SUMMARY REPORT

Cool Buildings: Greening Real-Estate Investments to Curb the Rise in Cooling Demand

Video Recording: https://www.youtube.com/watch?v=6bihax2po4s&t=1589s

A Brief history of the Cool Coalition

Launched at the First Global Conference on Synergies between the 2030 Agenda and Paris Agreement, the Cool Coalition is a global multi-stakeholder network that connects a wide range of key actors from government, cities, international organizations, businesses, finance, academia, and civil society groups to facilitate knowledge exchange, advocacy and joint action towards a rapid global transition to sustainable cooling. In September 2019, the Cool Coalition became one of the official outcomes and "Transformation Initiatives" put forward by the Executive Office of the Secretary-General for the UN Climate Action Summit in New York. The Cool Coalition has already over 100 partners driving change in the cooling sector who pledged to share knowledge, advocate and act on sustainable cooling.

Context of the Session

Energy demand for space cooling is predicted to triple by 2050. We need to rethink buildings if we want to limit the massive growth in energy for cooling, beyond the needed improvement in energy efficiency of air conditioners. According to the 2019 Global Status Report, only a fraction of the USD 4.5 billion annual global construction investments is made in energy efficiency. Better building designs for cool buildings include passive building design with natural ventilation, sustainable building materials, as well as nature-based solutions through landscape and vegetation. The webinar, moderated by Lily Riahi, Coordinator of the Cool Coalition, took place on July 1, 2020 and discussed the critical role of cooling to tackle the cooling challenge, increase thermal comfort as well as productivity and jobs. Speakers highlighted key challenges faced by the building sector as well as solutions, policies and best practices to accelerate action and investment in the transition to green buildings.

Report of the Session

Welcome and key challenges: Dan Hamza-Goodacre representing the Cool Coalition, Non-Executive Director of the Kigali Cooling Efficiency Program (K-CEP), and part of the COP26 Champion Team, stated that passive buildings are key to tackle the climate change challenge, as around 40% of global emissions derive from the built environment. In addition to smart urban planning, increasing the uptake of passive buildings is a key solution. They can tackle multiple important challenges and help deliver the SDGs: conversely badly designed or operated buildings can "make people sick, reduce productivity and concentration, and destroy nature."

Hamza-Goodacre highlighted the fact that buildings are a key part of the Cool Coalition's approach e.g. "avoid, shift, improve". He reminded the audience that passive building designs have been widely deployed throughout history, so we know technically what to do. However, much has gone wrong in the past few decades: our "love affair with concrete, glass and steel" that make them primary materials for constructions and cause carbon embeddedness in buildings; weak building standards; lack of enforcement capacity and financing; and the existence of corrupt compliance regimes create wrong incentives and all slow the uptake of passive buildings.

Hamza-Goodacre then highlighted the ongoing efforts of the COP26 team in building a pathway to zero emissions for the built environment and, linked to that, one for cooling. He also reminded of K-CEP's call for proposals for a funding window of 12 million to support the integration of cooling in NDCs. He concluded by underscoring the need to integrate cooling and passive buildings in recovery plans, to ensure we rebuild back better.

Bioclimatic architecture without air-conditioning: Architect Ashok B. Lall presented the challenge of curbing cooling demand in developing countries and his recommendations on potential solutions. He explained that specific attention should be focused on residential buildings, where RAC use is growing exponentially, together with growing urbanisation and higher living standards. Alone, this growth will cause additional 150GW of power demand by 2050 in India, a country where buildings already account for 30% of national energy consumption.

Lall then explained the causes of this growth. First, mechanical and refrigerant-based cooling technologies became mainstreamed as the 'only option' to ensure thermal comfort, replacing traditional ways to cool down. Second, high-end, intensive, vertical urban development has been the main focus of the construction sector, which negatively shaped real estate cultures, numbing the effect of policy making. Third, what are considered universal thermal comfort standards are unnecessarily low in the face of clear evidence from Adaptive Comfort research. These factors, compounded by 'negative' design by building designers, create a vicious feedback loop that increases need for mechanical cooling.

He highlighted that simple, low-cost principles of passive design, such as shading, insulation, natural ventilation and protected thermal mass, and integral use of ceiling fans to create comforting breeze, are effective ways to minimise the need for air conditioning. Sustainable urban planning that minimises the urban heat-island effect and controls passive design for thermal comfort in buildings, need to work symbiotically to ensure thermal comfort at low energy consumption, and increase overall liveability. On the supply side, professional culture needs to change, and the private sector needs to sign up for change for the transition to be effective. On the demand side, society and costumers must be made aware and demand the development of efficient and sustainable buildings, concluded Lall.

Report launch: Andreas Gruner, Advisor for the Programme for Energy Efficiency in Buildings (PEEB), launched the new working paper on "Better Design for Cool Buildings". He started by highlighting that "without mitigation in the building and construction sector, we will not achieve the Paris Agreement goals" and that better building designs can significantly increase the thermal comfort and reduce or even avoid the high energy demand for space cooling. While many countries mention the building sector in their NDCs, concrete targets and actions are often lacking: this is particularly problematic given the construction boom and rising cooling needs in buildings around the world.

