



ANGAN 2022 **Making the Zero-Carbon Transition in Buildings**

14th – 16th Sep 2022

Venue: The Ashok Hotel, New Delhi

<https://www.angan2022.com/>

Background:

The IPCC report of 2021 makes clear that “*global warming of 1.5°C and 2°C will be exceeded during the 21st century unless deep reductions in carbon dioxide (CO₂) and other greenhouse gas emissions occur in the coming decades*”. In the recent COP 26 there was growing acknowledgement that the 2°C target of the Paris agreement was no longer enough; that wide-sweeping measures for a 1.5°C target will be needed to stop irreversible damage.

India enhanced its commitment to climate action at the COP 26 in Glasgow, announcing its 5-point climate target – “Panchamrit”, aiming to become “**Net-zero by 2070**”. Globally, buildings consume 40% of energy and are responsible for 1/3rd of emissions. In India, the construction sector was the largest sector with regard to material consumption in 2013, accounting for around 44% of all material demand. Buildings are also the second-largest consumer of electricity (33% in 2017). Considering that buildings are major consumers of electricity, cement and steel and each of them have a large share in GHG emissions, it goes without saying that construction and operation of buildings is a substantial contributor of GHG emissions in the country.

India and the global south, where most of the new development will unfold, must go for a trajectory of low-carbon development across all sectors, and not repeat the mistakes of the developed world. Low-carbon sustainable development will require human-centric, collective efforts and robust action. As a call for action toward this, the Hon'ble Prime Minister, Shri Narendra Modi, also announced the LiFE (Lifestyle and Environment) movement which seeks to transform persons into ‘pro-planet people’, who would adopt sustainable lifestyles.

ANGAN 2022:

The objective of ANGAN 2022 is to deliberate on various thematic tracks leading India on the road to Net Zero Energy and Low Carbon Buildings and develop a discussion paper.

Organised jointly by the Bureau of Energy Efficiency and the Indo-Swiss Building Energy Efficiency Project, it will bring together more than 500 domain experts, practitioners and other Indian and international stakeholders. The conference will be held over three days, with an inaugural session, a keynote session, 5 plenary sessions and 8 thematic technical sessions

This conference will also host an exhibition of various low-carbon products, technologies and innovations applicable in the building sector.

The Indo-Swiss Building Energy Efficiency Project (BEEP) is a bilateral cooperation between the Ministry of Power (MoP), Government of India and the Federal Department of Foreign Affairs (FDFA) of the Swiss Confederation. The Bureau of Energy Efficiency (BEE) is the Implementing agency on behalf of the MoP while the Swiss Agency for Development and Cooperation (SDC) is the agency on behalf of FDFA.





Draft Agenda: ANGAN 2022

DAY 1 (14 September 2022)	
09:30 - 10:30	Registration
10:30 - 10:45	Inauguration of Exhibition by Shri Alok Kumar, Secretary- Ministry of Power Exhibits will include various low-carbon products, technologies and innovations applicable in the building sector
10:45 - 11:45	Inaugural Session
10:45 - 10:50	Lighting the Inaugural lamp
10:50 - 10:55	Welcome Address by Shri Saurabh Diddi, Director, BEE
10:55- 11:00	Address by Dr. Jonathan Demenge, Head of Cooperation, Swiss Agency for Development & Cooperation
11:00 - 11:05	Address by Shri Kuldip Narayan, Joint Secretary, MoHUA
11:05 - 11:15	Address by Shri Abhay Bakre, Director General, BEE
11:15 - 11:30	Key-Note Address: <i>Dr Brian Motherway, Head of Energy efficiency, IEA (Virtual)</i>
11:30 - 11:40	Inaugural Address by Shri Alok Kumar, Secretary, Ministry of Power
11:40 - 11:45	Vote of Thanks by Ms Saswati Chetia, Indo-Swiss Building Energy Efficiency Project
11:45 - 12:15	Tea / coffee
12:15 - 13:30	Plenary Panel Discussion 1: Decarbonisation of the building industry <i>The buildings sector emits nearly 40% of global CO2 emissions, of which two-third comes from the operation of buildings and one-third from building materials and construction. Decarbonising buildings needs action across building design & construction, materials & product industry as well as in the energy sector. Action through policies, product & technology choices, and energy-efficiency measures have been implemented. However, a lot more needs to be done.</i> <i>This session will focus on:</i> <ul style="list-style-type: none">• <i>Discussing various aspects of decarbonizing the building sector</i>• <i>Examples of action across building design, materials and clean energy use</i>• <i>Challenges in implementing these actions and ensuring its effectiveness</i>• <i>Side-effect of the transition to a low-carbon building sector and managing them</i> Chairperson: Shri Abhay Bakre*, Director General- BEE Speakers: <ul style="list-style-type: none">○ Dr Anshu Bharadwaj, CEO- Shakti Sustainable Energy Foundation○ Dr Satish Kumar, President & Executive Director, AEEE○ Mr Nicolas Schenk, Chief Development Officer, Noida International Airport○ Mr Guruprakash Sastry, Regional Head- Infrastructure at Infosys○ Mr Girish Sethi, Senior Director- TERI○ Mr Sanjay Dube, CEO, International Institute of Energy Conservation
13:30 - 14:30	Lunch
14:30 - 15:45	Thematic Session 1 Circular Economy and Life Cycle Approach for low carbon buildings
	Thematic Session 2 Net-Zero Carbon Buildings



