

Supporting India's energy transition to India's NDC and Sustainable Development Goals (SDG)

15th June 2021

Overview of SDG in Perspective of Buildings, Appliances, Cold-chain (Horticulture and Vaccines)

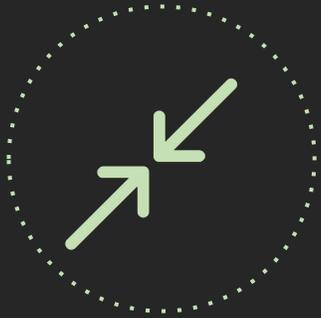


*Supports 10
UN
Sustainable
Development
Goals*

<p>1 NO POVERTY</p>	<p>2 ZERO HUNGER</p>	<p>3 GOOD HEALTH AND WELL-BEING</p>
<p>7 AFFORDABLE AND CLEAN ENERGY</p>	<p>8 DECENT WORK AND ECONOMIC GROWTH</p>	<p>9 INDUSTRY, INNOVATION AND INFRASTRUCTURE</p>
<p>11 SUSTAINABLE CITIES AND COMMUNITIES</p>	<p>12 RESPONSIBLE CONSUMPTION AND PRODUCTION</p>	<p>13 CLIMATE ACTION</p>

17 PARTNERSHIPS FOR THE GOALS

Overview of India's NDC in The Context of Human Habitat



To reduce the emissions intensity of its GDP by 33% to 35% by 2030 from 2005 levels.



To mobilize domestic and new and additional funds from developed countries



Enhancing investments in development programs in sectors vulnerable to climate change



Quick diffusion of **cutting-edge climate technology** in India



To adopt a **climate friendly and cleaner path**

Supporting National and International Agreements

India Cooling Action Plan (ICAP)

Development & Implementation

Sustainable Development Goals (SDGs)

SDG 1, 2, 3, 7,8,9,11,12,13,17

Standard and Labelling Program

BEE's Star Labelling Scheme



Atmanirbhar Bharat

Promote make in India appliances and equipment



National Mission on Himalayan Studies

Low carbon pathways for residential buildings



Montreal Protocol & Kigali Amendment

HCFC Phaseout Management Plan (HPMP)



