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Cooling a warming India

How sustainability and decarbonisation are shaping the future of cooling

August 2026

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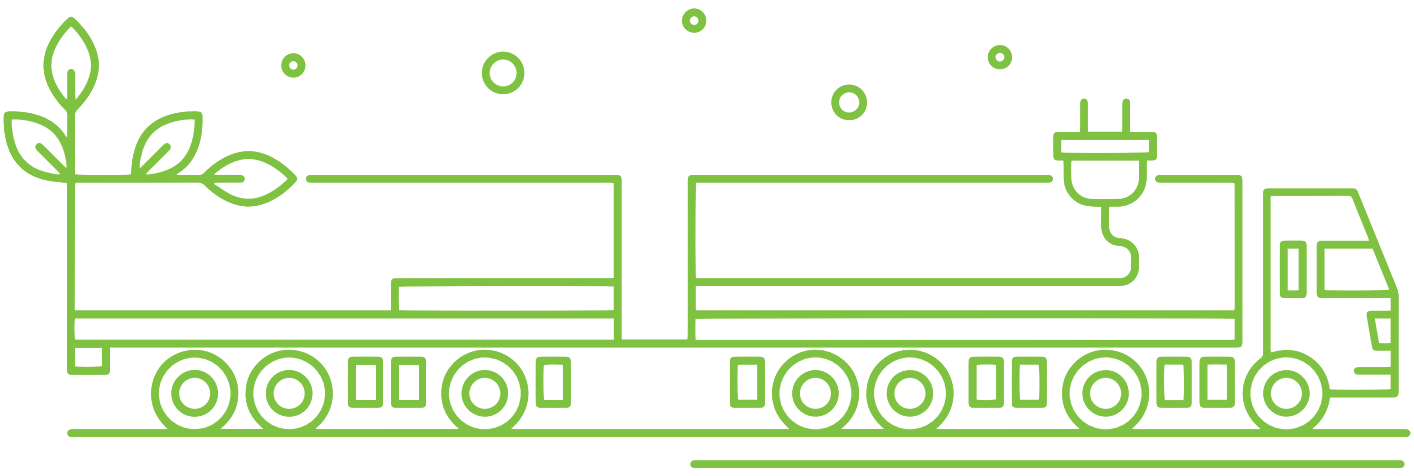

Foreword from ISHRAE

Dr. R. Saravanan
Society President, ISHRAE

For more than four decades, Indian Society of Heating, Refrigerating and Air Conditioning Engineers (ISHRAE) has stood for one conviction: the science and practice of heating, ventilation, air conditioning and refrigeration exist to serve people. Today that conviction faces its greatest test. India is warming, urbanising and prospering at the same time, and cooling has moved decisively from luxury to necessity. It protects health in our hospitals, food in our supply chains, medicines in our cold rooms and productivity in our workplaces.

The question before our profession is not whether India will cool, but how. The choices our engineers, designers, manufacturers and service professionals make in this decade will determine whether cooling becomes one of India's largest sources of emissions or one of its proudest transition stories. Efficiency, passive design, cleaner refrigerants and skilled servicing are not separate agendas; they are one discipline, and it is ours.

This paper, prepared jointly with Deloitte India, brings together the evidence, insights and practical recommendations needed to accelerate this transition. I commend it to policymakers, industry leaders and every practitioner in our community. I invite each of you to view sustainable cooling not as a constraint on our profession, but as the defining opportunity of our generation: an opportunity to drive innovation, strengthen resilience, reduce environmental impact, and create a healthier, more sustainable world for future generations to cherish.

As President of ISHRAE, I urge each one of you to read this report, share it widely within your professional and personal networks and inspire others to do the same. More importantly, let us move beyond awareness to action. Together, let us prepare ourselves, our organisations and our nation for a future-ready built environment that is sustainable, resilient, energy-efficient, and climate-responsive. The future of cooling is in our hands, and the time to act is now.

Foreword from Deloitte India

Shailesh Tyagi
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Every economy has sectors where climate ambition and development needs collide. In India, cooling is one of them. Access to cooling saves lives, protects productivity and underpins economic growth, yet its unmanaged expansion could strain the power system and absorb a rising share of the nation's carbon budget. Resolving that tension is no longer a technical footnote; it is a strategic question for government, industry and investors alike.

The encouraging reality, as this paper demonstrates, is that India starts from a position of strength. It authored the world's first national cooling action plan, ratified the Kigali Amendment, tightened appliance standards year after year, and built a renewable energy base at record pace. The tools exist. What the next decade demands is scale, coherence and capital: codes enforced in every state, efficient equipment in every market segment, refrigerants managed across their life cycle, and disclosure that lets capital find the leaders.

At Deloitte, we believe sustainability has moved from the margins of strategy to its core: it shapes how organizations grow, compete, and earn trust. We are pleased to collaborate with ISHRAE on this paper and hope it helps every reader, technical and non-technical alike, recognise cooling for what it has become: an essential service that India can deliver sustainably, and a market in which it can lead globally.

Executive summary

Cooling in India has crossed a threshold. What was once a comfort for the few is now a necessity for health, food security, medicine and productivity in a country experiencing longer and harsher heat waves. The question this paper addresses is not whether India cools, but how, because the pathway chosen in this decade will decide whether cooling becomes the country's next major emissions problem or one of its most valuable transition opportunities.

The global backdrop sharpens the stakes. 2024 was the warmest year on record, and United Nations Environment Programme (UNEP) projects that installed cooling capacity worldwide could more than triple by 2050, nearly doubling cooling-related emissions to 7.2 billion tonnes of CO_2-equivalent a year.[1] The same analysis shows a different route: a sustainable cooling pathway that cuts those emissions by 64 percent, and by around 97 percent once electricity is decarbonised, while saving an estimated US$17 trillion in energy costs.[2]

India sits at the centre of this story. Its aggregate cooling demand is projected by the India Cooling Action Plan (ICAP) to grow around eight times between 2017–18 and 2037–38, with room air conditioner ownership rising from 8 percent of households to 40 percent.[3] Space cooling could account for as much as 45 percent of peak electricity load by 2050.[4] Unmanaged, that growth carries a heavy emissions bill; managed well, the World Bank estimates it represents a US$1.6 trillion investment opportunity by 2040.[5]

Yet India enters this transition from a position of considerable strength. It has decoupled emissions from growth, reached a majority non-fossil power capacity five years ahead of schedule and raised its climate ambition through an updated Nationally Determined Contribution (NDC) for 2031–35. It authored the world's first national cooling plan, ratified the Kigali Amendment on Hydrofluorocarbon (HFC) phase-down and has tightened air conditioner efficiency standards repeatedly, most recently from January 2026.

The paper organises the response around a simple hierarchy: first reduce the need for mechanical cooling through passive design and stronger building envelopes, then meet the remaining demand with super-efficient equipment; transition to low-Global warming potential (GWP) refrigerants; and scale system-level solutions such as district cooling, thermal storage and solar integration. Policy enablers, from building codes and star labelling to state-level enforcement and financing innovation, determine how fast these levers scale. ESG disclosure, increasingly structured through the Business Responsibility and Sustainability Reporting (BRSR) framework and global standards can make cooling performance visible to capital markets for the first time.

The paper closes with a three-horizon roadmap and a clear message for industry, government and consumers: sustainable cooling is where India's climate commitments, development goals and public health converge, and the window to shape it is open now.

1. World Meteorological Organization (WMO), State of the Global Climate 2024, March 2025. https://wmo.int/publication-series/state-of-global-climate-2024
2. United Nations Environment Programme (UNEP), Global Cooling Watch 2025, launched at COP30, Belem, November 2025. https://www.unep.org/resources/global-cooling-watch-2025
3. Ministry of Environment, Forest and Climate Change (MoEFCC), India Cooling Action Plan, 2019. https://ozonecell.nic.in/wp-content/uploads/2019/03/INDIA-COOLING-ACTION-PLAN-e-circulation-version080319.pdf
4. IEA, The Future of Cooling, 2018, and World Energy Outlook 2023. https://www.iea.org/reports/world-energy-outlook-2023
5. World Bank, Climate Investment Opportunities in India's Cooling Sector, November 2022. https://www.worldbank.org/en/news/press-release/2022/11/30/a-greener-cooling-pathway-can-create-a-1-6-trillion-investment-opportunity-in-india-says-world-bank-report

The global climate imperative and the cooling challenge

1.55°C
warming above pre-industrial levels in 2024, the warmest year on record (WMO)

~10%
of global electricity is already consumed by air conditioners and fans (IEA)

489,000
heat-related deaths every year between 2000 and 2019 (WHO)

1.1 The escalating climate crisis

The World Meteorological Organisation has confirmed that 2024 was the warmest year in the observational record, at about 1.55°C. It is above the 1850 to 1900 pre-industrial average, and likely the first calendar year to exceed 1.5°C of warming. The ten warmest years in a record stretching back 175 years have all occurred in the past decade.[6]

A single hot year does not, by itself, breach the Paris Agreement, whose temperature goal is measured over decades rather than seasons. What it does signal is how little headroom remains. The arithmetic set out in the Intergovernmental Panel on Climate Change (IPCC) Sixth Assessment Report is unambiguous: to keep 1.5°C within reach, global emissions must peak before 2025 and fall by 43 percent by 2030 relative to 2019 levels.[7] Every sector of the economy now faces the same question: where can deep, affordable and rapid emission reductions be found? Cooling, as this paper argues, is one of the clearest answers available, and one of the least discussed.

