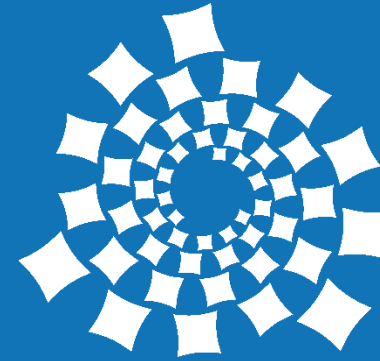




GLOBAL COOLING PLEDGE ASSEMBLY

SINGAPORE 15 - 18 SEPTEMBER 2026

Parallel Session: Implementation Roundtables and Beat the Heat Training

National and Multi-level Cooling Action: from plans to implementation and investment

09:00-10:30, 16 September 2026



Ministry of Sustainability
and the Environment
— SINGAPORE —



IGCC Workplan 2027-28

ACTION AREAS

#1 Flagship Initiative
– Heat Resilience
Roadmap for a
Warming World

#2 National and
multi-level cooling
action and
investment plans

#3 Market
Transformation and
deployment for
sustainable cooling

#4 Mobilizing Finance and
investment for Cooling
and Heat Resilience for
Pledge's implementation

#5 Scientific foundation, political coordination, and
advocacy on sustainable cooling and heat resilience

Opening remarks



Lily Riahi

Head of Unit
Buildings and Cooling, UNEP

Spotlight : India Cooling Action Plan

10 minutes



John Daniel Marcus Knight

Scientist E

Ministry of Environment,
Forest and Climate Change,
India



India's Initiatives in Sustainable Cooling

MINISTRY OF ENVIRONMENT, FOREST & CLIMATE CHANGE
GOVERNMENT OF INDIA

The Cooling Imperative in India

Climatic & Growth Demands

India experiences highly diverse climatic conditions with rapidly growing cooling demands across residential, commercial, and industrial sectors.

Developmental Necessity

Cooling is recognized as a fundamental necessity for maintaining health, boosting economic productivity, and improving overall quality of life.

Core Objective

The primary goal is to balance the urgent need for increasing access to cooling with long-term environmental sustainability.

Integrated Approach

Focusing on a holistic strategy that covers energy efficiency, transition to eco-friendly refrigerants, and sustainable built environments.



Sustainable Cooling Need for a Synergistic Action



LONG-TERM VISION

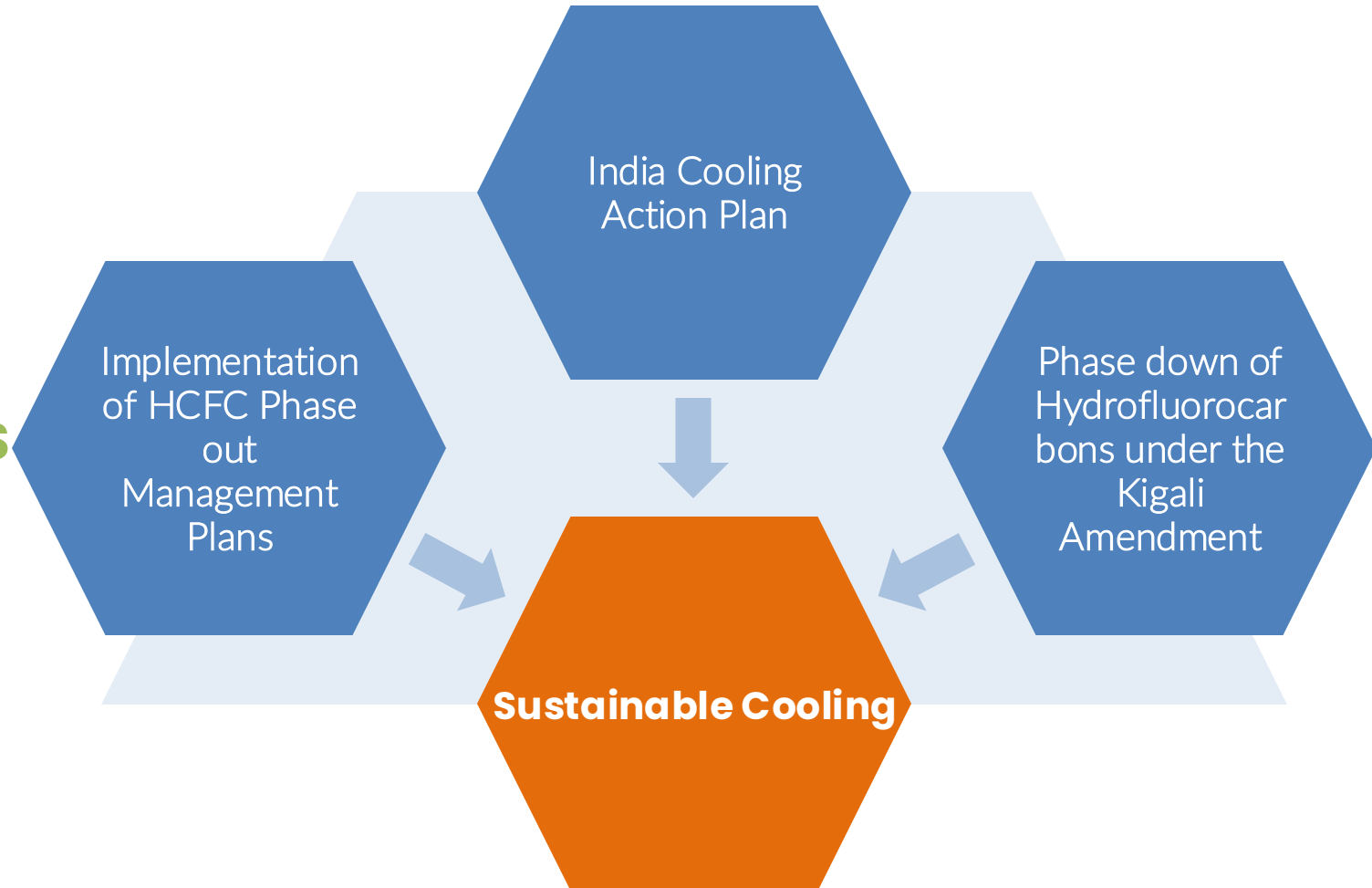
- Optimization of cooling demand.
- Integration of refrigerant transition and energy efficiency.
- Adoption of climate friendly technology options.