	<p><i>In India, so far, the discussion and policy action on low carbon buildings has mainly focused on reduction in operational energy (energy-efficient buildings, energy-efficient appliances, etc) and meeting this operational energy through on-site or off-site renewable energy. Upfront carbon emissions (caused in the materials production, transportation and construction phases) and end of life carbon (carbon emissions associated with deconstruction/demolition, transport from site, waste processing and disposal phases) have not been adequately addressed. A more holistic life cycle approach and circular economy model of production and consumption is needed for a truly low carbon and resource efficient building sector.</i></p> <p><i>This session will focus on:</i></p> <ul style="list-style-type: none"> • <i>Introduction to the concepts of life cycle analysis and circular economy</i> • <i>Case studies on life cycle carbon analysis of buildings and systems</i> • <i>Challenges in carrying out life cycle carbon analysis in India/developing countries context</i> • <i>Case studies on innovative low carbon and resource efficient building materials and renewable energy systems to facilitate transition towards circular economy in India</i> <p>Chairperson: Mr Hitesh Vaidya, NIUA*</p> <p>Speakers:</p> <ul style="list-style-type: none"> ○ Mr Christoph Ospelt, CEO, Lenum AG Switzerland ○ Mr Hemant Chaudhary, Executive Director, Circular Economy Alliance Australia (Virtual) ○ Dr Sameer Maithel, Director, Greentech Knowledge Solutions ○ Dr Soumen Maity, Chief Technology Officer, Technology and Action for Rural Advancement 	<p>Session supported by European Union <i>Net-zero carbon buildings are about reducing energy, both operational and embodied, with offsetting the last resort for residual emissions. There's greater understanding of operational energy use in buildings and hence, the roadmaps to reduce this is clear. Embodied energy has only started to be addressed and the scale of reduction required for net-zero carbon is still unclear.</i></p> <p><i>Achieving net-zero carbon or even near-zero carbon buildings is a challenge, one that requires industry-wide action and among all stakeholders in the building design, construction and operation.</i></p> <p><i>This session will give the stage to some organisations to talk about:</i></p> <ul style="list-style-type: none"> ○ <i>Case studies of near-zero carbon buildings</i> ○ <i>Design process, challenges in achieving near-zero carbon buildings</i> ○ <i>Enablers for net-zero carbon buildings in their geographical context</i> <p>Chairperson: Mr Sanjay Seth, Senior Director- Sustainable Habitat Division, TERI</p> <p>Speakers:</p> <ul style="list-style-type: none"> ○ Ms Sonia Shukla, Senior Project Manager, International Institute for Energy Conservation ○ Mr Oliver Rapf, Executive Director, Buildings Performance Institute Europe (Virtual) ○ Mr Christian Richter, International Knowledge Exchange, Energiesprong (Virtual) ○ Dr. Stijn Verbeke, Senior Researcher, VITO (Virtual) ○ Mr Pankaj Sharma, Project Engineer, BEE
15:45 - 16:15	Tea / coffee	
16:15 - 17:30	<p>Plenary Panel Discussion 2: Unlocking Finance for low-carbon buildings</p> <p>Session organised in partnership with International Financial Corporation</p> <p><i>Low-carbon, "Green" buildings represent one of the biggest investment opportunities of the next decade—\$24.7 trillion across emerging market cities by 2030. The investment opportunity in residential construction, estimated at \$15.7 trillion, represents 60 percent of the market. This is about \$ 2 trillion opportunity in South Asia.</i></p>	