Supporting International and National Agreements

Energy Code Implementation

ECBC & ENS

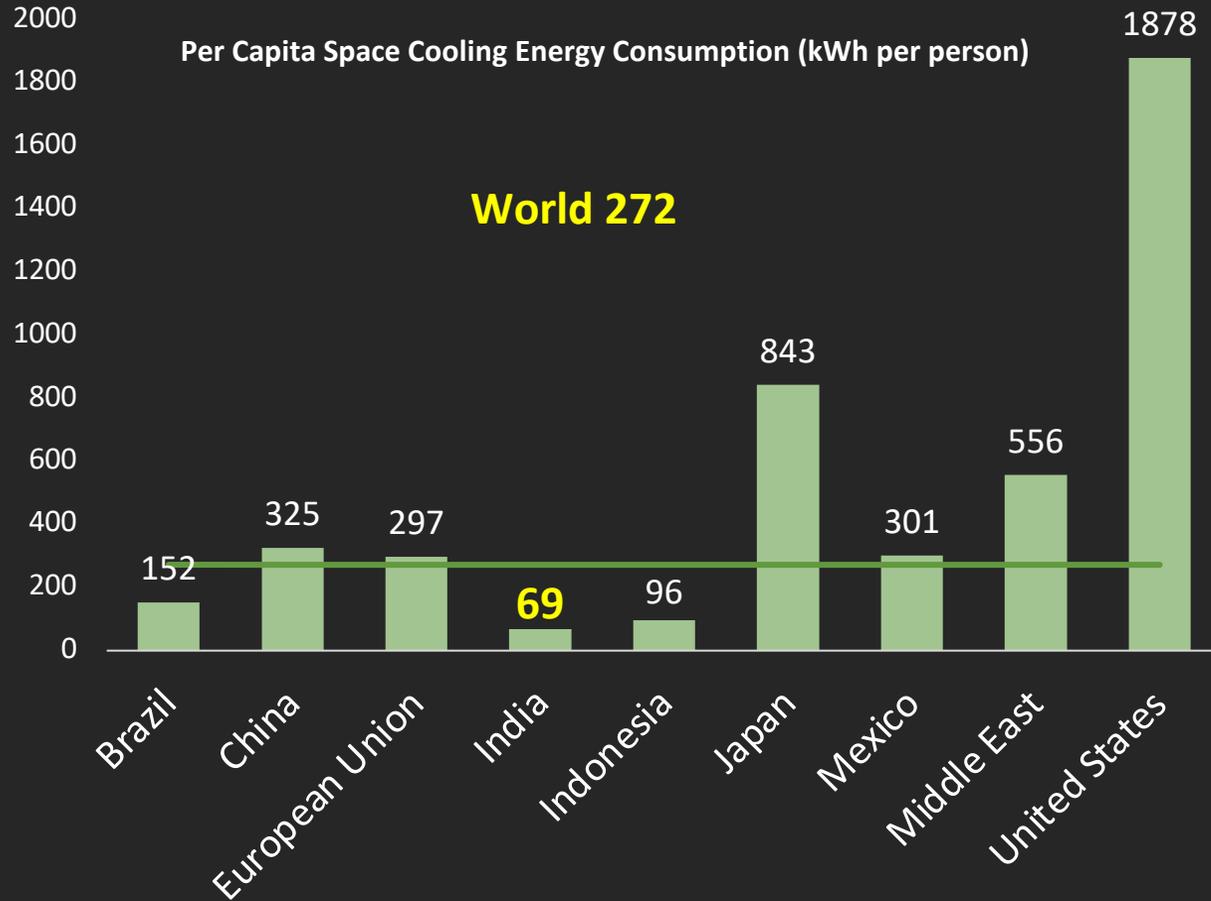


Paris Agreement

Nationally Determined Contribution



Access to cooling in India



Thermal Comfort

In India, more than 60% of the buildings required for 2030 have not yet been built.



Horticulture

Around 15% of food loss and 30% wastage exist due to inadequate cold-chain infrastructure. More than 90% of required infrastructure is yet to be built



Healthcare

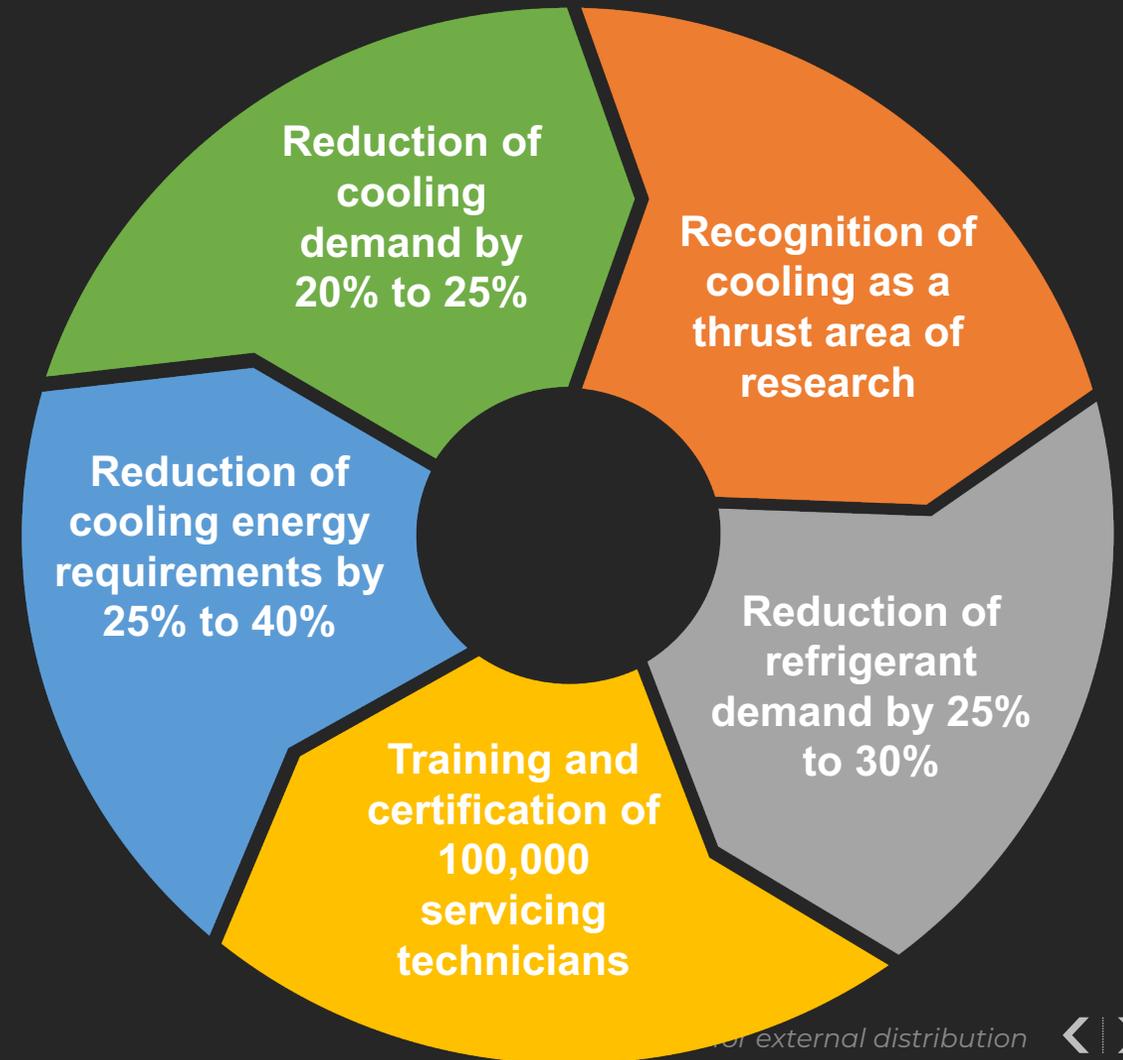
Nearly 20% of temperature-sensitive healthcare products in India arrive damaged or degraded because of broken or insufficient cold chains, including a quarter of vaccines