SYNERGISTIC ACTIONS

Integrated actions across sectors will have a higher impact during the implementation of Kigali Amendment to the Montreal Protocol

COOLING NEED



SYNERGISTIC ACTIONS



India Cooling Action Plan (ICAP)

INDIA COOLING ACTION PLAN



OZONE CELL
MINISTRY OF ENVIRONMENT, FOREST & CLIMATE CHANGE
GOVERNMENT OF INDIA

MARCH, 2019

INDIA COOLING ACTION PLAN

Developed and launched in March 2019

INTEGRATED VISION TOWARDS COOLING ACROSS SECTORS BY 2037-38

- Reducing cooling demand
- Refrigerant transition
- Enhancing energy efficiency and better technology options

GOALS OF ICAP BY 2037-38

- Reduce cooling demand across sectors by 20% to 25%
- To reduce refrigerant demand by 25% to 30%
- To reduce cooling energy requirements by 25% to 40%
- To recognize “cooling and related areas” as a thrust area of research



ICAP – Implementation Framework

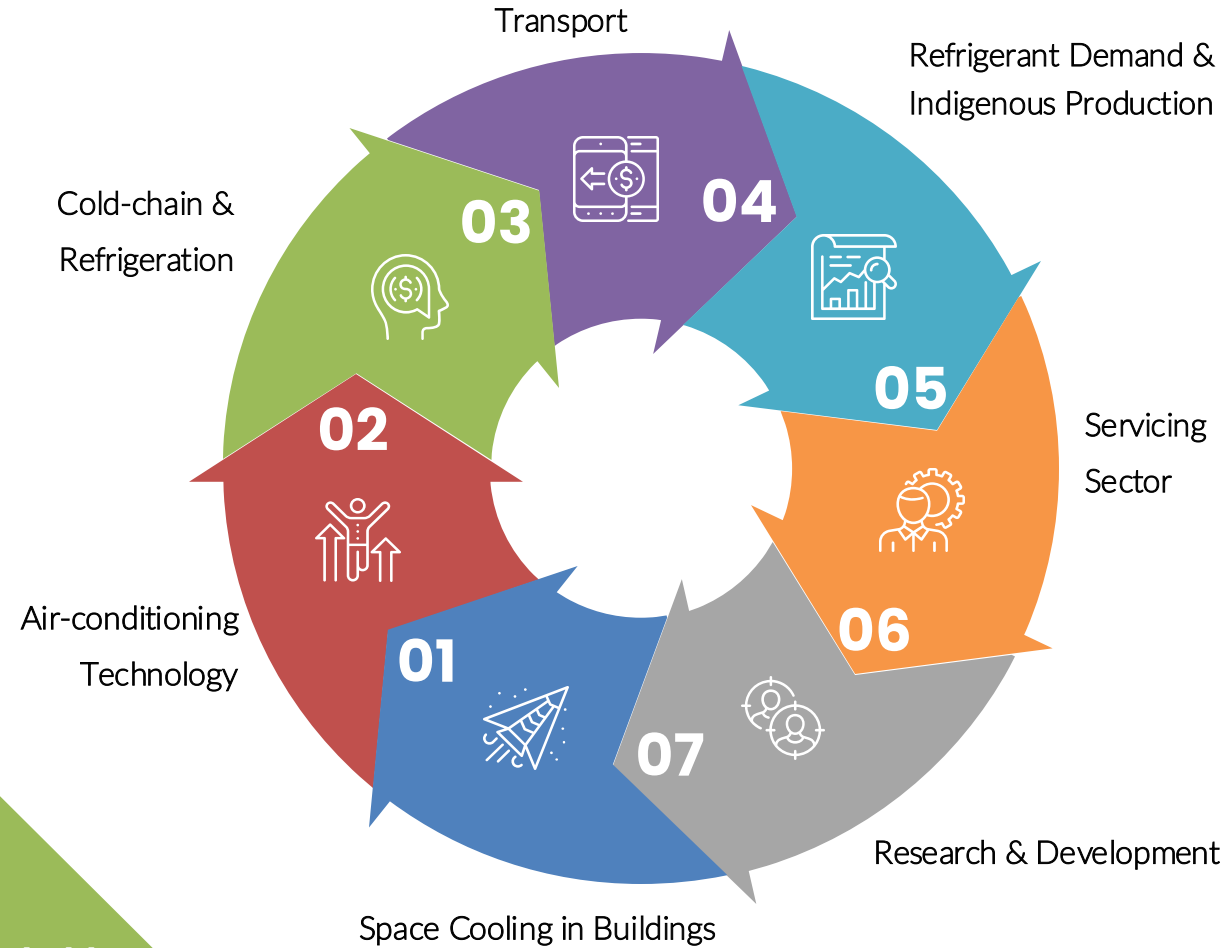
Synergies with ongoing government programmes