Most of this growth will occur in residential construction, particularly in middle-income countries. Besides lowering energy consumption, and therefore operational costs, greener buildings typically achieve higher sale premiums and attract and retain more tenants, ensuring a more continuous revenue stream. In addition, green buildings can help investors and owners manage the risks associated with a transition to a lower carbon economy. This transition will bring regulatory, economic, and resource changes, and some energy inefficient assets will no longer be profitable.

The objective of this panel will be to discuss:

- *Has green building finance been successful in other countries, and is India ready for it?*
- *How can we best communicate the value of green finance to developers, occupiers, home-buyers?*
- *What are the key opportunities and challenges in mainstreaming green building finance in India?*
- *What are the top two things that need to happen to ensure growth in green building finance?*

Moderator:

Mr Shounak Ray, Business Development Lead, IFC

Speakers:

- Mr Daniel Magallon, CEO, Basel Agency for Sustainable Energy, Switzerland
- Mr Franco Alexander Piza Rondon, Head of Corporate Sustainability, Bancolombia Group (Virtual)
- Mr. Deo Shankar Tripathi, MD / CEO, Aadhar Housing Finance Ltd
- Mr. Mridul Upreti, Sector Lead - Tourism, Retail & Property, MAS Upstream, Asia Pacific at IFC
- Mr. Sarada Kumar Hota, MD, National Housing Bank
- Mr Sanjay Joshi, Addl. Sr. General Manager, HDFC Ltd.

DAY 2 (15 September 2022)	
10:00 – 11:00	<p>Plenary Panel Discussion 3: Women in the resource efficiency conversation</p> <p><i>Women are disproportionately impacted by the negative effects of climate change. The challenge of decarbonization requires transformative on-ground action and women are indispensable to achieving this. However, there are many gaps in harnessing this influential force. Gender-disaggregated data is limited. Knowledge-sharing, awareness-building and training is needed. There is also the need for representation on the right platforms.</i></p> <p><i>This session explores the role of women in resource efficiency and decarbonization in buildings and the built environment, through international and national research and experience sharing. This session will focus on:</i></p> <ul style="list-style-type: none"> • <i>How women view the impact of climate change in buildings and the built environment</i> • <i>Instances of women-led action</i> • <i>Real, practical enabling actions, especially in developing economies, to be more inclusive</i> <p>Moderator: Dr Veena Joshi, Independent Expert</p> <p>Speakers:</p> <ul style="list-style-type: none"> ○ Mr Siraz Hirani, Senior Program Management Specialist, Gujarat Mahila Housing SEWA Trust ○ Ms Swati Puchalapalli, Director, Terra Viridis ○ Dr Sunita Purushottam, Head of Sustainability, Mahindra Lifespace Developers Ltd. ○ Ms Neetu Jain, Founder & MD, Panache Greentech Solutions
11:00 - 11:20	Tea / coffee
11:20 - 11:30	Reassembly for Keynote Session
11:30 - 13:00	Keynote Session
11:30 – 11:35	Lighting the Inaugural lamp
11:35 - 11:40	Welcome Address by Shri Abhay Bakre, Director General, BEE
11:40 - 11:45	Address by Shri Ajay Tewari, Additional Secretary, Ministry of Power
11:45 - 11:50	Address by Dr Olivier Fink, Deputy Head of Mission, Embassy of Switzerland
11:50 - 12:20	Keynote Address by Dr. Richard de Dear, Professor at The University of Sydney School of Architecture, Design and Planning
12:20 - 12:30	Distribution of NEERMAN Awards Distribution of certificates and awards to 15 awardees
12:30 - 12:55	Address by the Chief Guest, Shri R.K. Singh, Hon'ble Minister of Power and New & Renewable Energy
12:55 - 13:00	Vote of Thanks by Shri Saurabh Diddi, Director, BEE
13:00 – 14:00	Lunch