1.2 Cooling: the blind spot in the energy transition

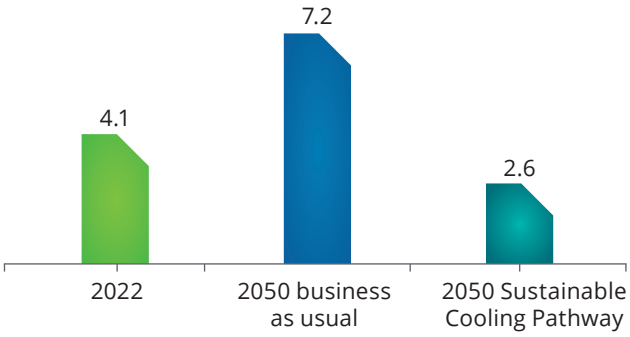
Air conditioners and electric fans already account for nearly 20 percent of the electricity used in buildings worldwide, which is roughly 10 percent of all electricity consumed globally. The global stock of air conditioners is expected to grow from about 1.6 billion units to some 5.6 billion units by 2050. Expressed differently, that is close to ten new air conditioners sold every second for the next quarter of a century.[8]

The scale of what lies ahead was quantified afresh at COP30 in Belem, where UNEP released the Global Cooling Watch 2025. The report finds that installed cooling capacity could more than triple by 2050, from 22 terawatts (TW) in 2022 to 68 TW, under business as usual. That growth would nearly double cooling-related greenhouse gas emissions over 2022 levels, taking them to an estimated 7.2 billion tonnes of CO_2 equivalent a year by mid-century, even after accounting for the efficiency and refrigerant policies already in force.[9]

The same report shows why this trajectory is a choice rather than a destiny. Its sustainable cooling pathway, which puts passive cooling first and combines it with high-efficiency equipment and an accelerated refrigerant transition with efficient operating strategies for the entire life of the building, would cut expected 2050 emissions by 64 percent, to 2.6 billion tonnes. Paired with the decarbonisation of electricity, residual cooling emissions fall by around 97 percent. The economics point the same way: an estimated US$17 trillion in cumulative energy savings and up to US$26 trillion in avoided grid investment by 2050.[10]

6. World Meteorological Organization (WMO), State of the Global Climate 2024, March 2025. https://wmo.int/publication-series/state-of-global-climate-2024
7. Intergovernmental Panel on Climate Change (IPCC), AR6 Synthesis Report: Climate Change 2023. https://www.ipcc.ch/report/ar6/syr/
8. International Energy Agency (IEA), The Future of Cooling, 2018. https://www.iea.org/reports/the-future-of-cooling
9. United Nations Environment Programme (UNEP), Global Cooling Watch 2025, launched at COP30, Belem, November 2025. https://www.unep.org/resources/global-cooling-watch-2025
10. United Nations Environment Programme (UNEP), Global Cooling Watch 2025, launched at COP30, Belem, November 2025. https://www.unep.org/resources/global-cooling-watch-2025

Figure 1: Global cooling-related GHG emissions, 2022 and 2050 pathways (billion tonnes CO2e)



Source: UNEP Global Cooling Watch 2023 and 2025.

Cooling emissions arise in two distinct ways. Roughly two-thirds are indirect, produced by the power stations that supply electricity to air conditioning equipment in the built environment space. About one-third are direct, caused by leakage of refrigerant gases, chiefly hydrofluorocarbons, whose warming potential is hundreds to thousands of times that of CO2.[11] The practical implication is that the sector must pull both levers at once. Efficiency alone leaves refrigerant emissions untouched, and a refrigerant transition alone does nothing for the electricity bill and its associated emissions.

1.3 Cities, heat islands and a self-reinforcing loop

Cities concentrate the cooling problem. The buildings and construction sector accounts for around 37 percent of global energy-related emissions, and space cooling is its fastest-growing end use.[12] Dense urban fabric traps heat: UNEP notes that the urban heat island effect can drive city temperatures up to 10°C above surrounding areas.[13] Air conditioning then adds to the problem it is solving, because every unit that cools a room rejects waste heat into the street outside. This results in a self-reinforcing loop in which hotter cities demand more cooling, and then more cooling, in turn, makes the cities even hotter. Breaking that loop through efficient building design with the least cooling load, without affecting human comfort and productivity, urban greening, wind circulation around the buildings, sustainable architecture and efficient equipment are some of the defining urban challenges of the coming decades.

1.4 A climate- development- and public health-related priority

Extreme heat is the deadliest of climate hazards. WHO estimates that approximately 489,000 heat-related deaths occurred each year between 2000 and 2019, with 45 percent of them in Asia.[14] The economic toll runs alongside the human one. The International Labour Organisation (ILO) estimates that India lost 4.3 percent of

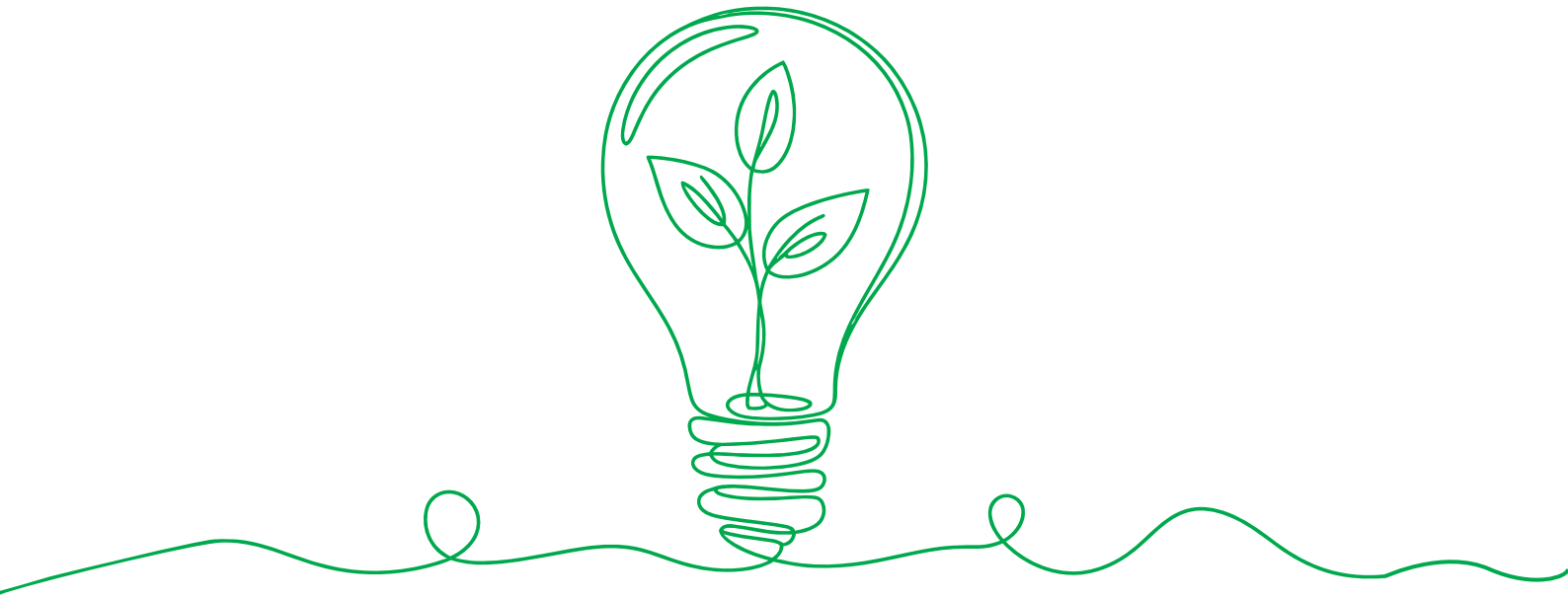
11. UNEP, Global Cooling Watch 2023: Keeping it Chill. https://www.unep.org/resources/report/global-cooling-watch-2023
12. UNEP, Global Status Report for Buildings and Construction 2023. https://www.unep.org/resources/report/global-status-report-buildings-and-construction
13. UNEP Executive Director, press statement at the launch of the Global Cooling Watch 2025, November 2025. https://www.unep.org/news-and-stories/statements/unep-executive-director-press-statement-launch-global-cooling-watch
14. World Health Organization (WHO), fact sheet on heat and health. https://www.who.int/news-room/fact-sheets/detail/climate-change-heat-and-health

its working hours to heat stress in 1995 and is projected to lose 5.8 percent by 2030, a productivity loss equivalent to 34 million full-time jobs, the largest of any country in the world.[15]

At the same time, more than a billion people still lack adequate access to the cooling they need for safe food, effective medicines and productive work.[16] Cooling is therefore not a question of comfort. It protects lives, vaccines, harvests and livelihoods, which is precisely why access to it must expand even as its emissions fall.

