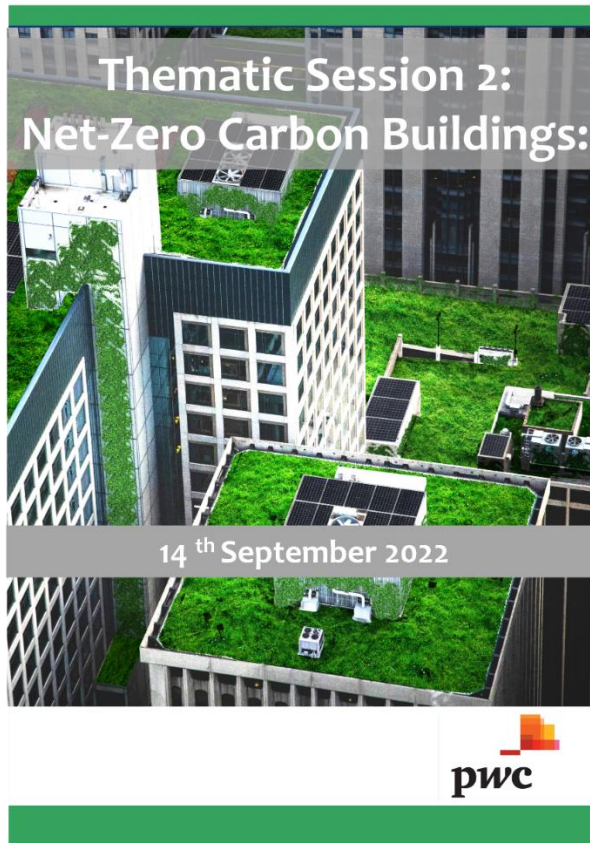


Event summary of ANGAN's Thematic Session 2 focusing on Net Zero Carbon Buildings

14 September 2022



Proceedings

The objective of ANGAN 2022 was to deliberate on various thematic tracks leading India on the road to Net Zero Energy and Low Carbon Buildings. Organized jointly by the Bureau of Energy Efficiency and the Indo-Swiss Building Energy Efficiency Project, it brought together more than 500 domain experts, practitioners and other Indian and international stakeholders. The conference was held over three days spanning from 14th to 16th September 2022 and it had an inaugural session, a keynote session, 5 plenary sessions and 8 thematic technical sessions. The conference also hosted an exhibition of various low-carbon products, technologies, and innovations applicable in the building sector.

Thematic Session 2: Net-Zero Carbon Buildings

The Thematic session 2 focusing on Net Zero Carbon Buildings was supported by the European Union and was held on 14th September 2022. **Mr. Edwin Koekkoek**, First Counsellor – Energy & Climate Action, EU Delegation to India started the session by giving a brief overview about the EU Clean Energy Climate Partnership (EU CECP) project and its activities.

The session gave the stage to the experts from the EU to speak on the following points:

- Approach towards achieving Net-zero carbon buildings
- Design process and barrier addressal via case studies
- The enablers for net-zero carbon buildings in their geographical context

Mr. Oliver Rapf, Executive Director, BPIE presented on the “Net- Zero carbon Buildings and Neighbourhoods: EU policy context and project examples”. He discussed EU’s GHG goals, European climate law and Energy performance of building directive. Further, he explained the definitions of Net- zero operational carbon and Net-zero whole-life carbon, along with the impact of Europe’s building stock on climate by 2050. EU policy actions promoting net-zero emissions such as LEVEL(s), New European Bauhaus, EPBD recast proposal 2021, EU mission were also discussed. Following policy instruments for whole life carbon considerations were presented:

- Energy Performance Certificate
- Building Renovation Passport
- Digital Building Logbook
- Mandatory Minimum Performance Standard
- National Building Renovation Plan

Also, case studies showcasing the Net- Zero buildings funded by EU Horizon 2020 were also showcased:

- Excess 2019-2024
- Cultural 2019-2024
- Sustainable plus energy neighborhoods

Dr. Stijn Verbeke, Senior R&D expert at VITO/ Enegy Ville, Belgium along with Mr. Gopal Nurani Parasu, Manager at PricewaterhouseCoopers gave a presentation on “Assessing Smart Buildings: The Smart Readiness Indicator (SRI)”. They discussed the impact of smart solutions on the GHG emissions, occupant comfort, and urban energy performances of residential buildings and offices in North Europe. Further the benefits of “The Smart Readiness Indicator (SRI)” a common EU scheme for rating the smart readiness of buildings were presented. The following aspects of SRI were discussed:

- Pillars of SRI:
 - Optimize energy efficiency and overall, in-use performance
 - Adapt operation to the needs of the occupant
 - Adapt to signals from the grid (energy flexibility)
- The SRI assesses buildings (or building units), based on their capacity to satisfy **seven impact criteria**:
 - Optimize energy efficiency and all in news performance
 - Energy efficiency
 - maintenance and fault prediction
 - adapt their operation to the needs of the occupant comfort
 - convenience
 - health, well-being and accessibility
 - information to occupants
 - energy flexibility and storage
- The methodology for calculating the SRI is based on the assessment of smart-ready services that the building has or could use ("service catalogue").
- A first study was conducted in 2017-2018 to establish a definition of the SRI and draft methodology, with intensive stakeholder consultation. Currently, SRI is defined in legal acts, establishing it as an official common EU instrument.

Mr. Gopal Nurani Parasu, Manager at PwC India presented the findings on penetration of smart technologies in India across six technology domains – cooling, controlled ventilation, lighting, electricity, EV charging and monitoring & control. The most promising smart services for each domain was also determined based on the energy savings potential assessment done in Europe and the survey questionnaire. In addition to the above, he explained the current policy framework and how smart technologies can be integrated with it. The way forward for the adoption of SRI in India was also presented in consultation with developers, technology providers and consumers, which included preparation of a methodology for rating a building for SRI, carrying out a study on the assessment and implementation options, implementation of pilot projects and conducting capacity buildings program among manufacturers and consumers to adoption of SRI assessment scheme.

Mr. Christian Richter, Energiesprong foundation, had given presentation on, “Biggest Challenge for Europe: a carbon free building stock by 2045”. He presented the challenges faced by traditional non-scalable measures to make the existing building stock Net Zero. The emphasis was given on holistic approach as energy packages to make net zero houses instead of working in individual energy efficiency measures like providing insulation, changing glazing and windows. During his presentation he illustrated the methodology followed by Energiesprong, for high-quality retrofit solutions that overcome the challenges faced by the conventional methods. The methodology was followed by the case studies of the projects that demonstrated the Energiesprong approach, highlighting the environmental and economic benefits. The challenges faced during the project and their respective solutions were also discussed in his presentation. The focus was mainly on affordable financing solutions in form of a retrofit packages in the buildings to achieve their targeted goals.

Ms Sonia Shukla, International Institute for Energy Conservation, had given presentation on, “Net-zero carbon buildings”. She described the concepts on Nearly zero energy building, net zero energy building, net zero carbon building and net zero carbon building including embodied carbon. Further, she explained the pathway to reach a net zero energy building by designing, showcasing, implementation and monitoring RE technologies suitable in the local context and

applicable for multi-storey buildings. This pathway was showcased through the Mahindra Kanakapura case study, which is the India's first net-zero energy homes. RE potential of the site was analyzed by conducting analyses such as site RE resource assessment, shading and siting and cost benefit analysis. Her session concluded with the following learnings:

- EE/RE interventions need to be done at the project design for maximum potential.
- Collaborative effort is required for accepting and integrating sustainability elements
- Financial viability of proposed option