



SUSTAINABLE URBAN Cooling in Viet Nam Cities





The United Nations Environment Program (UNEP) and the Global Green Growth Institute (GGGI), in close cooperation with the Ministry of Agriculture and Environment (formerly Ministry of Natural Resources and Environment (MONRE)), are implementing a project on sustainable cooling in urban areas in Viet Nam. Drawing on international best practices, the project provides on-the-ground support to help pilot cities “Beat the Heat”. The project is developed in the framework of UNEP-led Cool Coalition.

The Challenge: Extreme Heat in Viet Nam Cities

Extreme heat is emerging as one of the deadliest climate-related threats globally. Recognizing this, UN Secretary-General António Guterres has issued a Call to Action on Extreme Heat, urging nations to protect vulnerable populations, safeguard workers, enhance societal resilience through data and science, and limit global temperature rise to 1.5°C.

Prolonged heat waves and extreme weather events have negative impacts on human health, particularly among vulnerable populations such as women, children, the elderly and those with underlying medical conditions. Additionally, people have to face heat stress when working under high temperature and humidity leading to fainting, heat exhaustion and, more seriously, heat stroke.

Viet Nam is particularly vulnerable to these challenges. Coupled with rapid urbanization, population and economic growth, and intensifying urban heat island effects in Vietnamese cities,

the cooling demand continues to increase. However, the use of cooling systems, such as air conditioners, fans, and coolers, is responsible for significant global greenhouse gas emissions. These cooling systems are estimated to contribute to 40% of residential electricity demand and 25-40% of electricity demand in the service and commercial/public sectors. Indirect cooling also contributes to climate change by increasing electricity demand, which is largely still generated from fossil fuels, and by releasing ozone-depleting substances and greenhouse gases that have a higher global warming potential than CO₂ emissions.

Therefore, the need for sustainable cooling solutions is increasingly urgent, both in Viet Nam and globally. However, current sustainable cooling solutions face challenges due to limited consumer awareness and high implementation costs.

The Solution: A Comprehensive Framework for Cooling Cities

A whole-systems approach to sustainable urban cooling needs to be deployed to adapt cities to the rising heat while reducing greenhouse gas emissions. In Viet Nam, achieving sustainable cooling requires a unified effort from stakeholders in various areas, such as developing national policies and regulations focused on sustainable cooling and choosing appropriate technology as well as securing necessary domestic and international financial support to achieve the goals of the Montreal Protocol and the Kigali Amendment.

In response, the United Nations Environment Programme (UNEP) and the Global Green Growth Institute (GGGI), in close cooperation with the Ministry of Agriculture and Environment (MAE, formerly Ministry of Natural Resources and Environment, or MONRE) are implementing the *Sustainable Urban Cooling in Viet Nam Cities* project. This initiative aims to mitigate urban extreme heat and improve climate resilience through policy support, the development of pre-feasibility studies and Urban Heat Action Plans in pilot cities, and support to unlock climate finance. By aligning with Viet Nam's Nationally Determined Contributions and the country's commitment under the Paris Agreement and the Global Cooling Pledge, the project contributes to fostering a sustainable and resilient urban future.

Viet Nam's National Cooling Action Plan (NCAP): A Roadmap for Sustainable Cooling

Initially developed by the Ministry of Industry and Trade and the World Bank, Viet Nam's National Cooling Action Plan's scope is expanding to pilot the NCAP methodology with inter-ministerial collaboration including MAE and with the support of UNEP, ESCAP and the Energy Transition Partnership.

The NCAP outlines a clear pathway to meet Viet Nam's growing cooling demand while supporting its 2030 NDCs and 2050 Net-Zero targets. It promotes energy-efficient cooling technologies, low-GWP refrigerants, and improved building performance, alongside recommendations for urban cooling policies and planning strategies. The plan consolidates both active and passive cooling measures, ensuring that efficient technologies are complemented by design solutions that reduce the need for mechanical cooling. The NCAP enables a cohesive national approach and offers a practical roadmap for policymakers, industry, and partners to advance sustainable and climate-resilient cooling. It positions Viet Nam as a regional leader in climate-friendly cooling for a rapidly developing economy.