The burdens of heat, and the benefits of cooling, are not evenly shared. WHO identifies pregnant women among the groups most vulnerable to extreme heat, which is associated with adverse birth outcomes.[17] Women are also over-represented in the settings where workplace cooling is rarest: agriculture, informal enterprises and home-based work, where the ILO finds the heaviest heat-related losses of working hours concentrated.[18] Within households, affordability decides access, and in the poorest homes a fan is often the only defense, with kitchen heat adding an exposure that falls largely on women. The workforce tells a parallel story: women remain a small minority in the Heating, Ventilation, Air Conditioning and Refrigeration (HVAC&R) servicing trade, a gap that initiatives under UNEP's OzonAction programme have begun to address by opening cooling careers to women.[19] Treating cooling access and cooling skills as questions of equity is therefore not an add-on to the transition described in this paper; it widens both the talent pool the sector needs and the population the transition protects.

Global recognition of this dual challenge arrived at COP28, where the Global Cooling Pledge became the first collective commitment on the sector: to reduce cooling-related emissions by 68 percent by 2050 relative to 2022 and to expand access to sustainable cooling. By the time the Global Cooling Watch 2025 was published, 72 countries had signed.[20] Few countries embody the pledge's twin imperatives of wider access and lower emissions more completely than India.



15. International Labour Organization (ILO), Working on a Warmer Planet: The Impact of Heat Stress on Labor Productivity and Decent Work, 2019. https://www.ilo.org/resource/news/increase-heat-stress-predicted-bring-productivity-loss-equivalent-80
16. United Nations Environment Programme (UNEP), Global Cooling Watch 2025, launched at COP30, Belem, November 2025. https://www.unep.org/resources/global-cooling-watch-2025
17. World Health Organization (WHO), fact sheet on heat and health, on populations most vulnerable to extreme heat. https://www.who.int/news/item/05-06-2024-experts-warn-of-serious-health-impacts-from-climate-change-for-pregnant-women--children--and-older-people
18. International Labour Organization (ILO), Working on a Warmer Planet, 2019. https://www.ilo.org/resource/news/increase-heat-stress-predicted-bring-productivity-loss-equivalent-80
19. UNEP - WOMEN IN COOLING - A Worldwide Survey, https://wedocs.unep.org/rest/api/core/bitstreams/9610767f-a7e8-4896-a085-191540b35823/content
20. COP28 Presidency and UNEP Cool Coalition, Global Cooling Pledge for COP28, December 2023; signatory count as reported in UNEP Global Cooling Watch 2025. https://www.cop28.com/en/global-cooling-pledge-for-cop28

India's climate commitments and energy transition landscape

52.3%
non-fossil share of installed power capacity as on 31 January 2026 (Ministry of Power)

55.3 GW
non-fossil capacity added in FY 2025 –26, the highest in any year (MNRE)

2070
India's target year for achieving net zero emissions

2.1 A balanced approach and India's emissions profile

India's climate policy has always rested on a distinct premise. Most major economies committed to decarbonise after they industrialised; India is doing both at once, while safeguarding energy security and affordable supply for 1.4 billion people as a net energy importer. That context shapes every choice the country makes on the demand side, including cooling.

The official record shows a country decoupling growth from emissions. India's Fourth Biennial Update Report to the UNFCCC places total emissions at 2,959 million tonnes of CO_2-equivalent in 2020, excluding land use and forestry, and 2,437 million tonnes net of the carbon absorbed by forests. The emission intensity of GDP fell by 36 percent between 2005 and 2020, and per capita emissions remain less than one-third of the world average.[21]

The composition of the inventory matters as much as its size. The energy sector contributes roughly three-quarters of national emissions, with electricity generation the single largest source, followed by agriculture, industrial processes and waste.[22] This is why cooling sits so close to the center of India's mitigation story. Nearly every unit of electricity saved by an efficient air conditioner displaces coal-based generation at the margin, and it does so in the evening hours when the grid is under the greatest strain.

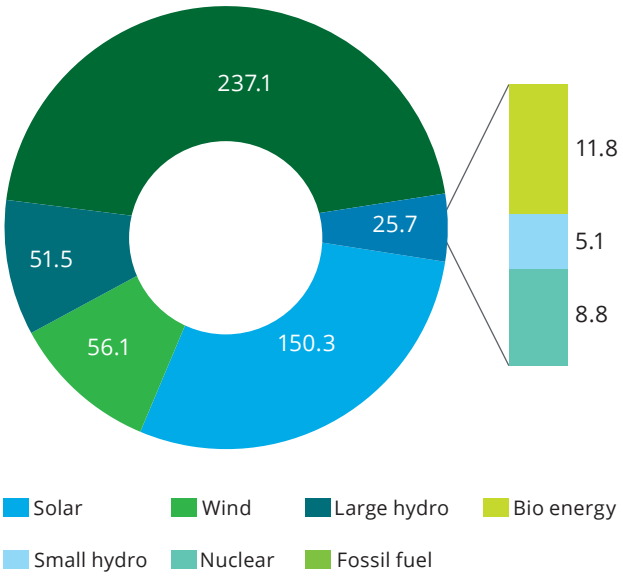
2.2 Current energy mix and renewable energy expansion

India's power system is in the middle of a structural shift. As on 31 January 2026, installed generation capacity stood at 520.5 GW, of which 272 GW, or 52.3 percent, came from non-fossil sources.[23] The 50 percent milestone was reached in June 2025, five years ahead of the timeline committed under India's NDC.[24]

The pace is accelerating. FY 2025–26 saw a record 55.3 GW of non-fossil capacity added, taking the total to 283.5 GW by 31 March 2026, including 150.3 GW of solar and 56.1 GW of wind, and placing India third in the world in renewable energy installed capacity. The national goal remains 500 GW of non-fossil capacity by 2030.[25]

21. Press Information Bureau (PIB), Government of India, India submits its 4th Biennial Update Report to the UNFCCC, 30 December 2024. https://www.pib.gov.in/PressReleasePage.aspx?PRID=2089589
22. India, First Biennial Transparency Report to the UNFCCC, Ministry of Environment, Forest and Climate Change. https://unfccc.int/documents/656939
23. PIB, Ministry of Power, reply in Parliament on power generation capacity from various sources, as on 31 January 2026. https://www.pib.gov.in/PressReleasePage.aspx?PRID=2238921
24. PIB, Ministry of New and Renewable Energy, India achieves 50 percent non-fossil installed capacity milestone, July 2025. https://www.pib.gov.in/PressReleasePage.aspx?PRID=2144627
25. PIB, Ministry of New and Renewable Energy, statement on renewable energy installed capacity and FY 2025-26 additions, April 2026. https://www.pib.gov.in/PressReleasePage.aspx?PRID=2250039

Figure 2: India's installed power generation capacity by source, as on 31 March 2026 (GW)



Source: PIB, Ministry of New and Renewable Energy.

Capacity, however, is not the same as generation. Non-fossil sources supplied 29.2 percent of electricity generated in 2025–26, a reminder that coal still carries the base of the load and that the grid emission factor will decline gradually as renewables and storage scale through the 2030s.[26] For cooling, that trajectory defines the near-term burden: until the grid is clean, efficiency and refrigerant action must do the heavy lifting.

2.3 Nationally determined contributions: the 2031–35 targets

In April 2026, India communicated its updated Nationally Determined Contribution for 2031–35 to the UNFCCC, having met key elements of the earlier pledge ahead of schedule. The new commitments raise the bar on three fronts by 2035: reducing the emission intensity of GDP by 47 percent from 2005 levels, achieving a 60 percent share of non-fossil sources in installed power capacity, and creating an additional carbon sink of 3.5 to 4.0 billion tonnes of CO_2-equivalent through forest and tree cover.[27]

2.4 Net zero by 2070 and what it means for cooling

The long-term destination was set at COP26 in Glasgow, where India announced its Panchamrit commitments and the goal of net zero emissions by 2070.[28] The supply-side transition that follows from that pledge is highly visible through solar parks, wind farms and green hydrogen missions. The quieter contest is on the demand side, in the efficiency of everything the economy plugs in.