India Cooling Action Plan (ICAP)

An Overview of **INDIA COOLING ACTION PLAN**

BROAD GOALS BY 2037-38



Residential buildings landscape



Housing deficit in India:
18.78 million

Captured under PMAY:

Total: **11.2 million**

Completed : **3million**

Yet to be grounded: **7.2 million**

Not Captured under: **7.5 million**

Total houses remaining:
14.7 million



Residential air conditioning demand (As per ICAP):

2018 ~ 8% of households

2028 – 21% of households



COVID Stimulus Package

USD 9 billion will be invested in Affordable Housing through the extension of Credit Linked Subsidy Scheme (CLSS).



Mainstreaming Thermal comfort and energy optimization will require an **integrated & stronger link** between **policy , research and design practices.**

HUGE POTENTIAL to reduce cooling energy and refrigerant demand in 14.7 millions homes

Space cooling recommendations

Buildings

- Introduce **climate-appropriate building design & construction** in affordable housing under PMAY
- Minimize **cooling needs of commercial buildings** through **energy efficient building designs** as a condition under **environment clearance policy**
- **Mandatory building cooling requirement and energy use disclosures and third-party verification for all commercial buildings (100 kW or higher)**
- **Mandatory minimum indoor temperature settings (adaptive thermal comfort standards)**
- Widespread **adoption and enforcement of ECBC** for commercial and ENS for residential sectors

Appliances

- Ratchet up **MEPS for room ACs**
- Mandatory **star labelling for fans and introduction of MEPS for evaporative coolers.**
- Institutionalise **Demand Side Management** programmes with **DISCOMS to replace inefficient ACs with energy efficient equipment**
- Institute **eco-labelling programme** for cooling appliances
- Mandatory **public procurement guidelines** for energy efficient ACs, fans, chillers, etc. (low-GWP options where available)
- Incentives coupled with **awareness campaigns** to drive market demand of energy efficient cooling appliances and equipment