Mapping of the recommendations for each thematic area

Actions to be undertaken by the concerned line Ministries/ Departments/ agencies

Multistakeholder inclusive process

Steering Committee to guide and oversee





ICAP Implementation

SPACE COOLING IN BUILDINGS



Passive and active cooling strategies including adoption of Energy Conservation Sustainable Building Code (ECSBC).



Optimization of cooling loads, encompassing natural and mechanical ventilation in building design



Thermal comfort standards specifying pre-setting of temperatures for air-conditioning equipment



Promoting use of energy efficient refrigerant based appliances including not in-kind technologies.



ICAP Implementation

COLD CHAIN

Development of energy efficient and climate friendly cold chain infrastructure in supporting the Government's priority areas of :

- Reducing food loss,
- Ensuring food security
- Doubling farmers income and
- Pharmaceutical cold chain
- E-commerce industry

Development and implementation of safety standards for flammable and toxic refrigerants





ICAP Implementation

SERVICING

Unified Certification and training system for personnel in Refrigeration Airconditioning (RAC), cold chain and Mobile Airconditioning (MAC) sectors

Develop and promote good servicing practices to handle flammable and toxic refrigerants



R&D and Domestic manufacturing

- **Cooling as a thrust area of research**
- **Promote R&D in low GWP refrigerants and blends including their application**

- **Domestic Manufacturing of next generation low GWP refrigerants and blends**
- **Standardization of testing and calibration of equipment for checking purity of refrigerants**



Montreal Protocol Implementation

GHG Emission Reduction

Implementing the Ozone Depleting Substances phase-out under the Montreal Protocol will mitigate 778 to 1176 million tonnes of CO₂-eq GHG emissions by 2030.

Past phase-out of ODS

- Phase out of use of CFCs and Halons in new cooling and fire fighting equipment manufacturing from 1.1.2003
- Phase out of production and consumption of virgin halons in 2002

HPMP Stage-II

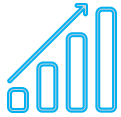
- As on 1.1.2020, India achieved reduction of 44% of HCFCs as against reduction target of 35% of the Montreal Protocol.
- Complete phase out use of HCFC-141b as on 1.1.2020 in manufacture of rigid polyurethane foam

HPMP Stage-III

- Phase out of HCFCs in manufacturing of all equipment and products from 1.1.2025
- Unified certification and training system for RAC service technicians.
- Strengthening training infrastructure for servicing at government training institutes



Other initiatives towards sustainable cooling



Provisions in the e-waste Management Rules for appropriate management and disposal of refrigerants at the EOL RAC equipment



EPR for managing e-waste and associated refrigerants by equipment manufacturers



Guidelines for environmentally sound facilities for handling, processing and scrapping of vehicles at the EOL, including management of refrigerant gases.



Initiatives planned for Implementation of Kigali Amendment

Policy and regulatory framework including for quota system and reporting obligations for HFCs in line with the Kigali Amendment



