

INDIA COOLING PROGRAMME





UNEP Cool Coalition has developed a long-term, multi-ministry, multi-partner India Cooling Programme to support the implementation of the India Cooling Action Plan, the Doubling Farmers' Income report recommendation and India's path towards a net-zero and climate resilient economy. The programme leads urban heat adaption and sustainable cooling through the following flagship initiatives:

- **BeCool India-** Passive Cooling for India's buildings and urban hotspots
- **Cold Chain** Support Programme
- **Nature for Cooling Challenge**
- **District Cooling** and Cooling-as-a-Service

The programme currently collaborates with six central government ministries, five national institutions, and several state governments reaching over 600 million people in over 20 cities. It also directly engages the private sector, academia and civil society organizations to accelerate action on the ground.

Working across three pillars: advocacy, science and joint action, the Cool Coalition is the largest global platform of this kind for cooling that brings together over 250 governments, businesses, cities and financial institutions to drive comprehensive action for sustainable cooling to address extreme heat.

BeCool

India Programme

Passive Cooling for India's building
and urban hotspots



FUNDING SUPPORT



Schweizerische Eidgenossenschaft
Confédération suisse
Confederazione Svizzera
Confederaziun svizra

Swiss Agency for Development
and Cooperation SDC

SEED FUNDING



TECHNICAL PARTNERS



BeCool

India Programme

India has the world's largest population at risk from extreme heat, with wide-ranging impacts on health, productivity and the economy. While air conditioning provides indoor relief, it remains unaffordable for millions—and will likely remain so for decades. Poorly designed buildings and rising urban heat islands mean that even households with AC often face stark budget choices between high electricity bills to keep cool and other household priorities like education and healthcare. Conventional air conditioning is also highly energy-intensive, worsens the climate crisis, can trigger dangerous power outages during heatwaves, and expels heat directly onto streets, exacerbating urban hotspots.

Passive cooling measures can address these challenges if implemented on a large-scale – both in buildings and at the urban-level. Buildings can remain naturally cooler for longer durations through design features like shading, cross-ventilation, cool or green roofs, insulation and thermal mass, and heat-resilient glazing. At the urban level, passive cooling can reduce urban heat island effect (UHIE) and provide much needed outdoor thermal comfort for the most vulnerable through increased green and blue infrastructure, reduced hard, heat-absorbing surfaces, increased reflectivity of roofs and surfaces, shading and urban layouts that allow cool breezes to flow through the city.

The BeCool project, supported by the Swiss Agency for Development and Cooperation (SDC), aims to rapidly accelerate uptake of passive cooling across India's built environment making it more sustainably and affordably cooled and more resilient to rising extreme heat. This will help avoid greenhouse-gas (GHG) emissions from cooling in buildings and mitigate impacts on the climate, power systems, health, the environment and the economy.



Strengthening Policy

Strengthen, design and implement policies at central and state level for passive cooling and thermal comfort, both indoors and outdoors



Accelerated Finance

Accelerate public and private sector funding and financing of passively cooled buildings and cities



Capacity Building

Train and handhold private real estate developers and building designers for accelerated uptake of passive cooling

The project is working with central government ministries and institutions as well as with Delhi, Maharashtra, Odisha, Tamil Nadu, and Uttar Pradesh in the following priority areas:



India Cooling Action Plan (ICAP) Implementation

Supporting the Ministry of Environment, Forests and Climate Change (MoEFCC) to implement ICAP, targeting a 20–25% reduction in cooling demand by 2037–38, and directly supporting state environment departments to drive action on this target and cross-cutting action on cooling emissions and rising extreme heat



Building Regulations for Passive Cooling

Accelerating subnational building regulations mandating and incentivizing passive cooling in alignment with the Energy Conservation and Sustainability Building Code (ECSBC) from the Bureau of Energy Efficiency (BEE)



