

SUSTAINABLE BUILDINGS-SRC

SERVICES

We work with a diverse range of organizations, including nodal ministries/ departments, PSUs, corporates, academia and international development agencies. We present a mosaic of services catering to both new as well as existing buildings. Impact of our work is significantly enhanced by leveraging our experience and expertise across other thematic areas within TERI. Our services span across geographies, especially among developing countries.

- POLICY RESEARCH & ADVOCACY
- RESEARCH & DEVELOPMENT
- ENVIRONMENTAL DESIGN CONSULTANCY
- TRAINING & CAPACITY BUILDING

FACILITIES

Modelling & Simulation

Our in-house expertise in software modelling & simulation tools of enables us to correlate and validate our field observations and recommendations.

- TRNSYS
- RADIANCE
- Energy Plus
- DesignBuilder
- DIALux
- eQUEST
- HAP
- RETScreen
- IES-VE
- Daysim
- Rhinoceros
- DIVA

TOOLS & EQUIPMENT

On-site measurement of technical parameters through various tools & equipment provides us with the capability to look beyond calculations and estimations.

- Thermohygrometers
- Radiant Asymmetry Sensors
- Radiant Temperature Sensors
- Floor & Ankle Temperature Sensors
- CO and CO Measurement Sensors
- Lux Meters
- Anemometers
- Pyranometers
- Heat Stress Meters

PUBLICATIONS

Research papers

1. **“Evaluation Of Thermal Comfort In Natural Ventilated Houses At Various Locations In Warm And Humid Climate Zone”** , Akanksha Modi & Kiriti Sahoo, National Conference on Reviving Regional Wisdom in Architecture – 2018, Poornima University
2. **“Thermal Comfort Study of a Dining Space in Temperate Climate Using Natural Ventilation”**, published in the Souvenir released during NOSTARCH 33 event on 5th & 6th JAN 2018
3. **“Thermal Comfort Performance Of Different Masonry Blocks In Tropical Climatic Zones Of India”**, Kiriti Sahoo & Minni Sastry , Fellow at TERI , Published in MGIRED Journal Volume 3(2) : 18 – 27 Issn 2393 -9605
4. **“Greening Through Natural Ventilation”**, Kiriti Sahoo, Minni Sastry, Akshay Urja - Renewable Energy MNRE, April 2011
5. **“A Feasibility Study Analysis for Radiant Cooling System in Housing for Hot and Humid Climate in India”**, at 4th National Conference on Refrigeration and Air Conditioning (NCRAC-2015) Rajalakshmi Engineering College, Chennai, 28th to 30th October 2015.
6. **“Optimization of Window Design in a High-Rise Residential Township to Achieve Griha Requirements for Thermal and Visual Comfort”**, at International Journal of Research in Engineering and Technology eISSN: 2319-1163 | pISSN: 2321-7308, on 12 Nov 2016.
7. **“Daylighting in schools influencing the health and productivity of children: investigating with current British standards”**. Proceedings of International Conference on Advances in Building Sciences 2012, Indian Institute of Technology, Chennai.
8. **“Straw bale construction: a study of thermal performance and climate suitability in India”**. Proceedings of PLEA Conference 2015, Italy.
9. **“TERI Study Maps out Heat Islands, Urban Canyons”**. The Hindu-Bangalore Edition. 19-01-2018.
10. **“Smart Planning and Reduce Heat Island Effect”** .The Hindu-Bangalore Edition. 20-01-2018

MANUALS & GUIDELINES

- Environmental Building Guidelines for Hyderabad Metropolitan Development Authority
- Environmental Building Guidelines for Bangalore Bye Law
- Formulation of incentives policy for promoting green buildings in Tamil Nadu

We support governments at national, state and local levels in formulation, review and amendment of enabling policies. We also offer technical services for implementing various building codes & standards and green rating systems.

POLICY RESEARCH & ADVOCACY

Key projects

- Market assessment for climate resilient low-cost housing in Nepal Policy
- Formulation of incentives policy for promoting green buildings in Tamil Nadu
- Development of policies, regulations and guidelines for Bengaluru municipality and development authority
- Study and preparation of Green Building Guidelines for Hyderabad Metropolitan Area
- Green building initiatives study for affordable housing in five climatic zones of India

Esteemed clients

- Chennai Metropolitan Development Authority
- Fraunhofer society
- HUDCO
- Hyderabad Metropolitan Development Authority
- APP
- United Nations Environmental Program

RESEARCH & DEVELOPMENT

We specialize in designing green buildings and energy efficient systems. Our areas of expertise include building materials, construction technologies, cool roof, façade and fenestration shading techniques, daylight integration measures, and thermal mass storage system. We assess the energy performance of advanced technologies like low energy cooling and radiant cooling system. TERI has established a two test beds for research on dynamic shading devices in its Bangalore office.