Cooling stands at the head of that queue for three reasons. It is the fastest growing end use of electricity in the country. Its direct emissions are governed by a separate and highly effective treaty track, the Montreal Protocol and its Kigali Amendment, giving India a proven institutional lever. Also, it sits at the junction of mitigation and adaptation, because the same appliances that add load to the grid also protect people from the heat that climate change is intensifying. The NDC cycles ahead will increasingly be won or lost in appliance markets, building by-laws and cold chains, not in power plants alone.

26. PIB, Ministry of New and Renewable Energy, statement on renewable energy installed capacity and FY 2025-26 additions, April 2026. https://www.pib.gov.in/PressReleasePage.aspx?PRID=2250039
27. Prime Minister's Office and PIB, Cabinet approves India's Nationally Determined Contribution (2031-2035), 2026; India, NDC 2031-35, submitted to the UNFCCC in April 2026. https://unfccc.int/sites/default/files/2026-04/INDIA%20NDC%202031-35.pdf
28. PIB, National Statement by the Prime Minister at COP26, Glasgow, 1 November 2021. https://www.pib.gov.in/PressReleasePage.aspx?PRID=1768712

Cooling demand in India: Sectoral landscape and growth trajectory

8X
projected growth in India's aggregate cooling demand between 2017–18 and 2037–38 (ICAP)

8% → 40%
households owning a room air conditioner, 2017–18 to 2037–38 (ICAP)

~45%
of India's peak electricity load could come from space cooling by 2050 (IEA)

3.1 The sectoral landscape

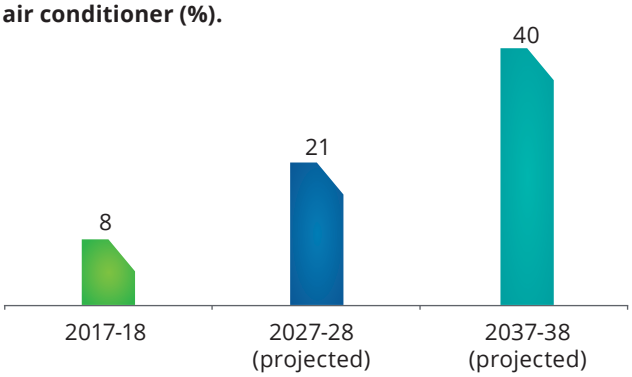
Cooling demand in India spans four broad segments: space cooling in residential and commercial buildings, refrigeration and the cold chain, air conditioning in transport and process cooling in industry. Buildings dominate. The sector already accounts for about a third of India's electricity consumption, and a large share of the floor space that will serve the country in 2040 has not yet been built.[29] That is both the risk and the opportunity: design decisions taken in this decade will lock in or lock out decades of cooling demand.

3.2 The ICAP growth trajectory

The ICAP, released by the Ministry of Environment, Forest and Climate Change in 2019, was the first national cooling plan anywhere in the world. It frames cooling as a developmental necessity, under the banner of thermal comfort for all, and provides a twenty-year demand outlook. Its central projection is striking: aggregate cooling demand is expected to grow around eight times between 2017-18 and 2037–38, with the building sector growing fastest.[30]

Ownership tells the same story from the household's point of view. Around 8 percent of Indian households owned a room air conditioner in 2017–18. ICAP projects that share rising to about 21 percent by 2027–28 and 40 percent by 2037–38, as incomes rise and prices fall.[31] India is, in effect, one generation away from air conditioning becoming a mass household appliance, the same transition that refrigerators and televisions completed in earlier decades.

Figure 3: Share of Indian households owning a room air conditioner (%).



Source: India Cooling Action Plan, MoEFCC, 2019.

29. Bureau of Energy Efficiency (BEE), Ministry of Power, Government of India, on energy use in the building sector. https://beeindia.gov.in/
30. Ministry of Environment, Forest and Climate Change (MoEFCC), India Cooling Action Plan, 2019. https://ozonecell.nic.in/wp-content/uploads/2019/03/INDIA-COOLING-ACTION-PLAN-e-circulation-version080319.pdf
31. Ministry of Environment, Forest and Climate Change (MoEFCC), India Cooling Action Plan, 2019. https://ozonecell.nic.in/wp-content/uploads/2019/03/INDIA-COOLING-ACTION-PLAN-e-circulation-version080319.pdf

3.3 Peak demand: The grid's hardest hours

The challenge is not only how much electricity cooling consumes, but when. Air-conditioning load peaks on hot evenings, precisely as solar generation fades. The International Energy Agency (IEA) estimates that the space cooling could account for as much as 45 percent of India's peak electricity load by 2050, up from around 10 percent in recent years, and projects that residential air conditioning in India alone could consume more electricity by 2050 than the whole of Africa does today.[32] Every summer heat wave already previews this future, as evening peaks set successive records and grid operators lean on the costliest generation to meet them. Managing the shape of cooling demand, not just its size, is becoming a first-order question for power system planning.

3.4 What is driving demand?

Table 1: Structural drivers of India's cooling demand.

Driver	What it means for cooling demand
Rising incomes	Air conditioners are moving within reach of a rapidly expanding middle class, converting latent demand into purchases with every price decline.
Urbanisation and heat islands	Cities can run up to 10°C hotter than their surroundings, raising cooling loads exactly where people and buildings are concentrated.
A warming climate	More frequent and severe heat waves lengthen the cooling season and turn air conditioning from comfort into protection for health and productivity.
Infrastructure expansion	Cold chains for food and pharmaceuticals, data centers and mass transit all add structural, round-the-clock cooling demand.
Low current penetration	With household AC ownership still in single digits in rural India, most of the demand that will ever exist has not yet arrived.

Source: ICAP, MoEFCC 2019; UNEP; ILO.

3.5 Emissions at stake and high-impact opportunity areas

Left unmanaged, this growth carries a heavy emissions bill. World Bank analysis suggests that business-as-usual growth in cooling could raise India's annual cooling-related emissions by around 435 percent over two decades. The same analysis finds that a greener cooling pathway represents an investment opportunity of about US$1.6 trillion by 2040, across efficient appliances, cold chains and building solutions.[33]

The intervention areas with the greatest leverage follow directly from the demand picture: super-efficient room air conditioners and fans with efficient operating control devices; passive design and better building envelopes that reduce the need for mechanical cooling in the first place; the transition to low-GWP refrigerants under the Kigali Amendment; modernization of the cold chain; district cooling in dense urban clusters; and the skilling of the servicing workforce on which real-world performance ultimately depends. The next section examines each of these levers, what it can deliver, and how far India has travelled on it.

[32] IEA, The Future of Cooling, 2018, and World Energy Outlook 2023. https://www.iea.org/reports/world-energy-outlook-2023

[33] World Bank, Climate Investment Opportunities in India's Cooling Sector, November 2022. https://www.worldbank.org/en/news/press-release/2022/11/30/a-greener-cooling-pathway-can-create-a-1-6-trillion-investment-opportunity-in-india-says-world-bank-report

Decarbonising the cooling sector: Key levers and pathways

There is no single technology that decarbonises cooling. What exists instead is a hierarchy of interventions, formalised by UNEP in the Global Cooling Watch 2025, that orders the levers by leverage: first reduce the need for mechanical cooling, then meet the remaining need with the most efficient equipment available and finally clean up what that equipment contains and consumes.[34] The hierarchy matters because the levers compound. A well-designed building needs a smaller air conditioner; a smaller, efficient air conditioner needs less refrigerant and less electricity and cleaner electricity shrinks whatever footprint remains.

Figure 4: The sustainable cooling hierarchy

1. **Avoid and reduce: Passive cooling first**
   Building orientation, shading, insulation, high-performance glazing, cool roofs, ventilation and urban greening that cut the cooling load before any machine is switched on.
2. **Improve: Super-efficient equipment and systems**
   Air conditioners, fans and chillers at the top of the efficiency curve, supported by standards, labelling and smart operation coupled with better control devices to optimise operational energy in the long run
3. **Shift: Low-GWP refrigerants**
   Transition away from high-GWP HFCs to low-GWP and natural refrigerants, with leak prevention and end-of-life recovery.
4. **Transform: Clean energy and system solutions**
   District cooling, thermal energy storage (TES), solar integration and demand flexibility that serve dense loads with the least carbon.

