





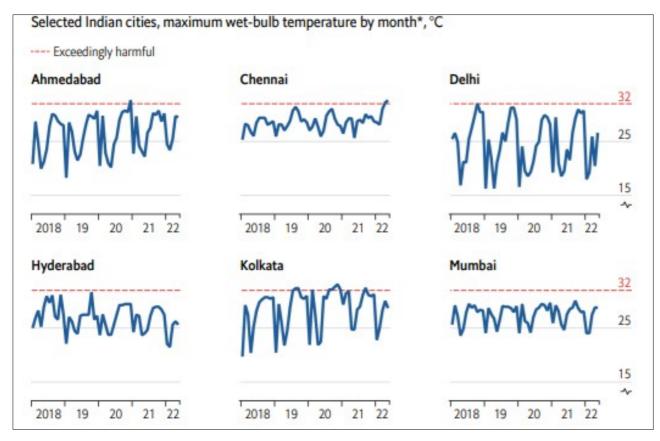
Promoting Green Cooling in India and the Global South

Saturday, 9th December 2023 5:00 PM to 6:30 PM (GST)





India's worsening heat crisis



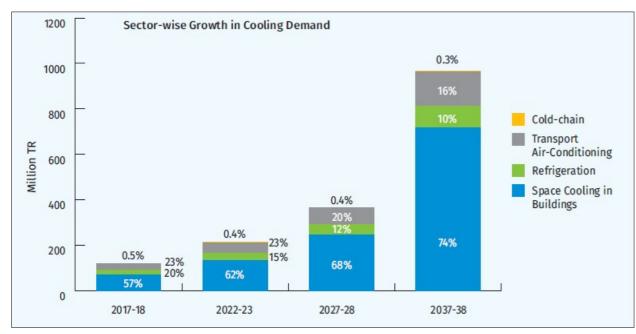
The wet-bulb temperature (WBT) has started to touch the 32°C mark and is expected to breach 34°C in the next 8 years. Even heat-adapted people cannot carry out normal outdoor activities past a WBT of 32°C.

	India	China	US
Population	1.4 bn	1.4 bn	0.3 bn
Cooling Degree Days (CDD)	2,200	650	650
Person CDD	3 tr	30% India	6% India

India's AC penetration is very low compared to its cooling demand.

- 11 out of 15 warmest years in India occurred after 2007.
- A study in the Lancet estimates the annual number of deaths related to high temperatures in India to be 83,700.
- All India peak power demand met reached a record high of ~240 GW on 1 September 2023.
- 75% of the Indian labour force work in heat-exposed sectors such as agriculture, mining, and construction.
- Only 8%-10% of Indian households have air-conditioning.

India: A perfect cooling storm



India's Total Primary Energy Supply (TPES) for Cooling 300 oil equivalent (mtoe) 250 200 Cold-chain 150 2% Transport Air-Conditioning of Refrigeration 2% 100 Space cooling 59% 2% in Buildinas Million 56% 2017-18 2022-23 2022-23 2027-28 2027-28 2037-38 2037-38 Reference Reference Reference Intervention Intervention Intervention Scenario Scenario Scenario Scenario Scenario Scenario

Cooling demand in India is projected to grow 8X in the next two decades; the cooling demand in buildings can be reduced by 20% in two decades through climate-appropriate building envelopes driven by the higher adoption of building energy codes

The total primary energy consumption for cooling will grow 4.5X in the business-as-usual scenario, with a 30% savings potential

Cooling = complexity

Multiple ministries:

Public enterprises

MSDE, NSDC, ESSCI DST, Mission Innovation

BEE

CSIR

NCCD

EESL

National priorities & agendas

- Housing For All
- Doubling Farmers' Income
- AMRUT Public Transportation
- FAME India
- Smart Cities Mission
- Energy Conservation Building Code
- Others...



Industry, private & knowledge sector

RAMA

REGMA

ACMA

Manufacturers

R&D Institutions

IPUA

International commitments/priorities:

- NDCs
- Kigali Amendment to the Montreal Protocol
- SDGs

The answer lies in integrated policymaking!

India Cooling Action Plan development

CONTEXT MAPPING & ICAP PLANNING

COOLING DEMAND ASSESSMENT

INTEGRATION & ICAP SYNTHESIS

1. MAPPING INDIA'S COOLING CONTEXT

Leveraging existing research and body of work. For example:

- Demand Analysis for Cooling by Sector in India in 2027
- HCFC Phase-Out Management Plan Stage-II
- Can India's Air-Conditioning Service Sector Turn Climate Friendly? Evaluating the Skill Gap

Mapping intersection with global & national commitments:

- NDCs
- Commitments under the Kigali Amendment
- National development priorities & agendas

Identifying key stakeholders:

- · Government entities
- Non-govt & industry entities

2. ICAP PLANNING & PRE-WORK

MoEF&CC sets guidance for the scope and intent of ICAP

Ozone Cell establishes Working Groups (WG):

- Ozone Cell convenes stakeholder workshops
- 7 WGs are established- each with representatives from public sector, private sector and the industry

Facilitating collaboration and consistency among WGs:

- OC and support entity establish framework for sector-wide assessments; templates for data mapping
- Timelines and output expectations established
- WG charters, and collaboration touch-points identified

3. ASSESSMENT OF SECTOR-SPECIFIC COOLING DEMAND

Detailed sector mapping:

- Growth drivers, unique attributes
- Existing policy and market levers

Data-driven assessment of the cooling demand for each of the chosen cooling sectors:

- Current cooling demand & associated energy and emission impacts
- Future cooling demand & associated energy and emission impacts

Intervention scenario:

- Intervention opportunities across policy, technology and market levers
- Associated enegy and nonenergy benefits

4. MAPPING INDIA'S COOLING CONTEXT

Sector-specific recommendations and solutions:

- Future pathways to address cooling demand while neutralizing negative impacts
- Prioritize actions: ease of implementation, impacts/benefits
- Consider synergies with existing policies & programs

5. INTEGRATION OF SECTOR-WIDE ASSESSMENTS

Integration:

- Aggregation of the sectorspecific analysis into cohesive country-wide view of cooling
- Consolidation and prioritization of opportunities

Synergizing with existing policies and priorities:

 Obtain alignment and interministerial buy-in for crosssectoral synergies

6. ESTABLISHING RECOMMENDATIONS & PATH FORWARD

Recommendations:

- Synthesizing into ICAP goals and recommendations
- Prioritize actions into short medium and long-term
- Consider synergies with existing policies & programs

Implementation framework:

- Guidance on future implementation governance
- Guidance on iterative refinement and recalibration of recommendations

Key learnings and takeaways

- Importance of a nodal/ coordinating entity that owns and drives the process.
- Adopting a triple-sector engagement model, right from the start
- Ensuring inter-ministerial coordination and buy-in
- Data is key, but need not be a show-stopper
- Importance of an implementation framework
- Balancing comprehensiveness and timeliness



South-South cooperation in climate-friendly cooling



 Cambodia and Indonesia pilot the innovative NCAP Methodology, showcasing South-South cooperation

Cambodia NCAP:

- Developed collaboratively by multiple entities
- Aims to realize Cambodia's sustainable development vision
- Establishes a national framework for collaboration in the cooling sector
- Supports Sustainable Development Goals, Paris Agreement, and Kigali Amendment