<p>14:00 – 15:15</p>	<p>Plenary Panel discussion 4: Accelerating Policy Implementation for Resilience, Affordability and Climate</p> <p><i>The road to India’s commitment of achieving net-zero carbon emissions by 2070 will need transformative changes across various sectors, including the building sector. Several policies have been introduced in our efforts to transition to low-carbon development, and more are being planned. Implementation of these policies requires coordinated action at different levels of the government, industry stakeholders, down to the end-users. This is especially relevant for Indian cities and buildings to move toward low-carbon and resilience while remaining affordable.</i></p> <p><i>This session will focus on:</i></p> <ul style="list-style-type: none"> • <i>Current policies: What works and what hasn’t? What is needed to implement policies?</i> • <i>Expectations and commitment of different stakeholders for the implementation of policies</i> <p>Chairperson: Mr Manoj Joshi*, Secretary, MoHUA</p> <p>Moderator: Ms Aarti Khosla, Founder Climate Trends</p> <p>Speakers:</p> <ul style="list-style-type: none"> ○ Shri Surendra Kumar Bagde*, Addl. Secretary- MoHUA ○ Shri Mr Ajay Jain*, Principal Secy, Govt. of Andhra Pradesh, Department of Housing ○ Mr Arvind Subramanian*, Managing Director & CEO at Mahindra Lifespace Developers ○ Mr. Gaurav Jain, Joint Vice President (North)- NAREDCO ○ Mr Stefan Kessler, Associate Partner, INFRAS, Switzerland ○ Mr Rajkiran Bilolikar, Assistant professor (ENERGY), Administrative Staff College of India (ASCI) ○ Ms Meenal Anand, Sector Expert, BEE 	
<p>15:15 - 15:45</p>	<p>Tea / coffee</p>	
<p>15:45 – 17:15</p>	<p>Thematic Session 3 Thermal comfort and climate resilience in residential buildings</p> <p>Session organised in partnership with GIZ</p> <p><i>Indoor thermal comfort, essential for physiological and psychological well-being, can be typically provided by active heating or cooling or a combination of both – this is contingent mainly on the local weather and the seasonal variations therein.</i></p> <p><i>The overarching goal of India Cooling Action Plan is to provide sustainable cooling and thermal comfort for all while securing environmental and socio-economic benefits for the society. According to ICAP, Government support for the vulnerable communities should include strategies such as: enforcing efficient building envelope and comfort systems through Eco-Niwas Samhita (ECBC-R) in the design and construction of housing for EWS and LIG to enable thermal comfort for all; funding and support for initiatives led by local municipalities and NGOs, such as cool-roof programs, off- grid micro-systems for cooling, and localized heat-action plans.</i></p>	<p>Thematic Session 4 Climate Strategies for Cities</p> <p><i>Cities are reported to be responsible for more than 70% of GHG emissions, and they share a big responsibility for the decarbonization of the global economy. They are a crucial link in developing and successfully implementing resilient, equitable and inclusive climate solutions, especially in key sectors like energy, building, mobility, water and waste management. City climate action plans have been developed for several cities in India. However, there are the challenges of clear definition of the climate action and its quantification, as well as the challenge of including the climate action in the statutory mechanism.</i></p> <p><i>This session will focus on:</i></p> <ul style="list-style-type: none"> • <i>City level climate action plans</i> • <i>Integrating climate priorities with urban planning, especially with respect to energy and thermal comfort in buildings sector</i> • <i>How cities set their climate action goals and how do they quantify them</i> • <i>Realistic steps to realise the climate goals for the built environment</i> <p>Chairperson: Shri Kunal Kumar, Joint Secy, Smart Cities, MoHUA*</p>

