

Net-Zero Building Challenge

Accelerated Pathway to India's 2070 net-zero goal





Net zero energy buildings (NZEBS) are crucial to realising India's Panchamrit Sutra for Climate Action by 2070. **What is the current landscape?**

- Buildings currently account for about a third of India's total energy consumption
- NZEBs can reduce building energy demand by as much as 50%
- By 2030, India will double its floorspace with new buildings

There is a huge business opportunity in climate action that will establish industry leaders within the next 10 years. **Where is the challenge?**

We face a severe capacity constraint. Almost none of the country's 500,000 building sector professionals graduating each year can deliver NZEBs. **What is the roadmap?**

Solar Decathlon India is a challenge where students from Indian institutions learn and develop cost-effective net-zero-energy-water solutions for real, live projects floated by building owners and developers. It engages with faculty members and the building industry across the country to transform perspectives.

Prasad Vaidya
Director, Solar Decathlon India

The story so far

Since 2020, Solar Decathlon India has built capacity and enabled collaborations between 4000 students, 400+ faculty members of 300+ academic institutions, 200+ real estate partners, and 200+ industry manufacturers. This ecosystem spans 23 states and 50 cities in India.

Student teams have collectively worked on **56 million square feet of new buildings** to make them net-zero energy-water, showing how **28 million tonnes of CO2 emissions** can be abated over the life of these buildings.

	YEAR 2020-21	YEAR 2021-22	YEAR 2022-23
STUDENTS	948	1,264	1,780
FACULTY MENTORS	165	195	179
ACADEMIC INSTITUTIONS	103	109	126
CITIES	51	42	50
STATES	17	23	18
PROJECT PARTNERS	53	67	83
INDUSTRY PARTNERS	60	70	79

Solar Decathlon India is conducted by the **Indian Institute for Human Settlements (IIHS)** and the **Alliance for an Energy Efficient Economy (AEEE)** under the aegis of the **Indo-US Science and Technology Forum (IUSSTF)**. It is supported by the **Department of Science and Technology, Government of India**.

The Challenge

This is a 9-month long challenge where we invite student teams to innovate future-ready solutions. They partner with the industry and develop resilient, net-zero-energy-water solutions for **real building projects** that are **affordable**, and **market-ready**. Student teams compete in one of the six building types that need customised and scalable solutions. Their solutions need to excel in each of the 10 contests, which makes this a Decathlon.

Building Divisions

The ten contests of the Building Divisions cover diverse areas that embody the expectations of high performance, market-ready, climate resilient, and net-zero building projects. Teams must address all ten contests in their proposed designs.


 Multi-Family Housing	 Educational Building	 Construction Worker Housing
 Community Resilience Shelter	 Office Building	

10 Contests

- Energy Performance
- Water Performance
- Embodied Carbon
- Resilience
- Affordability
- Engineering and Operations
- Architectural Design
- Innovation
- Health and Wellbeing
- Value Proposition

Product Division

The ten contests of the Product Division cover diverse areas that embody the expectations of a successful product. Teams must address all ten contests in their product solution.

 Residential Cooling Retrofit	<h3>10 Contests</h3> <table><tr><td>Cooling Performance</td><td>Technical Feasibility</td></tr><tr><td>Co-benefits</td><td>Financial Feasibility</td></tr><tr><td>Target Market</td><td>Novelty</td></tr><tr><td>User Desirability</td><td>Go-to Market Strategy</td></tr><tr><td>Ease of Installation</td><td>Value Proposition</td></tr></table>	Cooling Performance	Technical Feasibility	Co-benefits	Financial Feasibility	Target Market	Novelty	User Desirability	Go-to Market Strategy	Ease of Installation	Value Proposition
Cooling Performance	Technical Feasibility										
Co-benefits	Financial Feasibility										
Target Market	Novelty										
User Desirability	Go-to Market Strategy										
Ease of Installation	Value Proposition										

We provide students with learning modules on net-zero building science, industry expert mentors and simulation tools. We facilitate their partnerships with the industry and provide opportunities for internships programs. We conduct faculty development programs for the exchange of best practices of teaching for climate action.

Partners

Building an Impactful Ecosystem

Solar Decathlon India is also a platform for the real estate industry to explore climate change solutions with academia and apply feasible technology and design innovations in their projects.

Mahindra Lifespaces, Sobha Ltd., TATA Realty, Sumadhura Infracon, Lodha, Harmony Lifestyles Group, and Infosys, are Empanelled Project Partners with a commitment to a long-term association with SDI. This includes considering the students' design for implementation in their projects and hiring SDI alumni to work in their organisations.