Agriculture landscape

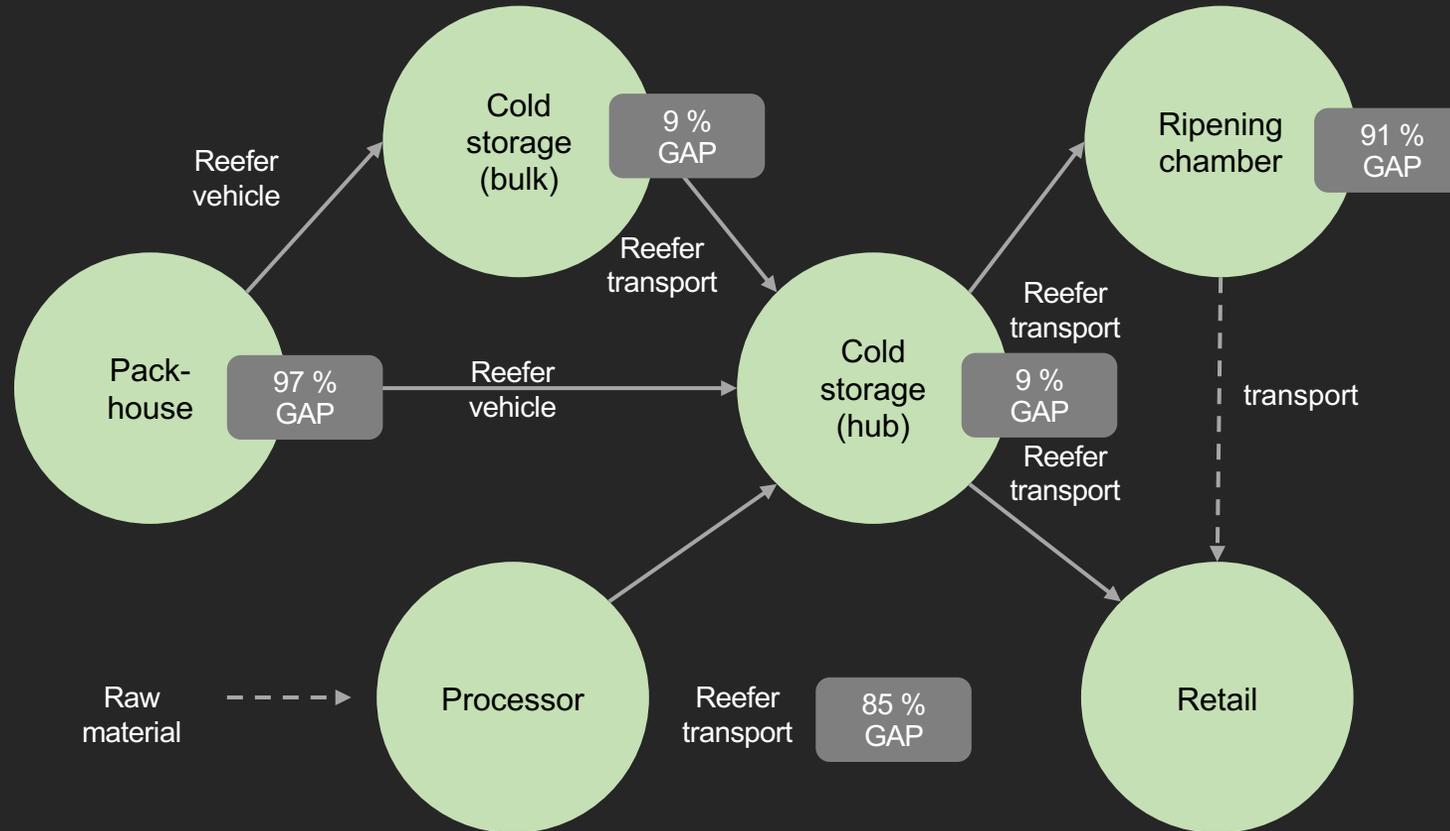
A typical cold chain consists of



Overview

- Agriculture contributes ~18% of GDP and employs at least 56% of people in India
- India is the second-largest producer of fruits and third-largest producer of vegetables in the world
- Most farmers are small-scale (**~126 million**), accounting for **86% of all farmers in India, owning about half the arable land**
- Limited (mostly no) access to cold chain infrastructure because of the **absence of affordable cold chain logistics**
- Fruits and vegetable losses is 4.58% to 15.88%
- Fruits and vegetables wastage is around 30%

Cold Chain Infrastructure Overview (Source: NCCD)



The gap presents an opportunity to frame policies and regulations to develop more climate friendly cold-chain infrastructure

Cold-chain recommendations

- Encourage development of **cold chain infrastructure** with energy efficient cooling systems and low-GWP refrigerants
- Develop programme for **retrofitting of existing cold storages** to reduce cooling, refrigerant demand and energy consumption
- **BEE star rating for commercial refrigeration** equipment like water coolers, display cabinets, freezers, commercial refrigeration appliances etc.
- **Standardise all design, construction and associated specifications** for small, medium and large cold-chain infrastructure components.
- **Link the incentives being provided for development of cold-chain infrastructure with adoption of low GWP**, energy-efficient maintenance practices.
- **Provide specialized training facilities for cold chain professionals and technicians** to promote proper utilization and operation of technology, as well as energy efficiency

SHEETAL

Alliance for Sustainable Habitat Energy Efficiency and Thermal Comfort for All

The project aims to implement ICAP recommendations

Duration- (2020-2024)

Appliances

Energy performance **standards and labelling** and **non refrigerant climate-friendly cooling solutions**



Cold Chain

Energy efficient and climate friendly **horticulture and immunization cold-chain**



Buildings and Cities

Residential building code adoption and implementation



Key Beneficiaries: Ozone Cell, BEE, MIDH, MoA&FW, MoHFW, Climate Smart Cities Alliance, State Governments and ULBs

India Cooling Coalition (ICC)



Multi-stakeholder group of *20 organizations* led by representation from non-profits, academic and research institutions, and industry associations engaged extensively in sustainable cooling research and application.