Key projects

- Urban planning characteristics to mitigate climate change in context of urban heat island effect
- Habitat Model for efficiency and comfort for smart shading and radiant cooling
- Studies on Air Purifier—Investigation on improvement of IAQ for paediatric asthma patients
- Development and demonstration of solar energy based Model Rearing House for silkworm seed crop rearing
- To analyse infiltration and exfiltration of façade using computational fluid dynamics
- Sustainability Report for Magarpatta City, Pune.

Esteemed clients

- EMPRI

- Ingersoll Rand
- Ministry of Science & Technology
- Saint-Gobain Research India
- Sharp Business Systems (India) Pvt Ltd
- South Asia Network of Economic Research Institutes

GREEN BUILDING DESIGN CONSULTANCY:

We offer services for enhancing the design of buildings and the selection of climate responsive building materials. We assist our clients in fulfilling their vision of constructing net-zero buildings, with minimal environmental footprint. We provide dedicated assistance for planning, management, design and implementation of projects. We provide support in promoting compliance with relevant building codes like ECBC. We also help achieve suitable ratings for buildings under green rating systems like GRIHA & its variants and LEED.

Key projects

- ITC Projects in Kolkata, Guntur & Chennai
- Product Development & Innovation Centre, BEL, Bengaluru National
- Academy of Customs, Indirect Taxes & Narcotics, Bengaluru
- Residential Camus development for Zuari Rain Forest, Goa
- R & D Campus development for ASTRA Microwave Product Limited, Bangalore
- Campus development for Govt. of India, Karnataka
- Campus development for IIT Bhilai
- Campus development for PGCIL

Esteemed clients

- Karnataka Rural Infrastructure Development Ltd
- NARL, Department of Space,
- MECON
- BARC
- NBCC (India) Ltd
- PGCIL
- Tamil Nadu Housing Board
- Zuari Infraworld India Ltd

OUTREACH PROGRAMS

We organize workshops, seminars, refresher courses, and customized training programmes for building professionals, including developers, architects and engineers. In addition to a broad gamut of publications, we have the essential expertise to provide hands-on training in various modelling & simulation tools as well.

Our team members are routinely invited as panellists, guest speakers and lecturers at various forums and institutions to share their insights on themes related to sustainability. We also

execute programmes in collaboration with NIT Trichy, SAP Chennai and Manipal Academy of Higher Education.

Key projects

Conference conducted

- Regional Green Building Conference on 25-11-2011
- 3rd Regional Green Building Conference from 10th to 11th Dec 2011
- GRIHA Regional Conference 2013 from 15th to 16th Nov 2013
- GRIHA Regional Conference 2015 from 3rd to 4th Feb 2015
- Sustainable Buildings R&D Summit 2018 8th to 10th March 2018

Workshop conducted

- Sustainable Cities & Climate Change from on 23-09-2015
- Workshop on Sustainable Lighting Practices from 24 to 26 Feb'16
- Bengaluru Regional Dialogue themed 'Urbanization, Innovation and Climate Resilience' on 10-08-2016
- Workshop to Disseminate SCP on 30-11-2016
- GRIHA E B Training on 26-10-2017

Training Programme conducted

- Workshop on analytical methods and software tools to predict sustainable performance of built environment for post graduate students at SPA, Vijayawada
- 3 Day - Training & Capacity Building Programme "Performance Evaluation Tools for Sustainable Buildings" from 2 - 4 August 2018
- 3-Day Building Performance Simulations workshop at SJB School from 13th to 15th Nov 2018
- 3 Day - Training & Capacity Building Programme "Performance Evaluation Tools for Sustainable Buildings" | at Bharati Vidyapeeth College of Architecture, Dhanakwadi Campus, Pune from 28th to 30th Nov 2018
- 3 Day - Training & Capacity Building Programme "Performance Evaluation Tools for Sustainable Buildings" from 31 Jan to 2 Feb 2019
- 3 Day - Training & Capacity Building Programme "Performance Evaluation Tools for Sustainable Buildings" | at BIC from 1st Aug - 3rd Aug 2019
- 3-Day Building Performance Simulations workshop at SJB School from 17th to 19th Oct 2019
- 2-Day Building Performance Simulations workshop at BGS School from 21st to 22nd Oct 2019
- 3 Day - Training & Capacity Building Programme "Performance Evaluation Tools for Sustainable Buildings" from 12th to 14th Mar 2020
- 2 Day Climate Responsive Design Strategies, Webinar from 29th to 30 July 2020
- 4 Day Natural Ventilation in Built Environment, Webinar from 7th to 10th October 2020

Guest Sessions & Lectures

- Adhyanmaan College of Engineering, Hosur

- Dayananda Sagar College of Architecture
- MGIRED, Bengaluru
- NIT, Tiruchirappalli
- PES University, Bengaluru

Esteemed clients

- Anna University
- NBCC (India) Ltd
- SPA, Vijayawada