Integrating Passive Cooling in Affordable Housing

Supporting Ministry of Housing and Urban Affairs (MoHUA) and state governments to integrate passive cooling features and financing into Pradhan Mantri Awas Yojana–Urban (PMAY), India's flagship affordable housing scheme targeting 10 million homes by 2029



Heat-Resilient Urban Design

Working with the National Disaster Management Authority (NDMA) and State Disaster Management Authorities to integrate passive cooling and heat-resilient urban redesign into Heat Action Plans and associated funding for extreme heat



Urban Heat Island (UHI) Assessments

Developing scientific urban heat island assessments with 20 cities for heat-resilient urban planning and integration of a standardized UHI methodology into national guidelines, with data access for city planners nationally





Cool Cities Hub

Hosting a Cool Cities Hub at the National Institute of Urban Affairs (NIUA) to drive city-level action in extreme heat adaptation



Engaging Real Estate Developers

Engaging and handholding over 20 real estate developers to drive passive cooling and sustainable materials into their portfolios and training over 5000 stakeholders on passive cooling



Decarbonization Building Charter

Enhancing Decarbonization Building Charter, a building industry led platform, to sensitize the sector and bolster capacity for aggressive passive and nature cooling ambitions.



Innovative Financing Mechanisms

Partnering with state governments and national financial institutions on developing innovative finance mechanisms and encouraging investment in passive cooling and nature targeting most vulnerable populations through a \$100 million plus project pipeline



Institutionalized Training

Institutionalized training for students and professionals on passive cooling and nature in urban planning.



Cold Chain Support Programme



FUNDING SUPPORT

SEED FUNDING

TECHNICAL PARTNERS



Agriculture supports 44% of India's population and contributes nearly 20% to its GDP. Yet only 4% of the country's produce benefits from cold chain, leading to high levels of food loss and associated methane emissions, lower farmer incomes, and missed domestic market linkage and export opportunities. Integrated cold chain infrastructure is vital for preserving food quality, extending marketable life of fresh produce, reducing emissions, and strengthening food and nutritional security. Scaling clean, efficient cold chains is essential, but challenges remain, including limited credit access, policy framework, low awareness among relevant stakeholders on clean technologies and available public support, lack of financial support, technical capacity and participatory business models.

UNEP Cool Coalition has established a National Cold-Chain Support Programme to accelerate the deployment of sustainable and integrated cold chain systems in India and support the implementation of ICAP and the achievement of the national target of Doubling Farmers Income Committee report (DFI). This objective is to mainstream efficient, renewable, climate-friendly cold-chain infrastructure and services for horticulture in rural areas. This project is being delivered in partnership with Alliance for an Energy Efficient Economy (AEEE).

The project is working with central government and with the state governments of Bihar, Haryana and Tamil Nadu to:

ICAP Implementation and Increased Packhouse Deployment

Supporting implementation of the ICAP with MoEFCC including a targeted 99% increase in deployment of packhouses to 125,000 by 2037-38 as part of integrated cold chains



National Design Guidelines for Energy Efficient Packhouse

Establish National Packhouse Design Guidelines with the BEE that integrate energy efficiency, renewable energy, and refrigerants with low Global Warming Potential alongside optimized designs to enhance commercial viability



Demonstration Projects

Deliver low-carbon, circular, equitable, and integrated horticultural cold chain demonstration projects including integration with health cold chain and rural energy access efforts. This includes supporting the Department and the Mithila Cooperative Union in Bihar to establish India's first net-zero packhouse, which will also be operated on a cooperative model and replicated in other cooperatives and FPO



Finance and Business Models

Develop and test new participatory business models for cold chains and expand these through new investment programs focused on high-efficiency and renewable technologies. This includes supporting the design of a \$320 million financing scheme in Haryana through Japan International Cooperation Agency (JICA) and targeting minimum requirements to ensure renewables and energy efficiency are prioritized through bankable model Detailed Project Report (DPRs) developed under the programme