Activities

ACHIEVING GREATER COLLABORATION

Important platform for dialogue and discussion on various aspects of cooling including buildings, cold-chain, refrigeration, transport sector, and servicing sector.

Engagement with Government

The *coalition jointly prepared a letter to the PMO* office offering support for an accelerated green economic reset

KNOWLEDGE EXCHANGE

Hosted webinar series linked to ICAP implementation; highlighting some of the best practices, knowledge creation and other opportunities

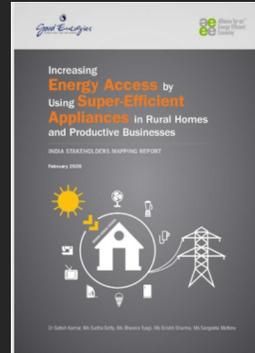
Members



Key Publications



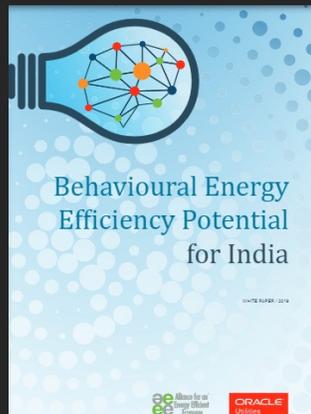
A Policy Strategy for Decarbonising the Building Sector



Increasing Energy Access by Using Super-Efficient Appliances in Rural Homes and Productive Businesses: India Stakeholders Mapping Report



Mainstreaming Super-Efficient Appliances in India



White Paper on Behavioural Energy Efficiency Potential for India



Decoding evaporative air coolers in India

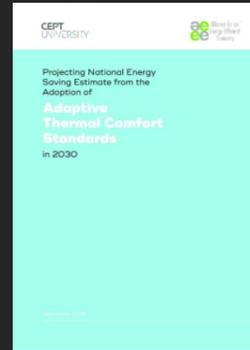


Mainstreaming Thermal Comfort for All and Resource Efficiency in Affordable Housing

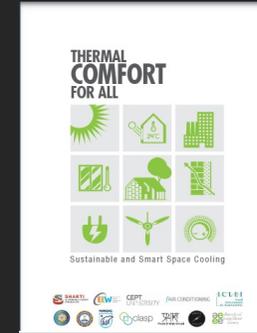
Key publications



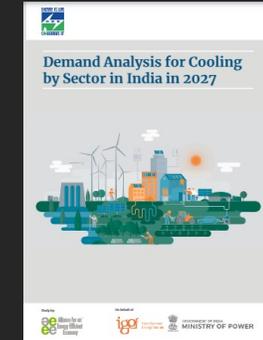
Projecting National Energy Saving Estimate from the Adoption of High-Performance Windows Glazing in 2030



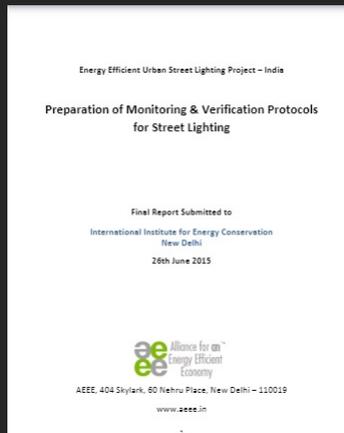
Projecting National Energy Saving Estimate from the Adoption of Adaptive Thermal Comfort Standards in 2030



Thermal Comfort for All



Demand Analysis for Cooling by Sector in India in 2027



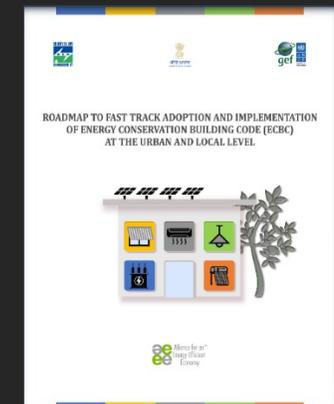
Preparation of Monitoring & Verification Protocols for Street Lighting



Assessment of Incentives for Appliance Energy Efficiency



Evaluating Market Response to the Appliance Standards and Labelling Programme



Roadmap to Fast Track Adoption and Implementation of Energy Conservation Building Code (ECBC) at the Urban and Local Level

The image features a cityscape background with a prominent green gradient overlay. The text "THANK YOU" is centered in a bold, black, sans-serif font. Below the text is a short horizontal black line.

THANK YOU