	<p><i>This session shall provide a platform for various agencies to come together and discuss the challenges, probable solutions and approach for mainstreaming thermal comfort and climate resilience in residential buildings.</i></p> <p>Moderator: Mr Ashok B. Lall, Principal, Ashok B Lall Architects</p> <p>Speakers:</p> <ul style="list-style-type: none"> ○ Dr Rajan Rawal, Senior Advisor, Centre for Advanced Research in Building Science and Energy, CEPT University ○ Dr Jyotirmay Mathur, Professor, Centre for Energy and Environment, MNIT Jaipur ○ Dr Vishal Garg, Professor, Plaksha University ○ Dr Richard de Dear, Professor, The University of Sydney ○ Mr S Vikash Ranjan, Programme Head (Climate Smart Buildings) at GIZ 	<p>Speakers:</p> <ul style="list-style-type: none"> ○ Ms Sakshi Chadha Dasgupta, Senior Thematic Advisor, SDC ○ Ms Anumita Roy Chowdhury, Executive Director, Centre for Science and Environment ○ Dr Umamaheshwaran Rajasekar, Chair, Urban Resilience, National Institute of Urban Affairs ○ Mr Mehul Patwari, Director Sustainable Finance, South Pole
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DAY 3 (16 September 2022)			
10:00 – 11:15	<p>Plenary Panel Discussion 5: International initiatives for sustainable habitat: The way forward</p> <p><i>A climate-neutral and net-zero future depends on synchronized concerted effort across our planet. There is a lot to learn, debate, discuss, contextualise and help among different countries and regions if we are to achieve our climate goals.</i></p> <p><i>This session will bring together such initiatives from different developing economies to continue this learning in the domain of decarbonizing buildings.</i></p> <p>Chairperson: Dr Ajay Mathur, Director General, International Solar Alliance</p> <p>Speakers:</p> <ul style="list-style-type: none"> ○ Ms Elizabeth Wangeci Chege, Energy Efficiency & Cooling Specialist- Africa, Sustainable Energy for All (SEforALL) (Virtual) ○ Mr Jonathan Duwyn, Head of Cities Unit and Head GlobalABC Secretariat ○ Ms Melanie Slade*, Senior Programme Manager, IEA (Virtual) ○ Mr. Andre Mueller, Programme Manager- SDC Bern ○ Dr Winfried Damm*, Head- Indo-German Energy Programme, GIZ 		
11:15 – 11:45	Tea break		
11:45 – 13:00	<table border="0" style="width: 100%;"> <tr> <td style="width: 50%; vertical-align: top;"> <p>Thematic Session 5 Reengineering traditional & indigenous design, materials, and construction practices</p> <p><i>Traditional design, building materials and construction practices are generally accepted to be low-carbon, climate and context responsive and climate resilient. However, with the pressures of scale, speed and modern building standards, they've come to be looked as niche solutions that cannot be translated at scale.</i></p> <p><i>To be main streamed again requires re-engineering and innovation in design, manufacturing and application, capacity building and possibly also an image-change. This session opens up a discussion on examples and approaches for mainstreaming traditional design, materials and construction practices.</i></p> <p>Chairperson: Shri Sanjeev Kassi, MoP</p> <p>Speakers:</p> <ul style="list-style-type: none"> ○ Ms Chitra Vishwanath, Principal architect, Founder & Managing Director, Biome Environmental Solutions ○ Ms Rita Panicker, Founder Director, Butterflies India & Ashok Lall ○ Ms Suhasini Ayer, Principal Architect, Auroville Design Consultants ○ Mr Monnanda Appaiah, Managing Director, Wienerberger India </td> <td style="width: 50%; vertical-align: top;"> <p>Thematic Session 6 Emerging Low-Carbon Cooling Practices and Technologies</p> <p><i>As the world warms, cooling through air-conditioning becomes increasingly important in our climate adaptation measures. It is vital to get cooling right- meeting the cooling demand without the devastating climate impacts. In recent years, much effort has gone toward this, including the Global Cooling Prize, which saw technology prototypes with 5 times less climate impact than conventional air-conditioning. Work is going on personal cooling devices and technologies as well as on a host of low-carbon cooling technologies including mechanical ventilation, evaporative cooling, radiant cooling, etc.