Gruner presented the need to adopt a three-steps approach in reducing the negative effects of cooling in buildings: *avoid* or reduce any demand for mechanical cooling through better building design, *shift* to renewable energy for operation of systems and appliances polluting energy supply and refrigerants, and *improve* the cooling systems and appliances by adopting the most efficient technologies. What is key is to "get the design right before the construction through integrated and climate-adapted planning" to avoid locking in cooling needs and related emissions and to avoid the need for expensive retrofitting at later stages.

Gruner then highlighted quick, low-cost wins to ensure better design which should be applied wherever possible. These include: align building orientation from west to east; window-to-wall ratio should not exceed 20%; build roofs with thermal insulation; apply white coatings on roofs and façades; install external shading above all openings, windows; use ceiling fans rather than air conditioners; provide vegetation for shade, additional insulation and evaporative cooling.

To ensure demand-side uptake, Gruner highlighted the accelerator-roles of well-placed climate finance and financial as well as non-financial incentives, such as, for example, fast-track building permit processing and the integration of traditional cooling techniques in modern designs. Especially, climate finance should play an important role in catalysing change: both international and national funding should focus stronger on fostering better building designs instead of financing mainly efficient appliances and technologies. Using green bonds and targeted national development banks initiatives are examples of how countries can channel climate finance to buildings.

He concluded by encouraging countries to seize this mitigation opportunity by integrating better building design into cooling strategies & NDC targets, adopting and enforcing ambitious energy codes for new buildings and renovations, using financial incentives, information campaigns and capacity building to promote energy-efficient building design, developing minimum energy performance standards and labelling for appliances, and finally by making low-income housing energy-efficient to ensure 'Cooling for all' and reduce energy poverty.

Nigeria: Emeka Nwandu, President of the Green Building Council in Nigeria, presented the world-first national voluntary sustainable building code that he contributed to develop. Passed in 2017 and developed in partnership with GIZ, private sector and government stakeholders, the building code outlines simple standards for few key elements, such as insulation and shading, and sets a star-rating system for building efficiency.

In the development process of this policy, Nwandu highlighted the importance of engaging professional bodies and raising awareness on this issue and on the effectiveness of solutions. “It is good to start from the basics, with things that people can easily engage with”, he said, and sooner than later people realize the saving potential of efficient buildings and adopt the measures outlined in the code. “We need more examples of how things can be done right” to ensure that demand, more powerful than policy, effectively drives change. In this framework, data collection and demonstrations play a key role in communicating benefits and ensuring the needed culture shift towards cool buildings, he said.

Nwandu concluded by saying that, after the success in the uptake of the code in Nigeria, the intention is to render it partially mandatory. This after the completion of capacity building and technical trainings for development authorities, to ensure implementation at the local level.

SEforALL: Brian Dean, Lead of Energy Efficiency and Cooling at Sustainable Energy for All (SEforALL), highlighted the positive development of renewed international interest in cooling, which led to good progress and rising awareness on the benefits of cooling and passive buildings. At the same time what is still missing country-level engagement and mainstreaming into specific policy.

“2020 is the year of solutions for cooling” he stated and announced the upcoming #ThisIsCool campaign (thisiscool.seforall.org), which will share solutions and fill the knowledge gap on sustainable technologies, designs, policies and financial solutions. #ThisIsCool will support increased awareness by policy makers and consumers of sustainable cooling benefits and solutions. Dean also highlighted SEforALL’s goal to ensure cooling for all and to support the integration of cooling in NDCs, on the way to COP26.

Martina Otto, from the GlobalABC, concluded the event with key takeaways:

- “Cooling in buildings is a hot topic”, cutting across both mitigation and adaptation, and solutions that need to be part of our pathways to Zero Emission Buildings as part of the Race to Zero, increasing our levels of ambition in the Nationally Determined Contributions submitted to COP26. But also in our response to the COVIS-19 pandemic, where for example building renovation can climate-proof our buildings while improving living conditions and reduce vulnerability linked to inequalities, and creating local jobs.
- We need to break the vicious cycle of heating up the planet and, with it, ever-increasing cooling needs while ensuring healthy and resilient cities and communities.
- “It is not about technology: we already know how to do it”: we need to unleash the design capacity of building professionals, building on and modernizing traditional knowledge and approaches, many of which are simple, quick to implement and come at a low cost.

- "We need all hands on deck, and radical cooperation": ensuring awareness and collaboration across the value chain, including end-users, and between levels of government, ensuring co-creation of policy frameworks, to push and pull the private sector's innovation and investment power, all this is key to accelerate change.
- It is not only about buildings, but rather about buildings in their 'ecosystem': city and neighbourhood planning and design, energy systems and supply, cross-sector integration, and the presence of nature in and around built environments are key factors and require integrated approaches to this problem.
- Change is underway, but more work is needed: countries are already developing transformational policy and financial approaches, but additional data, awareness and financial incentives are needed to ensure a radical culture shift.