Source: Adapted from UNEP, Global Cooling Watch 2025.

4.1 Passive cooling and the building envelope

The cheapest unit of cooling is the one a building never demands. Orientation that limits western sun, external shading, insulated walls and roofs, reflective cool roofs, high-performance glazing and natural ventilation can together cut the cooling load of a building substantially before any equipment is specified. UNEP estimates that passive measures alone could curb global cooling demand growth by around a quarter by 2050.[35] None of this is foreign to India. Traditional architecture across the country, from thick-walled *havelis* to shaded courtyards and *jaalis,* solved thermal comfort long before electricity, and modern envelope science now provides those principles with measurable performance values.

Policy has begun to catch up. The Eco Niwas Samhita for residential and Energy Conservation and Sustainability Building Code (ECSBC) for commercial set minimum envelope performance for new buildings, and cool roofs have entered the heat action plans that states and cities prepare under the National Disaster Management Authority's (NDMA) guidance, where they double as a low-cost public health measure for households that cannot afford air conditioning at all.[36] The constraint is not knowledge but enforcement, which is taken up in Section 5.

India's diversity of climate is itself a design instruction. The National Building Code classifies the country into five climate zones, hot-dry, warm-humid, composite, temperate and cold, and the passive playbook differs for each.[37] In the hot-dry northwest, high thermal mass, small shaded openings, courtyards and evaporative cooling carry the load; along the warm-humid coasts, deep overhangs and cross-ventilation matter more than mass; composite-climate cities of the northern plains need both, switched by season; temperate zones ask little more than good shading; and cold regions invert the problem towards solar gain and insulation. The gains

34. United Nations Environment Programme (UNEP), Global Cooling Watch 2025, launched at COP30, Belem, November 2025. https://www.unep.org/resources/global-cooling-watch-2025
35. UNEP, Global Cooling Watch 2023: Keeping it Chill. https://www.unep.org/resources/report/global-cooling-watch-2023
36. National Disaster Management Authority (NDMA), Government of India, guidelines and advisories on heat wave preparedness and heat action plans. https://ndma.gov.in/Natural-Hazards/Heat-Wave
37. Bureau of Indian Standards (BIS), National Building Code of India 2016, classification of climatic zones for building design. https://www.bis.gov.in/standards/national-building-code/?lang=en

are quantifiable. The residential envelope standard caps heat transmittance through walls, windows and roofs, measured as Residential Envelope Transmittance Value (RETV), at 15 watts per square meter for all zones except cold.[38] Code-compliant commercial buildings are designed to use about 25 percent less energy than conventional practice, rising towards half at the most stringent tier.[39] And cool roofs promoted through state heat action plans keep indoor temperatures several degrees lower in the hottest zones, at negligible cost.[40]

4.2 Super-efficient appliances

For the cooling load that remains, the efficiency of the machine and the selection of the right air conditioning system with mixed-mode cooling meeting the varying annual cooling demands decide the bill and the emissions for the next decade of its life. India's Standards and Labelling program has quietly become one of its most effective climate policies. Star ratings for air conditioners are based on the Indian Seasonal Energy Efficiency Ratio (ISEER), which tests performance across the temperature profile of 54 Indian cities rather than at a single point. Thresholds tighten periodically, and the effect compounds: the efficiency of a 5-star split air conditioner has improved by around 61 percent since 2015.[41]

The latest revision took effect on 1 January 2026, raising the ISEER bands so that a machine rated 5-star in 2025 now carries a 4-star label, and extending mandatory labelling to chillers, cooling towers and deep freezers. A 5-star split unit must now achieve an ISEER above 5.6.[42] Alongside air conditioners, the shift from conventional to brushless Direct Current (BLDC) ceiling fans offers one of the cheapest efficiencies wins available, since fans remain the first and often the only cooling appliance in most Indian homes.

4.3 Low-GWP refrigerants and clean cooling technologies

The refrigerant inside the machine is the second half of the emissions story. India has been here before, and successfully: under the Montreal Protocol it phased out CFCs and is completing the phase-out of HCFCs through its HCFC Phase-out Management Plan, coordinated by the Ozone Cell of MoEFCC.[43] The same institutional machinery now carries the HFC transition under the Kigali Amendment, whose schedule for India is described in Section 5.

Technologically, the direction of travel is towards refrigerants with low global warming potential, including hydrocarbons such as R-290 and R-600a already used in refrigerators and increasingly in room air conditioners, and transitional lower-GWP blends in larger systems. Just as important as the choice of gas is its management: preventing leaks during operation and recovering and reclaiming refrigerant at servicing and end of life, tasks that depend directly on the trained technician workforce that ICAP prioritises. Not-in-kind technologies, from evaporative and radiative cooling to solar thermal systems, widen the toolbox further, particularly for dry climates and industrial applications.

4.4 District cooling and thermal energy storage

Where cooling demand is dense, producing it centrally beats producing it separately in every building. A district cooling system chills water at an efficient central plant and circulates it to connected buildings, replacing hundreds of individual units. UNEP's District Energy in Cities Initiative, which has worked with Indian cities on feasibility, finds that such systems can cut the electricity used for cooling by around half compared with conventional equipment, while removing noisy, heat-rejecting units from rooftops and streets.[44]

Thermal energy storage extends the logic across time. By making chilled water or ice at night, when power is cheaper and the grid is lighter and using it through the afternoon peak, storage converts cooling into a flexible load rather than a rigid one. For a power system whose evening peak is increasingly set by air conditioners, that flexibility is worth almost as much as the efficiency itself. In India, district cooling remains at an early stage,

38. BEE, Eco Niwas Samhita, Part I: Building Envelope, residential envelope transmittance value (RETV) requirement. https://keralaenergy.gov.in/files/pdf2022/ENS_2018_1.pdf
39. BEE, Energy Conservation Building Code 2017, efficiency tiers for commercial buildings. https://beeindia.gov.in/show_content.php?lang=1&level=2&ls_id=201&lid=327
40. National Disaster Management Authority (NDMA), guidelines on heat wave preparedness and heat action plans, including cool roof measures. https://www.pib.gov.in/PressReleasePage.aspx?PRID=2026709&reg=48&lang=2
41. BEE, Standards and Labelling programme; revised star rating table for room air conditioners with validity from 1 January 2026; PIB, Ministry of Power, release on air conditioner energy efficiency, May 2023. https://www.pib.gov.in/PressReleasePage.aspx?PRID=1923031
42. BEE, Standards and Labelling programme; revised star rating table for room air conditioners with validity from 1 January 2026; PIB, Ministry of Power, release on air conditioner energy efficiency, May 2023. https://www.pib.gov.in/PressReleasePage.aspx?PRID=1923031
43. Ozone Cell, MoEFCC, Government of India, on the Montreal Protocol, HCFC phase-out and the Kigali Amendment; UNEP Ozone Secretariat, Kigali Amendment FAQs. https://ozonecell.nic.in/
44. UNEP, District Energy in Cities Initiative. https://www.unep.org/topics/energy/district-energy

concentrated in planned business districts and new urban developments, but the pipeline of greenfield construction gives the country an opening that retrofit-bound economies do not have. Here, Government policies with a coordinated effort with Master Urban Development Planners for cities, constructive discussion with the owners and developers' fraternity and subsidies for those developers planning to develop in these "Central Cities" will pave the way for the implementation of Central District Cooling Systems, similar to the wave in the Middle East in the early 2000s.