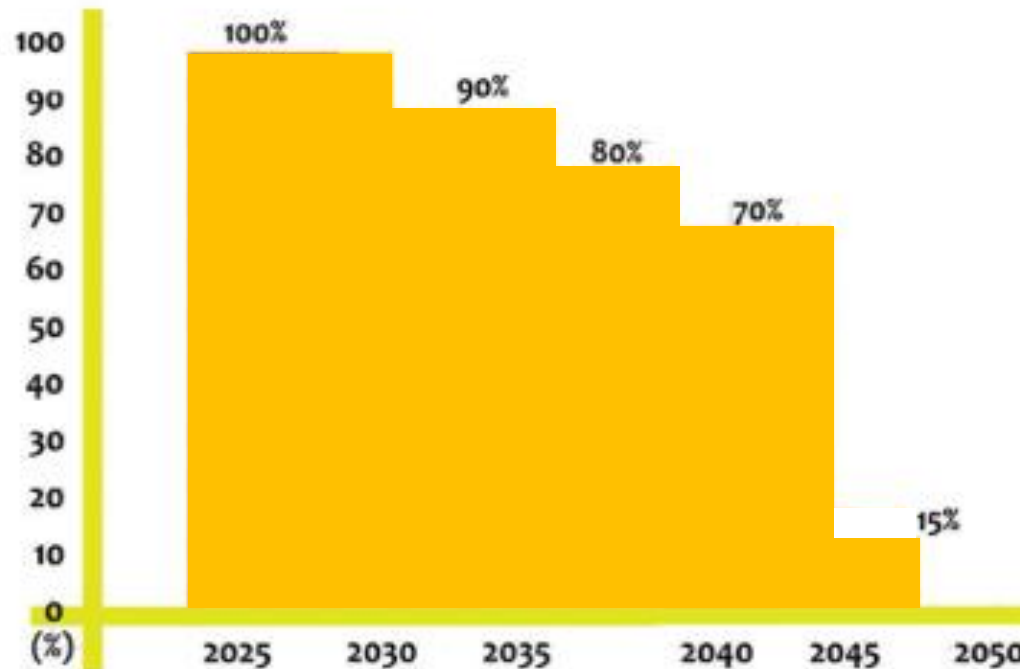
Minimum economic dislocation and obsolescence, particularly for MSMEs, without adversely affecting industrial and economic growth



Adoption of climate friendly alternatives as far as possible from indigenous sources, considering safety and sustainability



National Strategy for HFC phase down to be finalized in consultation with all line ministries/departments and industry stakeholders



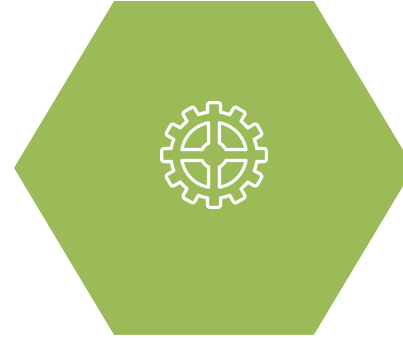
Develop and implement a robust and full proof system for compilation and dissemination of data related to substances controlled under the Montreal Protocol





Planned Initiatives towards Sustainable Cooling

Collaboration with line ministries/ departments and industry for implementation of ICAP recommendations



Develop and implement of safety standards for flammable and toxic refrigerants



Promote and strengthen institutes of excellence for:

- Domestic Manufacturing of low-GWP refrigerants like HFOs, R-290, R-600a, etc.
- R&D on climate friendly cooling technologies
- Indigenous development of energy efficient low-GWP based cooling equipment and components
- Testing including calibration of cooling equipment and refrigerants
- Upgradation of skill of manpower for wider adoption of low GWP refrigerants

Actions towards achieving net-zero by 2070:

- Reduction of emissions intensity of GDP by 45 percent by 2030 from the 2005 level
- Achieving about 50 percent cumulative electric power installed capacity from non-fossil fuel-based energy resources by 2030

Conclusion & Way Forward

- **India's pathway to sustainable cooling is intrinsically linked to its national circumstances, development imperatives, and industrial capacities.**
- **The focus remains steadfast on providing affordable, safe, and equitable access to cooling for all citizens.**
- **India continues its strong commitment to global environmental goals through structured, domestically aligned frameworks like the ICAP and HAPs.**
- **Emphasis on collaborative learning, sharing of best practices, and ensuring a just transition for domestic industries.**