Leading the Way: Can Tho's Flagship Urban Cooling Action Plan

To help "Beat the Heat" in Viet Nam's urban areas, UNEP and GGGI under the framework of the Cool Coalition, with financial support from the Clean Cooling Collaborative, work closely with the MAE to support pilot cities.

Can Tho, one of the pilot cities, is a rapidly urbanizing Mekong Delta city of 1.24 million faces intensifying heat stress: maximum air temperatures deviation of 6 °C between central districts and rural areas, and thermal comfort is unmet 76% of the year. Climate projections indicate heatwave days could rise six-fold by 2100, jeopardizing public health (14% rise in hospitalization), labor productivity (up to 47% loss), and straining energy systems. With cooling demand in Viet Nam's cities set to grow 34% by 2030, an integrated, a locally tailored Urban Cooling Action Plan (UCAP) is critical to strengthen cities' resilience by mitigating the urban heat island effect, improving thermal comfort, and curbing runaway energy and emissions growth.

The Can Tho UCAP was developed by project partners with a comprehensive spatial analysis of extreme heat and cooling. The findings were synthesized, and recommendations were developed for short-, medium-, and long-term interventions across urban planning, nature-based solutions and passive cooling strategies, building design, and financing streams, with actionable cooling governance structure, financing plans, and monitoring indicators.

Soon to be published, the Can Tho UCAP demonstrates how evidence-based planning, cross-sector collaboration, and targeted interventions can transform urban resilience to extreme heat—offering a blueprint for other cities confronting the dual challenges of rapid urbanization and climate change.

The UCAP methodology piloted in Can Tho—spanning baseline assessment to implementation guidance—can be tailored to diverse city contexts and multiple levels ranging from city to ward. It provides a holistic methodology for cities looking to mitigate heat, improve cooling access, and cut emissions.



Attracting Investment for Cooling Projects

In pilot cities, high-impact urban projects have been identified and compiled into an investment pipeline to advance passive cooling strategies, including nature-based solutions, at both building and urban scale.



Can Tho city authorities selected one urban development project—the New Urban Area and Centralized IT Park—for a pre-feasibility study assessing the integration of sustainable cooling solutions. The study evaluates passive cooling strategies and nature-based solutions, analyzing their cooling potential and cost-effectiveness with the aims to inform decision-making and guide investment in climate-resilient urban planning.

In this context, UNEP and GGGI are collaborating with the Can Tho Development Investment Fund (CADIF) which has committed to cover 20% of the project. The city aims to leverage the pre-feasibility study to attract additional domestic investment.

Cities can improve the health and well-being of their residents and build long-term resilience to protect those most vulnerable to extreme heat, support local productivity and economies, and contribute to city and state climate targets. The case of Can Tho illustrates that by showing their leadership on climate change, cities can also attract investors to develop and finance these solutions while encouraging local skill development and manufacturing capabilities within their cities.

Additionally, the program is developing recommendations for financial mechanisms to support sustainable cooling through the Viet Nam Environment Protection Fund (VEPF) aimed at mobilizing resources to overcome investment barriers and support sustainable urban cooling initiatives in the country.



Scaling Up: The ASEAN Passive Cooling Roadmap

Similar to Viet Nam, other ASEAN countries are witnessing a rapid urban expansion and escalating temperatures. Between 2015 and 2050, built-up floor space is expected to more than double across the region. By 2080, it is projected that over 1.1 billion urban residents in ASEAN will be exposed to 30 days or more of extreme heat each year. This growth, if not managed sustainably, could lock us into high-emissions pathways and increase heat-related vulnerabilities.

Passive cooling strategies can reduce energy use by up to 20% and offer significant financial advantages, with average life-cycle cost savings of around 50%. Incorporating passive cooling strategies into urban planning and building design is not just a sustainability measure — it's an investment in resilience, equity, and long-term economic efficiency.

Within the UNEP-led Cool Coalition & EmPower frameworks, UNEP and ACE with partners ESCAP are developing a comprehensive roadmap to promote the adoption of passive cooling policy and practice in the ASEAN region. This roadmap will be developed based on the best practices in the region and draw from successes from Viet Nam.



For More Information,
Please Email UNEP-Coolcoalition@Un.org
Or Visit:
coolcoalition.org
gggi.org