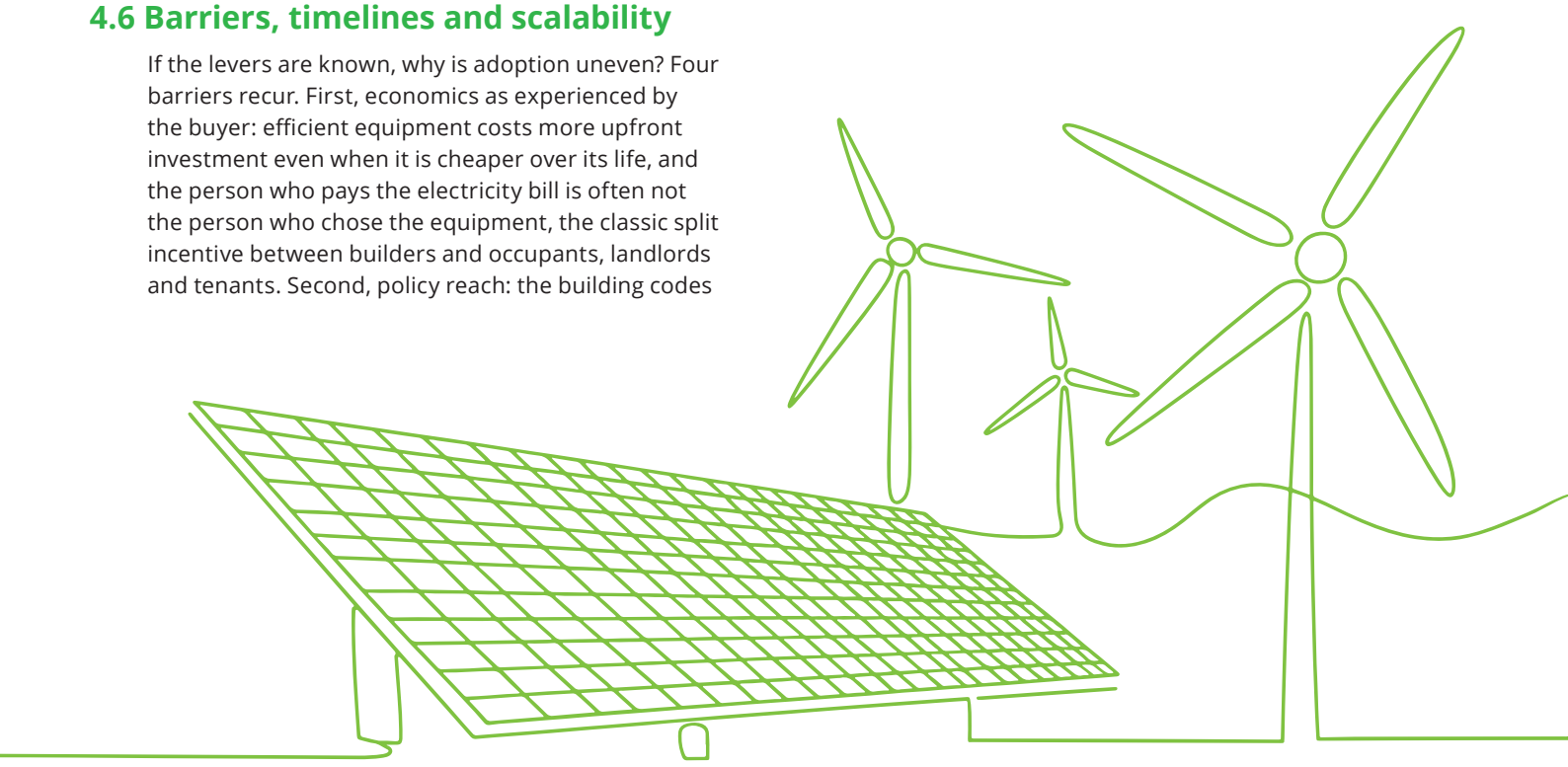
4.5 Renewable energy integration

Cooling and solar power are natural partners: the sun that creates the cooling load also generates the electricity to serve it. Rooftop solar is expanding rapidly under PM Surya Ghar: Muft Bijli Yojana, which targets installations in one crore households, and every panel installed offsets daytime cooling demand at the point of use.[45] Beyond buildings, solar-powered cold storages are extending the cold chain into farm clusters that the grid serves poorly, cutting both food losses and diesel use. The gap that remains is the evening, when cooling load peaks after solar output fades; bridging it is the joint work of storage, efficiency and the demand flexibility described above.

4.6 Barriers, timelines and scalability

If the levers are known, why is adoption uneven? Four barriers recur. First, economics as experienced by the buyer: efficient equipment costs more upfront investment even when it is cheaper over its life, and the person who pays the electricity bill is often not the person who chose the equipment, the classic split incentive between builders and occupants, landlords and tenants. Second, policy reach: the building codes that govern envelopes become binding only when states notify them, and enforcement capacity in urban local bodies is thin. Third, financing: efficiency and district cooling projects are small, distributed and unfamiliar to mainstream lenders, which is why models such as energy service companies, on-bill financing, bulk procurement and public-private partnership matter. Fourth, people: performance in the field depends on the installer and the service technician, and the skilling pipeline is still catching up with the size of the installed base.

The timelines differ by lever. Labelling revisions and fan replacement are delivered within a single appliance cycle. Envelope codes shape buildings that stand for 50 years, so every year of delayed notification locks in avoidable demand. District cooling requires urban planning horizons. A credible pathway therefore runs all the levers in parallel rather than in sequence, which is precisely what the policy architecture of the next section is designed to do.



45. PIB, Ministry of New and Renewable Energy, year-end review 2025, including progress under PM Surya Ghar: Muft Bijli Yojana. https://www.pib.gov.in/PressReleasePage.aspx?PRID=2209478

Policy, regulatory and market enablers

2019
India releases the world's first national cooling action plan (ICAP)

~61%
improvement in 5-star split AC efficiency since 2015 (BEE)

2028
India's HFC consumption freeze begins under the Kigali Amendment

5.1 The India Cooling Action Plan

The India Cooling Action Plan is the organising framework for everything in this paper. Released in 2019 with a twenty-year horizon to 2037–38, it was the first plan of its kind globally, and its premise is the one this paper shares: cooling is a developmental necessity, and the goal is thermal comfort for all, delivered sustainably. Its headline targets are set out below.[46]

Table 2: Headline targets of the India Cooling Action Plan by 2037-38

ICAP target, by 2037-38	Ambition
Reduce cooling demand across sectors	20% to 25%
Reduce refrigerant demand	25% to 30%
Reduce cooling energy requirements	25% to 40%
Train and certify servicing technicians	100,000 by 2022-23, with skilling to continue at scale
Recognise cooling as a thrust area of research	Yes, under the national R&D program

Source: MoEFCC, 2019.

5.2 Building codes: ECBC and Eco Niwas Samhita

The Energy Conservation Building Code (ECBC), first issued in 2007 and revised in 2017, sets minimum energy performance for larger commercial buildings across three tiers of stringency. Its residential counterpart, the Eco Niwas Samhita (ENS), addresses the building envelope in Part I of 2018 and electro-mechanical systems in Part II of 2021. The Bureau of Energy Efficiency (BEE) estimates that full implementation of the residential code could save about 125 billion units of electricity by 2030.[47]

As of 2026, India's building energy codes have undergone a significant transformation. The erstwhile **ECBC** and **ENS** have been comprehensively revised to expand their scope beyond energy efficiency and embrace the full spectrum of sustainability, with the objective of enhancing the overall sustainability performance of buildings.

46. Ministry of Environment, Forest and Climate Change (MoEFCC), India Cooling Action Plan, 2019. https://ozonecell.nic.in/wp-content/uploads/2019/03/INDIA-COOLING-ACTION-PLAN-e-circulation-version080319.pdf
47. BEE, Energy Conservation Building Code and Eco Niwas Samhita. https://econiwas.beeindia.gov.in/

Under the revised framework:

Commercial buildings are governed by **ECSBC.**

Residential buildings are governed by **ECSBC–Residential,** which replaces the earlier **ENS** as a unified residential sustainability code.

The revised ECSBC codes represent a paradigm shift from focusing solely on energy efficiency to adopting a holistic sustainability approach that encompasses energy performance, resource efficiency, environmental responsibility, occupant well-being, resilience and climate-responsive building design.

The codes share one decisive feature: they become mandatory only when a state notifies them and municipal by-laws give them teeth. Adoption across states has been uneven, which makes state notification and the capacity of urban local bodies to check compliance, the single most important unlock in India's cooling policy. A code on paper cools nothing.

5.3 Standards and labelling

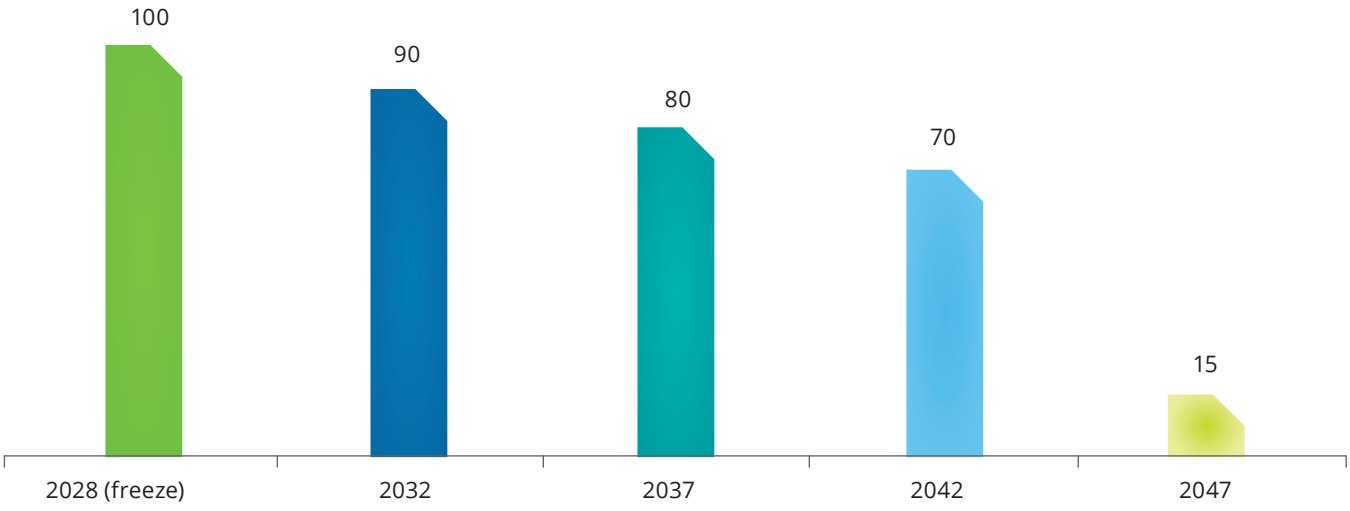
The appliance-side counterpart to the building codes is the Standards and Labelling program described in Section 4.