State-level Cold Chain Planning

Develop cold chain plans in states covering infrastructure planning, policy, finance, and capacity building that can be integrated into existing state plans and replicated. This includes integration into Bihar's Climate Resilient and Low Carbon Development Pathway for establishing 1,600 packhouses in Bihar and the first state-level Cold Chain Policy under development in India in Haryana under the MoU



Awareness, Capacity Building and Knowledge Sharing

Support awareness raising, capacity building and knowledge management on cold chain, including linkage with the planned Haryana-UK Centre of Excellence on Sustainable Crop Post-Harvest Management and Cold-Chain and establishment of model assessment tools and feasibility studies



Nature for Cooling Challenge



By 2100, cities across the world could warm up to 4.4°C, exposing the world's growing urban population to conditions that will damage human health, productivity, and quality of life. It is imperative we scale up solutions to tackle dangerous urban heat. Ecosystem approaches (green and blue infrastructure) are a powerful tool to cool cities and reduce extreme heat risks for urban dwellers around the world.

The UNEP Cool Coalition Nature for Cooling Challenge is a Global Environment Facility (GEF) project that aims to accelerate action by subnational governments, industries and financial institutions to promote expansion of ecosystem approaches for cooling and heat adaptation. UNEP along with co-financers and executing partners will pilot promising projects through grants and technical assistance to develop investment-ready ecosystem approaches. The project will support delivery of ICAP through monitoring/reporting processes to quantify cooling effect of ecosystem approaches along with quantification of cooling related GHG emission mitigation from the interventions.

The challenge aims to:

- Demonstrate the ability for ecosystem approaches to mitigate the urban heat island effect and reduce energy demand and emissions from cooling
- Drive finance for replication and upscaling of ecosystem approaches for cooling and extreme heat adaptation in the built environment
- Scale-up of solutions through engagement with project developers and public and private finance





The Award

The Challenge will identify a cohort of 12 ambitious proponents, including cities, four of which will be from India. Challenge winners will receive an incubation grant to help refine their projects and their implementation, technical assistance to prepare detailed design and procurement documents including for monitoring and reporting, communications support, investment pipeline development and matchmaking opportunities with potential financiers. Other countries being supported include Brazil and Cote d'Ivoire.



District Cooling

and Cooling-as-a-Service (Caas)



ICAP projects space cooling demand in India to rise 14-fold by 2037 compared to 2017 levels. India is already the world's second-largest cooling market, adding 2.2 crore refrigeration tons (RT) of air-conditioning capacity in 2024 alone. According to the International Energy Agency, cooling is expected to account for 44% of the country's peak energy load by 2050. The country also has a large domestic HVAC market from manufacturing companies, urban planners, consultants, contractors, energy auditors and plant operators for cooling plants given the increasing central cooling plants in green or net-zero certified projects and buildings in the country.

Despite its potential, district cooling remains underutilized. It can aggregate demand and accelerate resource circularity through waste-to-energy, combined heat and power (CHP) systems, sewage treatment plants, thermal energy storage, renewable energy integration, and city gas distribution systems. However, skill gaps, poor refrigerant management, lack of data, and limited financing models continue to slow large-scale adoption of sustainable cooling. Since 2016, UNEP has been working with the Government of India to accelerate the adoption of district cooling – the most energy efficient, low-carbon and cost-effective means to provide cooling to buildings in dense, urban areas.

District cooling, through merchant cooling utility model and Cooling-as-a-Service business models, offers an attractive and sustainable alternative to meet India's rapidly growing space cooling demand.