</i></p> <p><i>This session looks at some of the sustainable cooling technologies and what is required to make them market ready.</i></p> <p>Chairperson: Mr. Ashish Rakheja, ASHRAE</p> <p>Speakers:</p> <ul style="list-style-type: none"> ○ Dr Yash Shukla, Executive Director, CARBSE, CEPT University ○ Mr Pierre Jaboyedoff, Indo-Swiss Building Energy Efficiency Project ○ Mr Rahul Pathak, Manager Product Marketing & Key Accounts, Emerson ○ Shri Arijit Sengupta, Director BEE ○ Mr Kanwaljeet Jawa*, MD & CEO, Daikin ○ Ms Akshima Ghate*, MD, Rocky Mountain Institute India </td> </tr> </table>	<p>Thematic Session 5 Reengineering traditional & indigenous design, materials, and construction practices</p> <p><i>Traditional design, building materials and construction practices are generally accepted to be low-carbon, climate and context responsive and climate resilient. 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	<ul style="list-style-type: none"> o Mr Prashant Bhanware, Indo-Swiss Building Energy Efficiency Project o Ms Meenakshi, Project Engineer, BEE 	
13:00 – 14:00	Lunch	
14:00 – 15:15	<p>Thematic Session 7 Emerging Construction Practices and Technologies</p> <p><i>In India, the construction sector is the largest sector with regard to material consumption, especially for cement and steel, both of which have a large share of GHG emissions. Buildings are also the second-largest consumer of electricity. Decarbonisation of buildings will not be possible without an overhaul of current materials and construction technologies to reduce their embodied energy and enable reduction of operational energy. At the same time, any construction technology will also have to deliver on scale and speed.</i></p> <p><i>This session gives the stage some of the new materials and technologies that are contributing to reducing emissions, both embodied and operational.</i></p> <p>Chairperson: Dr Shailesh Agrawal, Executive Director BMTPC</p> <p>Speakers:</p> <ul style="list-style-type: none"> o Mr Anders Hall, President, European Sun Shading Organisation, Switzerland o Mr Tarun Jami, Founder & CEO at GreenJams. o Mr Rick Torgerson, CEO & Founder, Humengi o Mr Hal Hinkle, CEO & Director, Bamcore, USA (Virtual) 	<p>Thematic Session 8 Entrepreneurship and Innovative Technologies & Business Models</p> <p><i>The challenge of low-carbon development has seen an entrepreneurial response with many products, technologies and tools being developed, including ones that are for buildings and the built environment. Low-carbon and energy efficient building start-ups range from ones on efficient and low-carbon envelopes (low-carbon cement, insulating blocks, blocks from waste, smart windows, insulating plasters etc.), efficient space conditioning technologies, efficient lighting technologies, energy storage technologies, efficient energy services, and many energy analytics and optimization tools / platforms.</i></p> <p><i>This session looks at some of the products and services, their business models and discusses what innovation gaps still need a response in the Indian context.</i></p> <p>Chairperson: Shri Rajnath Ram, Adviser, NITI Aayog</p> <p>Speakers:</p> <ul style="list-style-type: none"> o Mr Rahul Bhalla, CEO, Zenatix o Mr Samit Jain, Managing Director, Pluss Advanced Technologies o Mr Arjun Gupta, Founder & CEO, Smart Joules o Mr Gaurav Burman, Managing Director, Asia Pacific, 75F o Mr Siddharth Arora, Co-Founding Director & Co-promotor, Revayu Energy
15:15 – 16:15	<p>Special session: Conversations with students & next-gen building professionals</p> <p>Moderator: Mr Ram Bhat, Facilitator & Organisation Development Expert</p> <p>Participants:</p> <ul style="list-style-type: none"> o Harsh Nag o Abinaya o Lahari Vishwanath o Ritika Goswami 	
16:15 – 16:30	<p>Valedictory Remarks</p> <p>Shri Abhay Bakre, Director General, BEE</p>	
16:30 – 17:00	High tea	