications of glazing (SHGC value, U-value and VLT)

12. Sunshades/ Chajjas

1 POINT

Incorporate passive architectural features to minimise negative environmental impact.

Measures:

- Implement shading elements for all exterior openings (fenestration) with sunshades/ chajjas of minimum 2 ft

Documents Required:

- Plans highlighting the sunshades/chajjas
- External building photographs showing the sunshades/ chajjas of minimum 2 ft

13. Renewable Energy

4 POINTS

Encourage the use of on-site renewable technologies, to reduce the use of fossil fuel energy.

Measures:

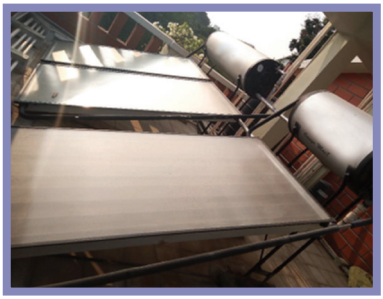
- Install renewable energy system (Solar Power) of 1 kWp to meet the annual energy consumption of the project (2 points)

  (And/Or)

- Install solar hot water system to meet hot water requirement with minimum capacity of 100 Liters per day (2 points)

Documents Required:

- Purchase invoices of the installed RE Systems
- Photographs of the installed RE systems
- Purchase invoices of the installed solar hot water system
- Photographs of the installed solar hot water system



14. Energy Saving Appliances

2 POINTS

Conserve energy in the use of appliances and other equipment, thereby reducing environmental impacts

Measures:

Install efficient energy saving appliances as: (1 point for each application, maximum 2 points)

- LED Light Fixtures
- Minimum BEE 3 Star rated/ BLDC Ceiling Fans
- Minimum BEE 3 Star rated AC
- Minimum BEE 3 Star rated appliances

Documents Required:

- Purchase invoices of the installed efficient energy saving appliances
- Photographs of the installed efficient energy saving appliance

15. Wet and Dry Waste Bins

MANDATORY

Facilitate segregation of house-hold waste at source, to prevent waste being sent to landfills

Measures:

- Provide 2 separate bins to collect dry waste (paper, plastic, metals, glass, etc.,) and wet waste (organic)

Documents Required:

- Photographs showing the dry and wet waste bins

16. Kitchen Waste Composting

1 POINT

Ensure effective organic waste management, so as to avoid domestic waste being sent to landfills and to improve sanitation and health.

Measures:

- Provide kambha/compost pit in the home.

Note: The generated manure shall be utilised as appropriate.

Documents Required:

- Photographs showing the kambha/compost pit

17. Green Construction Materials

4 POINTS

Encourage use of green construction materials to conserve natural resources and thereby reduce environmental impacts

Measures:

Use of green construction materials for following applications:

(1 point for each measure; maximum 4 points)

- Fly ash-based cement - PPC
- Concrete using artificial sand
- Plastering using ready mix plaster
- Gypsum plaster for interior
- Composite wood /alternate materials for door/window frames and shutters

Documents Required:

- Photographs of the green construction materials used, during construction

18. Certified Green Products

3 POINTS

Encourage use of certified green products to reduce dependence on materials that have associated negative environmental impacts

Measures:

- Use of GreenPro products for building construction and post occupancy (1 point for 1 product/usage)

Documents Required:

- Photographs of the certified green products & materials used, during construction

19. Odourless Paints

1 POINT

Encourage use of materials with low emissions to reduce adverse health impacts on building occupants

Measures:

Use paints and coatings (including primers) with low or no VOC content

Documents Required:

- Photographs of the low VOC paints and coatings used, during construction
- Manufacturer/ brochure/ cut-sheet of low VOC paints and coatings

20. Window Openings – Daylighting & Ventilation

1 POINT

Design habitable spaces to have access to natural daylight and ventilation, thereby enhancing the quality of life of the occupants

Measures:

Design window opening (WFR) for all regularly occupied spaces (living & kitchen, bedroom) with at least:

Climatic Zone	Minimum WFR_{op}
Composite / Hot and dry	10.00%
Warm and humid	16.66%
Temperale	12.50%
Cold	8.33%

(Source: adapted from model building bye-laws, 2016)

Documents Required:

- Floor plans with window schedule and carpet area
- Photographs of window openings from inside and outside

21. Exhaust System

2 POINTS

Ensure that bathrooms and kitchen are adequately ventilated to improve the quality of the indoor environment.

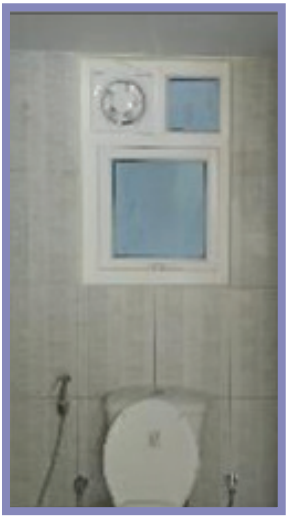
Measures:

Provide exhaust systems in kitchen and bathrooms:

- Opening provision (1 point)
- Exhaust fan (1 point)

Documents Required:

- Photographs of opening provision and exhaust fans in bathrooms & kitchens



22. Cross Ventilation

3 POINTS

Encourage adequate cross ventilation in the dwelling units thereby, providing a healthy environment.

Measures:

Ensure two openings (window/ventilator) in each space

- Living room/Kitchen (1 point)
- Each Bedroom (max 2 point)

Documents Required:

- Photographs of openings (window/ventilator) in living room/ kitchen and each bedroom

Notes

Notes

Notes

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 working closely with Government on policy issues, interfacing with thought leaders, and enhancing efficiency, competitiveness and business opportunities for industry.

Founded in 1895 and celebrating 125 years in 2020, India's premier business association has more than 9,100 members, from the private as well as public sectors, and an indirect membership of over 300,000 enterprises from around 291 national and regional sectoral industry bodies.

With 62 offices, including 10 Centres of Excellence, in India, and 8 overseas offices in Australia, Egypt, Germany, Indonesia, Singapore, UAE, UK, and USA, as well as institutional partnerships with 350 counterpart organizations in 133 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 the Confederation of Indian Industry (CII) was formed in the year 2001. The vision of the council is, "To enable a sustainable built environment for all and facilitate India to be one of the global leaders in the 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. The council also closely works with several State Governments, Central Government, World Green Building Council, bilateral multi-lateral agencies in promoting green building concepts in the country.

Confederation of Indian Industry

Confederation of Indian Industry
CII – Sohrabji Godrej Green Business Centre

IGBC

Indian Green Building Council
Survey No 64, Kothaguda Post
Near HITEC City, Hyderabad – 500 084
Tel : +91 40 4418 5111
Fax : +91 40 4418 5189

Email: igbc@cii.in

Website: www.igbc.in