



MINISTRY OF AGRICULTURE AND ENVIRONMENT
BỘ NÔNG NGHIỆP VÀ MÔI TRƯỜNG



ENERGY
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ESCAP
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for Asia and the Pacific



Policy Brief

National Cooling Action Plan

Developing the National Cooling Programme in Viet Nam

JULY 2025



Environment and
Climate Change Canada
Environnement et
Changement climatique Canada



Australian Government
Department of Climate Change, Energy,
the Environment and Water



**DEVELOPING THE NATIONAL COOLING PROGRAMME
IN VIET NAM**

POLICY BRIEF

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July 2025

Colophon and disclaimer

Beneficiaries

Southeast Asia Energy Transition Partnership

14th Floor, 208 Wireless Road Building Lumpini, Bangkok 10330, Thailand | +669 8832 1614 | etp@unops.org

Department of Climate Change, Ministry of Agriculture and Environment, Viet Nam

10 Ton That Thuyet, Nam Tu Liem, Ha Noi, Viet Nam | +8424 3775 9430 | info@dcc.gov.vn

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Policy brief on Viet Nam's National Cooling Action Plan

Viet Nam's demand for cooling is rising rapidly as urbanisation, higher incomes, and hotter, longer heatwaves converge. Cooling already accounts for an estimated 20 % of global electricity use, and in Viet Nam the sector is projected to approach one-tenth of national greenhouse-gas (GHG) emissions by 2030 if left unchecked. Recognising the twin imperatives of protecting public health and meeting its international climate pledges, the Montreal Protocol and Kigali Amendment, the Paris Agreement, the 2050 net-zero target (NZT) announced at COP26, and the Global Cooling Pledge signed at COP28, the Government has drafted this National Cooling Action Plan (NCAP) to chart a course to sustainable, climate-resilient cooling through mid-century.

The Ministry of Agriculture and Environment (MAE) is the national authority responsible for international climate and ozone protection. To meet these commitments, the MAE has developed Viet Nam's National Cooling Action Plan (NCAP).

The NCAP of Viet Nam was developed using a structured, data-driven methodology, primarily consolidating the analytical work and findings from the two most recent technical assistance initiatives that assisted MAE in developing effective, sustainable cooling solutions:

- **ETP/UNOPS Collaboration:** This initiative, through a Memorandum of Understanding of the Energy Transition Partnership (ETP) under the United Nations Office for Project Services (UNOPS) with the Department of Climate Change (DCC) under MAE, led to the development of the National Green Cooling Program (NGCP). The NGCP primarily focuses on improving the EE of active cooling technologies and enhancing refrigerant management (hereafter called ETP/UNOPS Technical Assistant).
- **UN ESCAP and UNEP Passive Cooling Support:** This initiative of the United Nations Economic and Social Commission for Asia and the Pacific (UN ESCAP) and United Nations Environment Programme (UNEP) Cool Coalition promotes the adoption of passive cooling solutions to inherently reduce cooling demand. Key strategies include climate-responsive building design, nature-based solutions, and effective urban planning.

Under the Business-as-Usual (BAU) scenario, total cooling-related emissions reach 91.7 MtCO₂e in 2030, about 9.9 % of Viet Nam's national inventory, before doubling by 2050, peaking at 116 MtCO₂e in 2045. Indirect emissions from electricity generation dominate through 2030 (84 %), while direct refrigerant leakage overtakes after 2040 as the grid decarbonises. Residential and Commercial Air Conditioning (AC) is the largest and fastest-growing sub-sector, driven by the quadrupling of household AC ownership, followed by industrial refrigeration. Without intervention, these trends would undermine national EE goals and expose vulnerable communities to escalating energy bills and heat-related health risks.

Strategic interventions

To achieve sustainable cooling, NCAP therefore sets two overarching quantitative target groups:

- **EE enhancement** – Improve the average efficiency of new AC units by at least 50 % from a 2022 baseline by 2030, delivering electricity savings of 9.9 TWh in 2030 and 69.4 TWh in 2050 compared with BAU.
- **Climate-friendly refrigerant transition** – Cap hydrofluorocarbon (HFC) consumption below 14 MtCO₂e through 2028 and drive an 80 % cut by 2045, while completing hydrochlorofluorocarbon (HCFC) phase-out by 2040. Low-GWP refrigerants reach 90 % penetration in Residential AC, 60 % in Domestic refrigeration, and 80 % in Industrial refrigeration by 2030.
- The NCAP adopts the roadmap to 2050 that is stipulated in the National Plan on the Management and Elimination of ODSs and Controlled GHGs promulgated in 2024:

- 2024-2028 – Regulatory foundations: freeze HFC use, tighten Minimum Energy Performance Standards (MEPS), launch awareness campaigns, and establish the first refrigerant recovery centres.
- 2029-2034 – Financing & scaling high-impact solutions: achieve the first 10 % HFC cut, extend import bans, certify 8,000 technicians, and mainstream Cooling-as-a-Service, trade-in/recycling and Article 6.2 ITMO finance models.
- 2035-2039 – Technology deepening: accelerate MEPS updates, expand recovery quotas, and introduce mandatory leak-testing for large systems.
- 2040-2045 – Full circularity: reach the 80 % HFC reduction milestone; all new products meet GWP ceilings; end-of-life refrigerant recovery becomes universal.

Governance framework and financial models

The NCAP is anchored in existing climate legislation and will be overseen by an inter-ministerial mechanism led by MAE for refrigerants and MOIT for EE. A dedicated monitoring, reporting and verification system tracks progress and enables adaptive management. Business models have been identified as immediately actionable under Vietnamese market conditions:

- Cooling-as-a-Service (CaaS) – energy-service companies fund equipment and are repaid from shared energy savings.
- Trade-in/recycling schemes – scrap collection integrated into formal recovery channels, supported by concessional loans and producer-responsibility levies.
- ITMO generation – a proposed pilot business model of 100,000 high-efficiency room ACs can yield about 0.135 MtCO₂e of credits; at USD 40 tCO₂e, this can raise roughly USD 5.4 million for consumer rebates. End-of-life R-22 recovery adds additional revenue streams.
- PPPs and green bonds finance urban cooling and sustainable cooling initiatives, de-risked by tax incentives and credit guarantees.

Expected impacts

Implementing the NCAP is expected to result in positive and quantifiable impacts by 2050 in order to achieve sustainable cooling in the country:

- Energy – Cumulative electricity savings exceeding 800 TWh, easing grid strain.
- Emissions – A 97 % reduction in cooling-sector GHGs relative to BAU.
- Health – Reduced heat-wave hospitalisations and protection for vulnerable groups.
- Industry competitiveness – Clear demand signals spur domestic manufacturing and certified service exports.
- Climate finance inflows – Scaled ITMO sales and green-bond issuance attract foreign capital.

Conclusion

Viet Nam's NCAP aligns with the cooling action plans in other developing countries: it links passive design with refrigerant management and enhancing EE, embeds MRV and capacity-building, and positions Article 6 finance as a core funding stream. This alignment boosts investor confidence and facilitates South-South knowledge exchange.

The NCAP translates Viet Nam's international climate commitments into a detailed, time-bound programme that freezes HFC growth this decade, halves cooling energy intensity by 2050, and drives direct emissions towards zero. By integrating policy reform, technology road-mapping, innovative finance and robust governance, the plan offers a clear blueprint for investment and implementation, positioning Viet Nam among global front-runners in sustainable cooling.



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