UNEP's programme on district cooling in India includes:

State-level Engagements and Policies

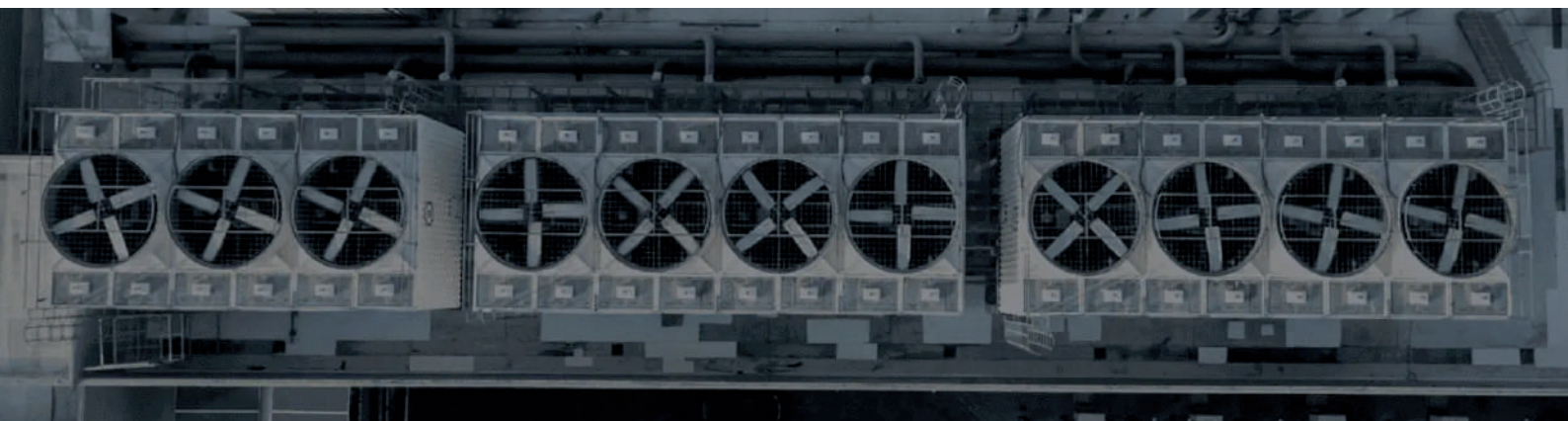
Since 2016, UNEP has been directly engaging state governments including Maharashtra, Delhi, Gujarat, Telangana, Andhra Pradesh and Tamil Nadu to integrate district cooling into state and urban-level policies and drive forward potential projects. Successes include supporting the tendering of \$200 million district cooling concession for Hyderabad Pharma City–Asia's largest district cooling public-private partnership project to date and supporting Amaravati city tender a 20,000 Ton of Refrigeration (TR) district cooling scheme through a long-term design, build, finance, own and operate public-private concession model as part of the city's net-zero target. UNEP currently is also supporting several state governments including Tamil Nadu through its State Planning Commission that has set-up a district cooling committee to fast-track adoption of district cooling solutions.

District Cooling Hub

Establishment of a District Cooling Hub with Bureau of Energy Efficiency and Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ) as part of the EE-Cool project funded by International Climate Initiative (IKI). This Hub includes a Virtual District Cooling Hub housed in UNEP's Copenhagen Climate Centre and a physical hub being established in India. The Hub will provide technical support to states, cities and the private sector to conceptualize and implement district cooling projects and policies.

National Support through EESL

Supporting Energy Efficiency Services Limited (EESL) to accelerate adoption of district cooling through a national potential study, awareness raising, and identification and feasibility analysis of projects and engagement with financiers.





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 efficient and climate-friendly cooling. The Cool Coalition promotes a 'reduce-shift-improve-protect' holistic and cross-sectoral approach to meet the cooling needs of both industrialized and developing countries through urban form, better building design, energy efficiency, renewables, and thermal storage while phasing down HFCs. Cool Coalition members are collaborating on science, policy, finance and technology to meet growing demands for cooling in a comprehensive manner, all aimed at raising climate ambition in the context of the Sustainable Development Goals while complementing the goals of the Kigali Amendment to the Montreal Protocol and Paris Climate Agreement.



<https://www.unep.org/>



<https://coolcoalition.org/>



For more information

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