Private Developers

2Getherments Infra
Adani Realty
Agami Realty
Betweenlines
Brookfield Properties
Casa Grand
Delhi Infratech
DHUN Jaipur
DND BuildHome
Doshi Enterprises
Goel Ganga Group
Himalaya Infraprojects
HomeLand Property Group
Innards Infrastructure
InStyle Homes
Kolte Housing and Infrastructure
Larsen & Toubro
Mahima Real Estate Pvt. Ltd.
Namrata Group
Navira
ORD Towers
Organo Eco Habitats Pvt. Ltd.
Ozone Groups
Prestige Group
Savvy Siddhi Realty & Infrastructure
Shapoorji Pallonji
SHiFt (Studio for Habitat Futures)
Sobha Developers
Sustainability Initiatives
Tata Realty and Infrastructure
Vellore Institute of Technology
We Work

NGOs

Akshar Dhara Foundation
ASEEM Foundation
Bhandarkar Oriental Research Institute
Indian Education Society
Karunar Kheti Trust
Orphans in Need
Ramakrishna Sarada Samiti
Samarpan Foundation
SEEDS India
SELCO Foundation
Shri Vile Parle Kelavani Mandal
The Energy Swaraj Foundation
URVEE Public Trust
Vivekanand Education Society

Government Agencies

Brihan Mumbai Municipal Corporation
Commercial Tax Office Building, Bhubaneswar
Gram Panchayat Ambewadi
Karnataka Housing Board
MAHA Metro, Pune
Nagpur Smart and Sustainable City Development Corporation Limited
National Health Mission
National Institute Of Urban Management
PWD, Arunachal Pradesh
PWD, Chennai
Uttarakhand Peyjal Nigam

“ Testimonials



“Mahindra Lifespaces is an active partner of SDI since its inception. We are happy to offer our projects and guidance to young professionals who participate in SDI to develop net zero projects. SDI interns have added tremendous value to our net zero journey.”

Sunita Purushottam,

Head of Sustainability at Mahindra Lifespaces

Empanelled Project Partner
2022-23 Challenge



In our Master's Programme in Manipal, we also have a similar pedagogy. But the feedback which I have received from the students is that SDI and the learning modules have complemented their learning. Previously the students didn't look at design in a quantification point-of-view. The architects were more into aesthetics and functionality. That dimension of looking at buildings through numbers and evaluating performance requires time. Because the competition is 9-months long, the knowledge penetrates and marines in the design thinking process.

Vaibhav Jain,

Manipal School of Art and Architecture

Faculty Mentor, 2022-23
Challenge



I had the opportunity to interact with sustainability firms and companies via the SDI virtual internship fair. I interviewed with a few of them before deciding on CSIR-CBRI Roorkee, where I learned and gained ground reality experience. I was exposed to various labs for the study of building materials while working here. Apart from that, the government office environment taught me a lot. Thank you to SDI for providing me with this fantastic opportunity to network with so many companies and organizations.

Bhukya Rajashekar

Participant, 2021-22 Challenge



Some of these solutions are very implementable. Will I bank my money on doing this (Team Ecocult) project? Yes. It makes sense, it can be done. It can stand.

Harleen Oberoi,

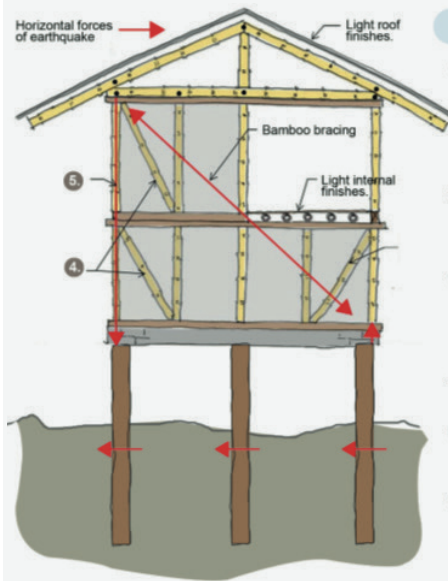
Senior Vice President, Tata Realty

Real Estate Jury, 2021-22
Challenge

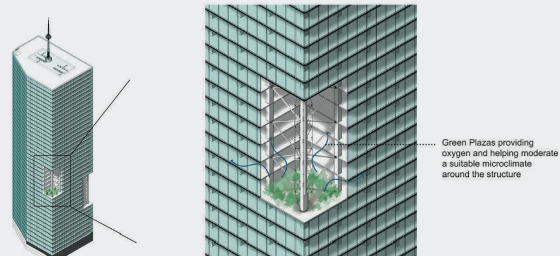
Student Work

Design Tomorrow, Today

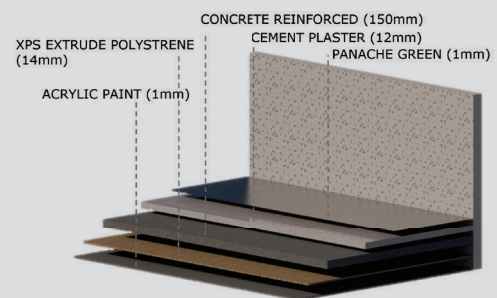
Team Tejasvi
Community Resilience
Shelter Division