THANK YOU

Spotlight: From NCAP to Investment Roadmap and Implementation

10 minutes



Alok K Singh

Global Lead,
Built Environment Decarbonization,
World Bank Group



GLOBAL COOLING PLEDGE ASSEMBLY

SINGAPORE 15 - 18 SEPTEMBER 2026

**NATIONAL AND MULTI-LEVEL COOLING ACTION: FROM PLANS TO
IMPLEMENTATION AND INVESTMENT**

From National Plans to Investment Pipelines

Alok Singh

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The World Bank Group



Ministry of Sustainability
and the Environment
— SINGAPORE —



Sustainable Cooling & Heat Resilience Initiative: “Five by Five” Plan



FIVE FOCUS SECTORS

BUILT
ENVIRONMENT



MANUFACTURING



AGRIBUSINESS &
COLD CHAINS



HEALTH & EDUCATION



TRANSPORTATION &
INFRASTRUCTURE



INNOVATION IN FINANCIAL AND BUSINESS MODELS

FIVE ENGAGEMENT PILLARS

INSIGHTS



INFLUENCE



INNOVATION



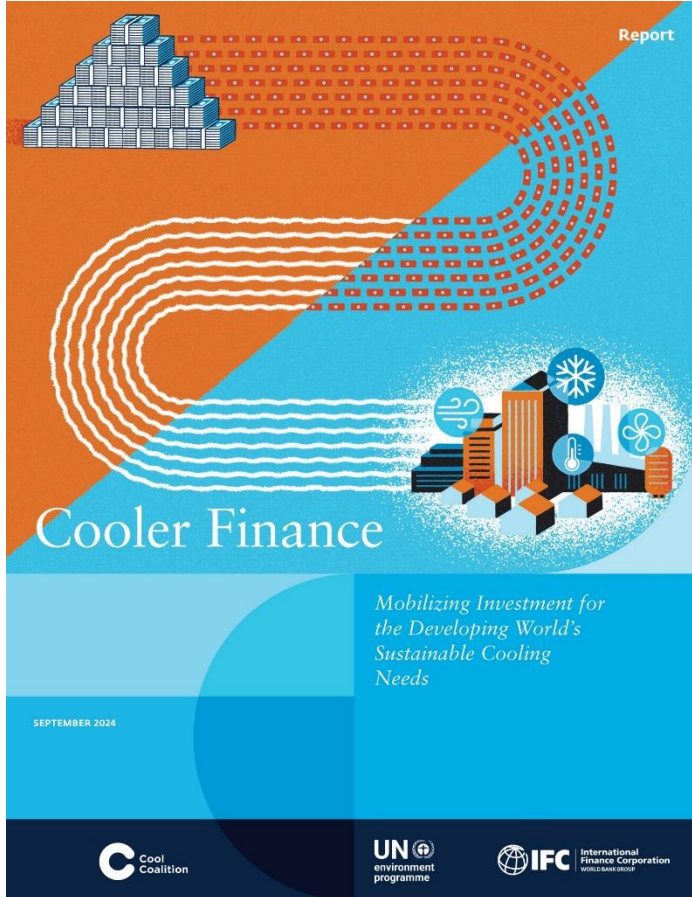
INVESTMENT



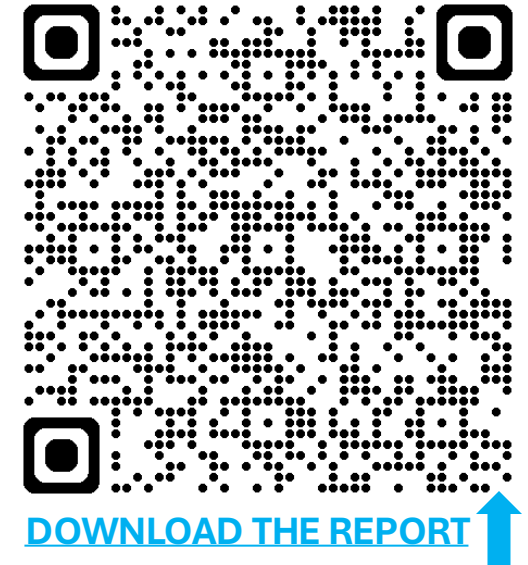
IMPACT



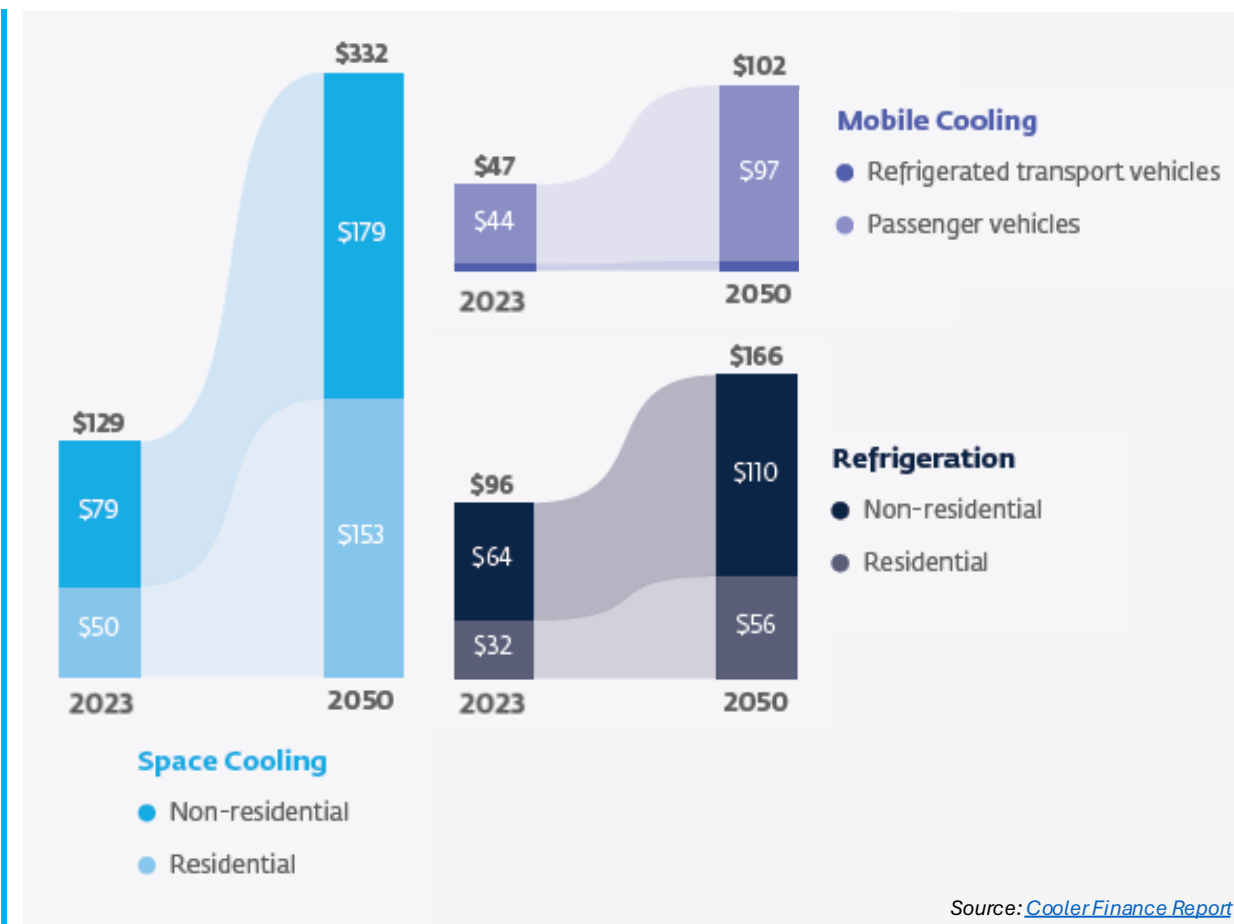
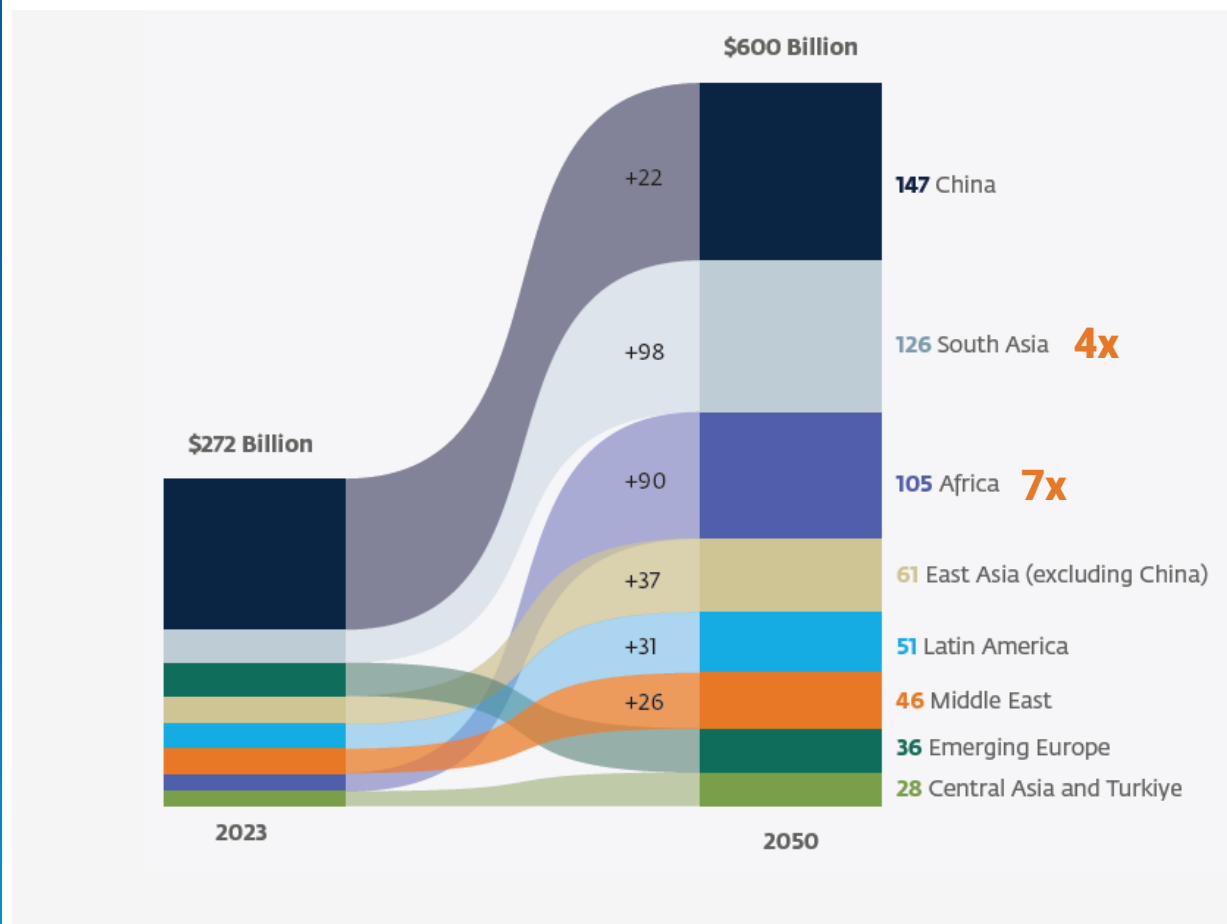
Flagship “Cooler Finance” Report Looks at Market Size, Business Models, Challenges, and Solutions