Its policy logic deserves emphasis here: by ratcheting ISEER thresholds on a published schedule, most recently from 1 January 2026, the program gives manufacturers a predictable innovation target and consumers a trustworthy signal, and it converts the entire market rather than only its premium segment. The extension of mandatory labelling to chillers, cooling towers and deep freezers from 2026 carries the same logic into commercial cooling.[48]

5.4 The Kigali Amendment and the HFC phase-down

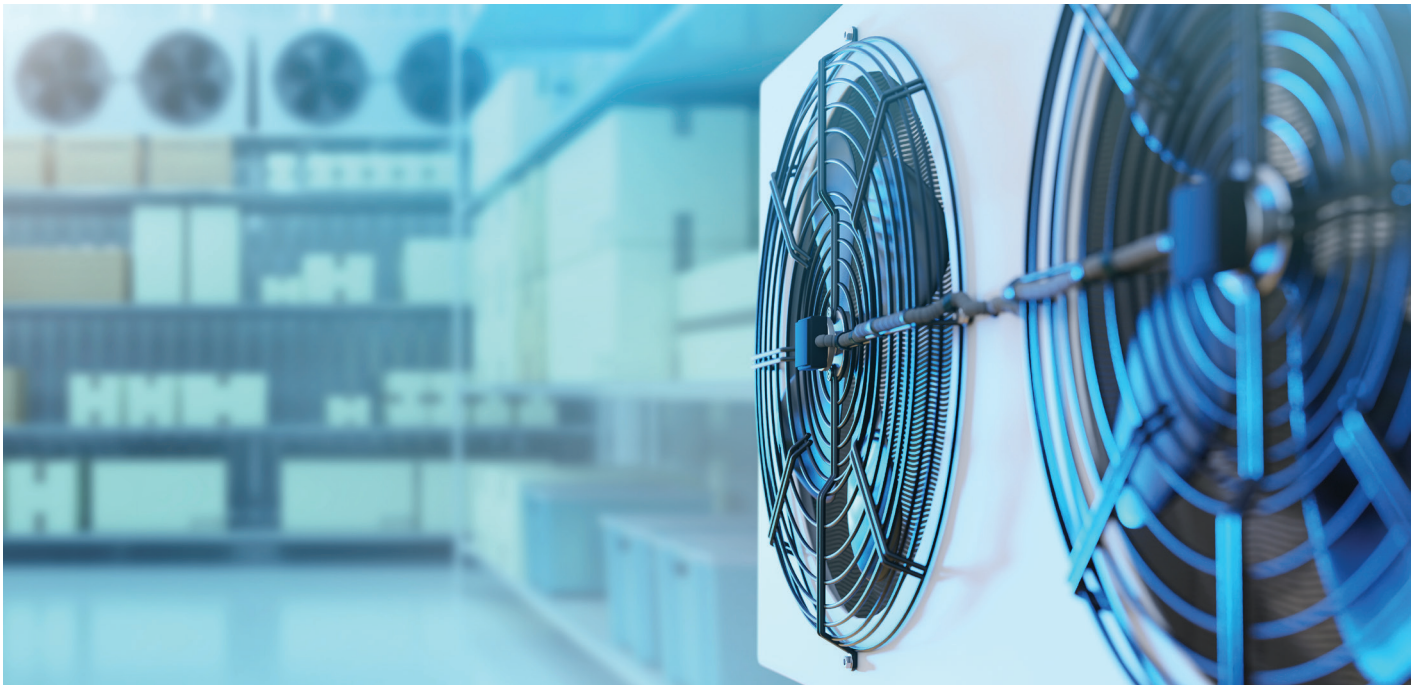
India ratified the Kigali Amendment to the Montreal Protocol in 2021. As an Article 5, Group 2 party, it will freeze HFC consumption in 2028 and then phase it down in four steps: to 90 percent of baseline by 2032, 80 percent by 2037, 70 percent by 2042 and 15 percent by 2047.[49]

Figure 5: India's HFC phase-down schedule under the Kigali Amendment (%)



Source: UNEP Ozone Secretariat; Ozone Cell, MoEFCC.

48. BEE, Standards and Labelling programme; revised star rating table for room air conditioners with validity from 1 January 2026; PIB, Ministry of Power, release on air conditioner energy efficiency, May 2023. https://www.pib.gov.in/PressReleasePage.aspx?PRID=1923031
49. Ozone Cell, MoEFCC, Government of India, on the Montreal Protocol, HCFC phase-out and the Kigali Amendment; UNEP Ozone Secretariat, Kigali Amendment FAQs. https://ozonecell.nic.in/



Globally, the Kigali Amendment is expected to avoid up to 0.5°C of warming by 2100, which makes the refrigerant transition one of the highest-leverage single actions available to any sector.[50] For India, the 2028 freeze is close enough to shape investment decisions today: every appliance designed, every production line tooled and every technician trained between now and then either eases the transition or adds to its cost.

The freeze is now barely two years away, and readiness is uneven across the value chain. India's baseline will be set by average HFC consumption over 2024 to 2026, with the freeze applying from 1 January 2028, so every design and procurement decision taken today already shapes compliance.[51] For equipment manufacturers, the task is to revise product portfolios towards lower-GWP refrigerants before quotas begin to bind, and many of the alternatives, from mildly flammable R-32 to flammable R-290, demand safety engineering and certified handling rather than drop-in substitution. At the dealer and installer level, leak-tight installation and refrigerant recovery at service determine whether rated performance survives contact with the field. The widest gap is the servicing workforce: the trade remains largely informal, and certified technicians are still a small fraction of those handling refrigerants daily. ICAP's target of training and certifying 100,000 technicians, and the training infrastructure built under the HCFC Phase-out Management Plan, provide the platform; the next two years must extend it to HFC-era skills at scale.[52]

5.5 States, financing and market mechanisms

Between national frameworks and household purchases sits the machinery that determines pace: state notifications of the codes, municipal by-laws, public procurement that specifies efficiency, and the financing that moves efficient equipment from premium to mainstream. Market models are emerging to close the affordability gap, including energy service company contracts that pay for equipment out of verified savings, cooling delivered as a service rather than an asset, on-bill and dealer financing and bulk procurement that uses volume to cut prices. Public–private partnership has a natural role in district cooling, where the concession structures familiar from other urban utilities apply directly. Moreover, as India's carbon market under the Carbon Credit Trading Scheme (CCTS) matures, verified cooling efficiency gains may earn a second revenue stream, strengthening every business case above.

Innovation completes the enabling environment. ICAP designates cooling as a thrust area for research, spanning low-GWP refrigerants suited to high ambient temperatures, not-in-kind cooling, smart controls and monitoring. The direction is deliberate: India does not intend merely to import the sustainable cooling transition, but to manufacture, service and export it.