Team X : Y : Z
Office Division



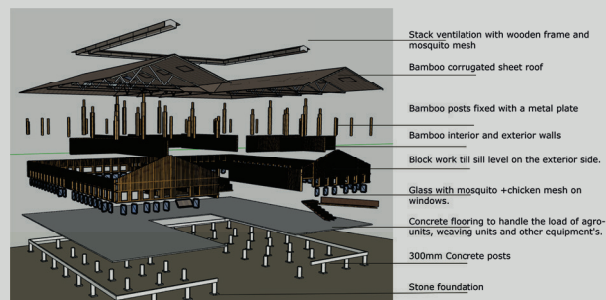
Team Amigos
Single Family Housing Division



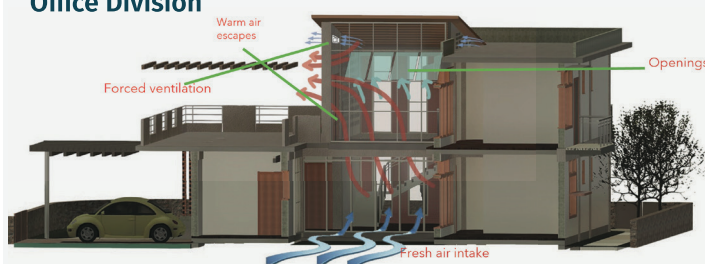
Team Samanvit
On-Site Construction
Worker Housing Division



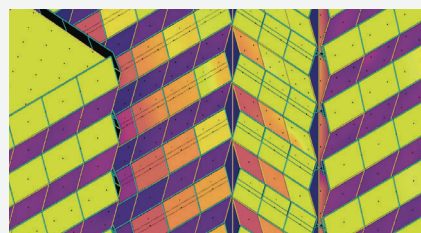
Team Sthairyam
Community Resilience Shelter Division



Team X : Y : Z
Office Division



Team Grey
Office Division



Supporters

Govt Support



Programme Support



Knowledge Partner[†]



Affiliates[‡]



The roles and responsibilities of AEEE and IIHS are separate and distinct, with independent budgets, financial resources and execution.

[†] AEEE and COA have signed a Memorandum of Understanding for knowledge collaboration on net-zero buildings in India.

[‡] ISHRAE (India) and IEEE SA (India) are acting as outreach partners to SDI. Solemma provides free software licenses to all student participants and faculty mentors for the SDI competition. There is no financial implication. The respective teams at their own risk and responsibility, may enter into relevant agreement(s) with Solemma for use of the Solemma software. Teams are however free to use any dynamic simulation modelling software of their choice. Climate Launch Pad India to provide incubation to finalist team(s) of SDI.

Organisers



The Indo-U.S. Science and Technology Forum (IUSSTF) is a bilateral organisation that promotes Science, Technology, Engineering and Innovation through substantive interaction among government, academia and industry. It provides Solar Decathlon India as a platform for innovation towards sustainable economic development, encouraging the use of renewable energy sources and towards promoting the design of buildings that are energy efficient and self-reliant in energy use.



The Indian Institute for Human Settlements (IIHS) is a national education, research, practice and capacity development institution committed to the equitable sustainable and efficient transformation of Indian cities and settlements. A proposed institution of Eminence (IOE), IIHS aims to transform the current nature of urban education as one of the most important drivers for India's national development and sustainable global futures. Its interdisciplinary approach to research and practice helps build new global knowledge and trains urban professionals. IIHS is jointly conducting Solar Decathlon India with AEEE.



Alliance for an Energy Efficient Economy (AEEE) supports policy implementation and enables the energy efficiency market with a not-for-profit motive. AEEE collaborates with diverse stakeholders such as policymakers, government officials, business and industry consumers, researchers, and civil society organisations, thereby contributing toward meeting India's goals on energy security, clean energy, and climate change. AEEE is jointly conducting Solar Decathlon India with IIHS.

Contact

Pooja Suresh Hollannavar
Communications Manager, SDI
phollannavar at iihs dot ac dot in

Ritabrata Sen
Lead - Partnerships, SDI
ritabrata at aeee dot in