- Size the market opportunity that sustainable cooling represents across EMDEs
- Bring attention to challenges and opportunities to financing sustainable cooling in the context of EMDEs
- Provide a blueprint on how to finance sustainable cooling



Sustainable Cooling is a Large Investment Opportunity



Source: [Cooler Finance Report](#)

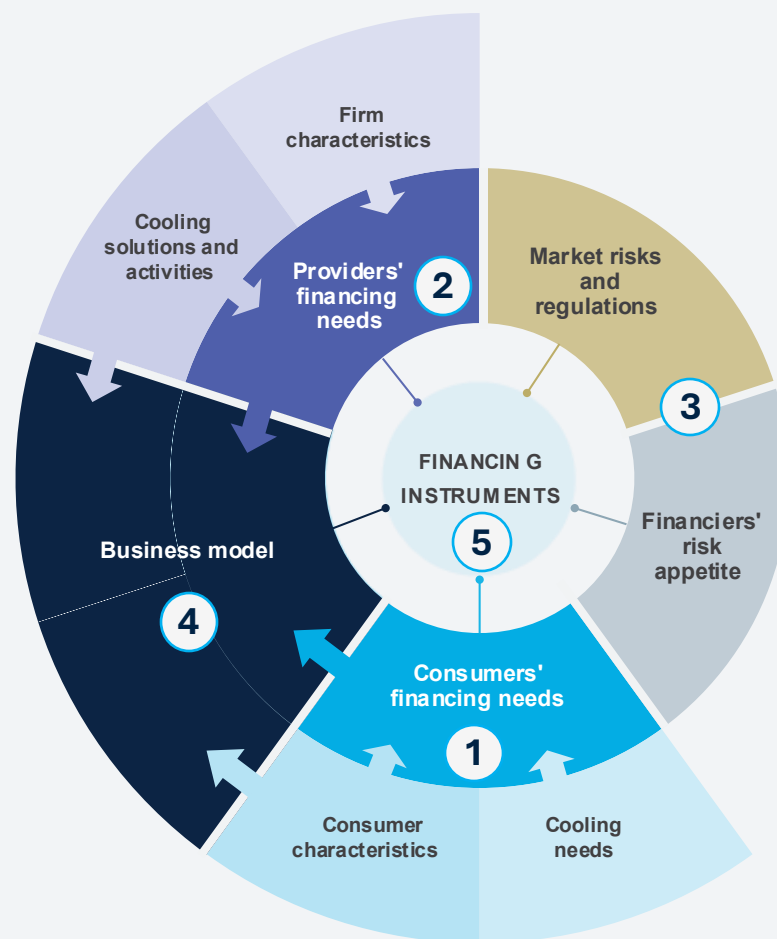
Cooling is already a **\$300 billion market** which could grow to **\$600 billion per year or more** by 2050

Financing Sustainable Cooling: No One Size Fits All!



The design of business models and financing instruments must consider:

- ① Consumers' financing needs and characteristics
- ② Providers' financing needs and characteristics
- ③ Local market context



④ Business Model Examples:

- ▶ Direct purchase
- ▶ Asset/property-linked financing
- ▶ Vendor financing
- ▶ Pay-As-You-Go (PAYG)
- ▶ Cooling-as-a-Service (CaaS)
- ▶ Cash for coolers
- ▶ Bulk procurement
- ▶ On-wage financing
- ▶ On-bill financing
- ▶ ESCOs/ DESCOs

⑤ Financing Instruments Examples:

- ▶ Revolving fund
- ▶ Results based finance
- ▶ Conventional equity
- ▶ Conventional loan
- ▶ Risk sharing
- ▶ Performance guarantees
- ▶ Blended finance
- ▶ Public finance
- ▶ Working capital loan

From Plans to Investment Roadmaps

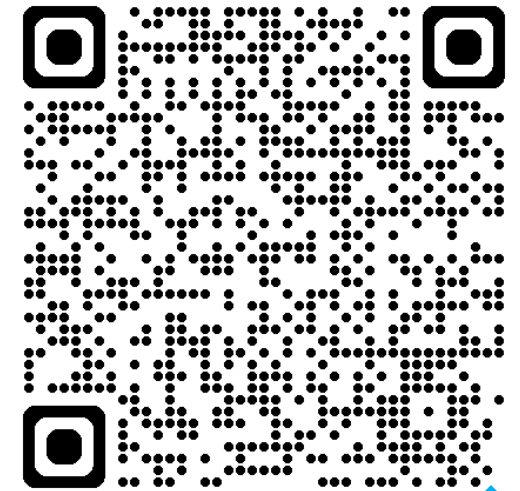


NCAP COMMITMENTS

- Reduction of cooling demand up to 25%
- Reduction of refrigerant demand up to 30%
- Recognition as a key sphere of research
- Training and certification of technicians