50. UNEP Ozone Secretariat, frequently asked questions on the Kigali Amendment, on avoided warming of up to 0.5 degrees Celsius by 2100. https://ozone.unep.org/sites/default/files/FAQs_Kigali_Amendment.pdf
51. Ozone Cell, MoEFCC; UNEP Ozone Secretariat, Kigali Amendment FAQs, on the Article 5 Group 2 baseline (2024-2026) and the 2028 consumption freeze. https://ozone.unep.org/sites/default/files/FAQs_Kigali_Amendment.pdf
52. MoEFCC, India Cooling Action Plan, 2019; Ozone Cell, HCFC Phase-out Management Plan. https://ozonecell.nic.in/wp-content/uploads/2019/03/INDIA-COOLING-ACTION-PLAN-e-circulation-version080319.pdf

ESG reporting and disclosure as a catalyst for sustainable cooling

6.1 Cooling's low visibility in sustainability reporting

Sustainability reporting has become a standing feature of corporate disclosure. Investors, lenders, regulators and customers now expect structured information on environmental performance and climate risk alongside the financial statements. Yet within these disclosures, cooling occupies an oddly quiet position. Companies routinely report aggregate energy and emissions data, and climate risk assessments are increasingly common, but few reports let a reader see how cooling systems contribute to either. Given the demand trajectory described in Section 3, and the fact that cooling equipment sits at the intersection of energy use, refrigerant emissions, water consumption and physical heat risk, that invisibility is a gap. The challenge is less the absence of reporting mechanisms than the visibility of cooling within them. Cooling energy in a built environment space needs a regulatory mechanism for every building owner to obtain clearance for their emissions based on certain benchmarking similar to that in other countries. This will only pave the way for buildings to comply with annual energy consumption and carbon emission levels.

6.2 The evolving disclosure architecture

No single framework governs sustainability reporting globally. The Global Reporting Initiative remains the most widely adopted standard for reporting an organisation's impacts on the environment and society.[53] Climate disclosure has been shaped by the recommendations of the Task Force on Climate-related Financial Disclosures, organized around governance, strategy, risk management, and metrics and targets and that structure now underpins IFRS S2 issued by the International Sustainability Standards Board, which together with IFRS S1 is consolidating investor-focused sustainability disclosure worldwide. SASB standards add industry-specific materiality.[54] The frameworks were built for different purposes, but their coverage increasingly converges on the same themes: energy, emissions, risk, social and governance.

6.3 India's framework: BRSR and BRSR Core

India's disclosure landscape has been formalised by SEBI through the BRSR framework, which applies to the top 1,000 listed entities and structures disclosure around nine principles. BRSR Core has since sharpened the regime, mandating assurance of a defined set of key performance indicators in a phased manner and extending expectations into the value chain.[55] For cooling, the significance is practical: the energy, emissions and water indicators that BRSR requires are exactly the indicators through which cooling performance can be made visible, if companies choose to disaggregate them.

53. Global Reporting Initiative (GRI), GRI Standards, including GRI 103: Energy 2025. https://www.globalreporting.org/standards/
54. IFRS Foundation, IFRS S1 and IFRS S2 sustainability disclosure standards; Financial Stability Board, recommendations of the Task Force on Climate-related Financial Disclosures. https://www.ifrs.org/issued-standards/ifrs-sustainability-standards-navigator/ifrs-s2-climate-related-disclosures/
55. Securities and Exchange Board of India (SEBI), Business Responsibility and Sustainability Reporting by listed entities, May 2021; BRSR Core framework for assurance and ESG disclosures for the value chain, July 2023. https://www.sebi.gov.in/legal/circulars/jul-2023/brsr-core-framework-for-assurance-and-esg-disclosures-for-value-chain_73854.html

6.4 Where cooling sits in the frameworks

Table 3: Position of cooling within sustainability disclosure frameworks

Framework	Coverage of cooling and typical disclosure
GRI 103: Energy 2025	Explicit. Purchased and self-generated cooling consumption reported alongside electricity, heating and steam.
CDP climate questionnaire	Explicit. Purchased cooling within energy reporting; refrigerant emissions within Scope 1.
ESRS E1 (EU CSRD)	Explicit. Cooling energy consumption and associated emissions.
IFRS S2 / TCFD	Indirect. Climate-related risks, opportunities, resilience and transition planning.
SASB standards	Sector-specific. Energy management, HVAC performance and refrigerant management topics.
BRSR / BRSR Core	Indirect. Energy, GHG and water footprint indicators within which cooling can be disaggregated.

Source: GRI; IFRS Foundation; SEBI.

Table 4: Examples of cooling-related metrics used in sustainability reporting

Cooling-related metric	Unit
Cooling energy consumption	kWh per year
Cooling energy intensity	kWh per m^2 per year, or per unit of output
Refrigerant leakage rate	Percentage of refrigerant charge per year
Refrigerant-related emissions	tCO2e per year
Cooling water consumption and intensity	m^3 per year; m^3 per unit of output
Cooling-related capital expenditure	Reporting currency per year
Facilities covered by resilient cooling	Percentage of facilities
Cooling-related targets and monitoring	Qualitative and target-based

6.5 From disclosure to accountability and investment

The value of disclosure lies not in the report but in the visibility it creates. Consistent cooling metrics let the Boards set targets and track them, let providers of the capital integrate resource efficiency into lending decisions, and let large buyers extend expectations through their supply chains, the same mechanism that has driven renewable procurement. As assurance requirements under BRSR Core raise the bar for quality and accuracy of reported data, companies that measure cooling progressively will find it easier to finance cooling. Disclosure, in short, is how the sustainable cooling transition becomes investable.

Way forward: A strategic roadmap for India's cooling transition

The threads of this paper pull in one direction. Cooling demand in India will multiply; that is settled by demography, income and temperature. What remains open is its shape: how much of the demand is avoided by design, how efficiently the remainder is served, what the equipment contains, and what powers it. Answering those questions well requires an integrated, cross-sectoral effort, because the levers sit with different actors: envelopes with states and urban local bodies, appliances with BEE and manufacturers, refrigerants with the Ozone Cell and the servicing trade, finance with lenders and markets, and behavior with a billion consumers.

Figure 6: A three-horizon roadmap for India's cooling transition

Now to 2030: foundations	2030 to 2038: scale	Beyond 2038: convergence
• All states notify and enforce ECSBC and ECSBC–Residential, through building by-laws • Star-label ratchets continue on a published schedule; coverage widens across commercial cooling • Industry readiness for the 2028 HFC freeze: products, production lines, technician certification • Cool roofs and passive measures embedded in every heat action plan • Cooling metrics enter BRSR-linked corporate disclosure	• ICAP targets delivered: cooling energy down 25 to 40 percent against baseline • Low-GWP refrigerants mainstream across new equipment • District cooling and thermal storage standard in planned urban districts • Cold chain electrified and solar-extended into farm clusters • Carbon market revenue routinely strengthens efficiency business cases	• Cooling demand served overwhelmingly by non-fossil electricity • HFC phase-down advances towards the 2047 milestone of 15 percent of baseline • Near-zero-emission cooling aligned with the net zero 2070 pathway • India established as a global manufacturing and skills hub for sustainable cooling

Source: ICAP; Kigali Amendment schedule; India's NDC and net zero commitments.

7.1 Priorities for the decade

Five priorities stand out. Strengthen policy coherence and enforcement, because the codes and standards already written deliver nothing until states notify and municipalities verify. Scale financing, by mainstreaming the market models of Section 5 so that lifecycle cost, not sticker price, decides purchases. Build the innovation ecosystem, so that refrigerants, controls and not-in-kind technologies suited to Indian conditions are developed and manufactured here. Invest in people, because a certified, well-equipped servicing workforce is the difference between rated efficiency and real efficiency and between contained refrigerants and vented ones. Finally, make cooling visible, in corporate disclosure, in public procurement and in consumer information, because what is measured attracts capital and accountability alike.

7.2 A shared responsibility

Government sets the frame, but it cannot cool the country alone. Industry converts standards into products, buildings and services, and its engineering community, of which ISHRAE is the professional home, carries the technical judgement on which every project rests. Consumers, in the end, cast the deciding vote with every purchase, and deserve information that makes the efficient choice the easy one.

India approaches this transition with assets few countries can match: the world's first national cooling plan, a proven Montreal Protocol institution, a standards programme that ratchets on schedule, a renewable build-out running ahead of its targets and a construction pipeline young enough to be shaped. Cooling has become a need. Meeting that need sustainably is now one of the clearest opportunities India has to align development, public health and climate ambition in a single national project. The window to shape it is open, and it is open now.

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About ISHRAE

The Indian Society of Heating, Refrigerating and Air Conditioning Engineers (ISHRAE) was founded in 1981 at New Delhi by a distinguished group of HVAC&R professionals. Today, ISHRAE represents a strong network of over 25,000 members, including student members, and functions through 57 chapters and sub-chapters across the globe, with its headquarters located in New Delhi. It is led by a team of elected officers who are members of the Society working on a voluntary basis, collectively called the Board of Governors. In pursuance of its objectives, ISHRAE works in the areas of Research, Standards, Education and Training, and Publication of Technical Books and a Journal. It also organizes world-class annual exhibitions ACREX, REFCOLD, Cool Conclave, besides hosting technical seminars and conferences. ISHRAE is a responsible and socially-conscious Technical Society.

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