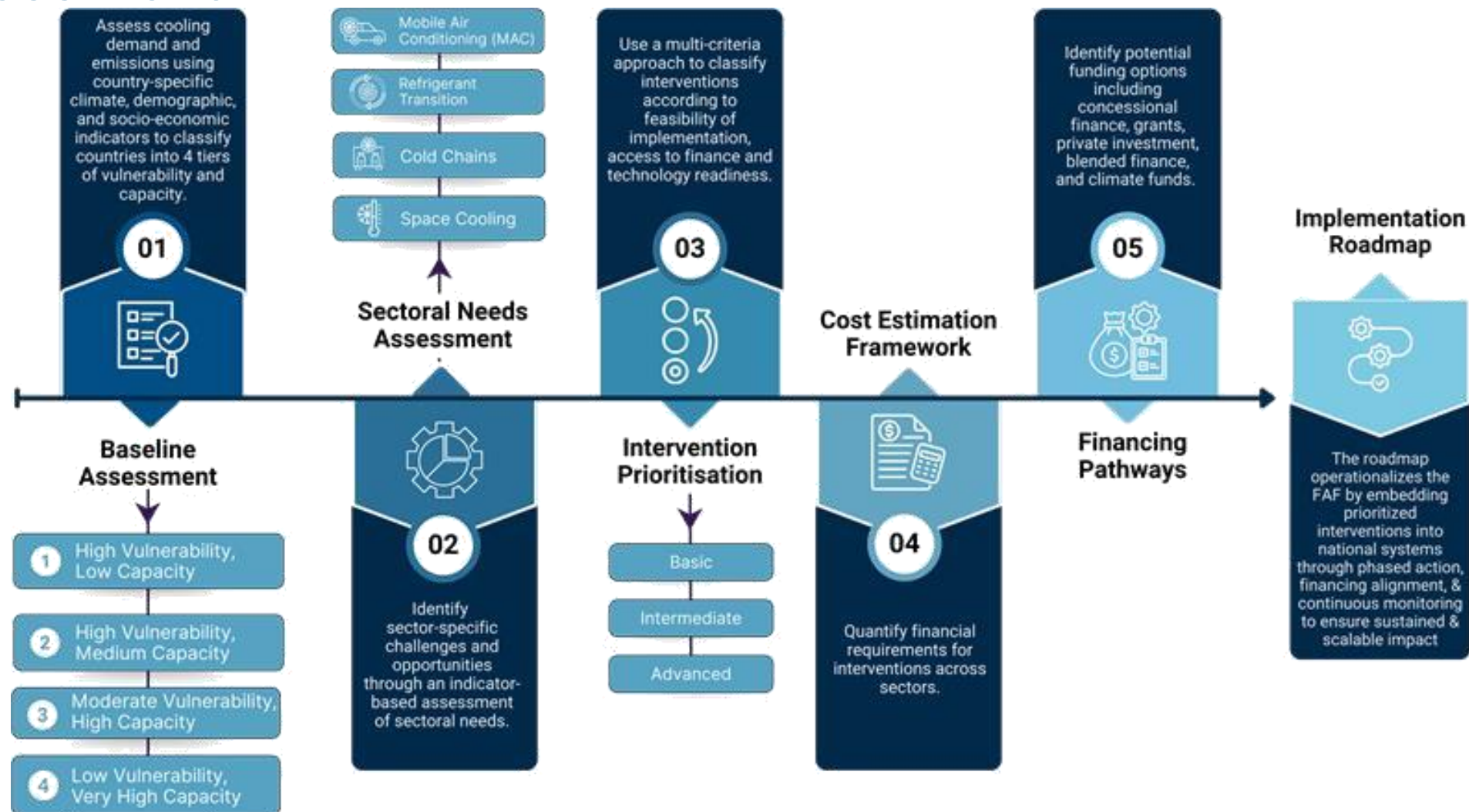
INVESTMENT OPPORTUNITY

- Investment opportunity of \$1.6 trillion by 2040
- Create 3.7 million jobs



[DOWNLOAD THE REPORT](#)

Conceptual Framework for Guidelines on Financial Assessment





Thank you!

Alok Singh

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[LinkedIn profile](#)

Discussion Breakouts

Participants are welcomed to join Breakout 1 or 2

50 minutes



Breakout 1: NCAP Governance and Implementation

MODERATOR

Dr. Omar Abdelaziz,
Associate Professor, Department of
Mechanical Engineering, The American
University in Cairo

Breakout 2: Financing and Delivery

MODERATOR

Mr. Andreas Hermelink, Director, Cool
Up Programme, Guidehouse



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Reporting Back

Rapporteurs designated by Breakouts



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Closing remarks



Satish Kumar

CEO, President
Alliance for Energy Efficient
Economy (AEEE)