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Cool Coalition

in collaboration with:

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and technical expertise by:

Alliance for an Energy Efficient Economy

NATIONAL COOLING ACTION PLAN METHODOLOGY

KIGALI COOLING EFFICIENCY PROGRAM

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U4E United for Efficiency

OzonAction UN ENVIRONMENT

Holistic Methodology for Developing a National Cooling Action Plan

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Note to the Reader

This document presents a holistic methodology for developing a National Cooling Action Plan (NCAP) that can be adapted to fit a country's specific context and priorities. The Methodology outlines a process that is within the reach of most countries today and can enable immediate and prioritized action towards climate-friendly cooling. Keeping in mind, the diverse stakeholders and their interests, the document is segmented into the following sections:

Section A. Context & Summary: Tailored for government entities and policymakers, this section presents a high-level overview of the cooling challenge and sets the context for the need for a national-level cooling action plan. It outlines the scope and structure of the proposed NCAP Methodology, provides an overview of the NCAP development process outlined in the Methodology, and shares important considerations that can support a robust NCAP development pathway for countries.

Section B. The NCAP Methodology: This section presents a detailed discussion of the NCAP Methodology describing each step and its objective and highlighting important considerations along the way. This section is intended for international and national consultants or entities who may be involved in the development or support of an NCAP.

Appendix. Introduction to the Data Assessment Frameworks: Tailored for the core data collection and analysis team, the Data Assessment Frameworks provides valuable guidance on how to do data collection and analysis for each sector – an integral and vital part of NCAP development. The frameworks are available online for download—as introduced in the Appendix—and should be used in conjunction with the detailed steps of the Methodology presented in Section B.

The NCAP Methodology was developed by the UNEP-led Cool Coalition, Economic and Social Commission for Asia and the Pacific serves as the United Nations (UN ESCAP) in collaboration with Alliance for an Energy Efficient Economy (AEEE) together with and built on the expertise of the Cool Coalition's NCAP Working Group facilitated by THE KIGALO Cooling Efficiency Programme (K-CEP). In addition to the core group of AEEE, KCEP, UNEP, UN ESCAP the NCAP working group consists of Birmingham University / Heriot Watt University, CLASP, Energy Foundation China, German Corporation for International Cooperation (GIZ), UNEP's OzonAction, Sustainable Energy for All (SEForALL), United Nationas Development Programme (UNDP), UNEP's United For Efficiency (U4E), and the World Bank Group (WBG).

SECTION A. CONTEXT & SUMMARY

The Cooling Challenge

Our world is characterized by climate change-induced warming, population growth, and rapid urbanization and development trends that are further intensifying the warming effects. Acting in parallel, these drivers are leading to an unprecedented increase in the global demand for cooling, including for over one billion people who face serious risks because they lack adequate access to cooling to support essential needs such as for health and wellbeing, productivity, and nutritious food.[1] There is significant and growing use of cooling in several sectors of the economy for satisfying critical needs related to thermal comfort in buildings, agriculture and food supply chains, storage and transfer of vaccines and medical products, transport, and industrial processes. It is estimated that the current baseline of an estimated 3.6 billion cooling appliances in use will jump nearly 4-times by 2050[2] if cooling is provided to everybody who needs it – and not just those who can afford it.

The current market behavior defaults to addressing the rising need for cooling largely with a greater dependence on mechanical means for delivering air-conditioning and refrigeration. These cooling systems are generally very energy intensive and largely reliant on fossil-fuel-generated electricity and refrigerants harmful to the climate –– thereby further multiplying the emissions and increasing global warming. In fact, cooling is the fastest growing GHG contributor in the world. Under a business-as-usual scenario, it is estimated that the energy requirement for cooling our buildings alone would jump by 300 percent ––to 6,200 Terrawatt-hour (TWh) in 2050––and the associated stock of room air conditioners will cumulatively emit enough GHG emissions to warm the planet by 0.5°C by 2100.[3]

On one hand, the growth in cooling is inexorably linked with the development needs and socio-economic progress of nations. On the other hand, the current cooling practices––and the associated additions to grid infrastructure and increased greenhouse gas emissions––are perpetuating a downward spiral where cooling is further warming our world necessitating even more cooling, and disproportionately impacting those that do not have adequate financial resources necessary to procure mechanical cooling solutions. And herein lies the cooling challenge!

Why Cooling Action is Needed at a National Level

The need of the hour is to equitably serve the growing demand for cooling without causing further warming. This requires targeted policy, technology, and market levers to enable holistic solutions to address cooling, leveraging synergies across sectors, utilizing passive cooling to the fullest extent possible and meeting the mechanical cooling needs with the lowest possible energy and emissions footprint. The benefits of doing this are far-reaching! Improving the cooling industry's energy efficiency together with the transition to climate-friendly refrigerants can reduce GHG emissions by 210-460 billion tons of CO_2e over the next 4 decades – these GHG emission cuts will be important to limit the global temperature rise to 1.5°C.

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1 SEforALL. 2020. "Chilling Prospects: Providing Sustainable Cooling for All". https://www.seforall.org/sites/default/files/SEforALL_CoolingForAll-Report.pdf.

2 UNEP-IEA. 2020. “Cooling Emissions and Policy Synthesis Report”. https://www.unenvironment.org/resources/report/cooling-emissions-and-policy-synthesis-report

3 Rocky Mountain Institute. 2018. “Revolutionizing the Air Conditioner Industry to Solve the Cooling Challenge”. Colorado. https://globalcoolingprize.org/solving_the_global_cooling_challenge/

Given its cross-cutting nature, addressing cooling holistically requires engaging multiple public and private sector stakeholders, whose interests may not always align. National Cooling Action Plans (NCAPs) can be an important instrument to drive such alignment by establishing strong political will and meaningful nationwide directives, leveraging inter-linkages with national and international agendas, and setting direction and actionable targets for addressing access to cooling while reducing its environmentally harmful impacts and maximizing the socioeconomic benefits. As an important macro-level policy tool, NCAPs assist countries in identifying pathways to integrate comprehensive action to reduce energy consumption and related emissions from cooling, aligned with plans related to emissions from refrigerant transition. They also offer an opportunity for a country to consider how to improve access to cooling and address several Sustainable Development Goals (SDGs) that are closely interlinked with cooling, such as: (2) Zero Hunger, (3) Good Health and Well-being, (7) Affordable and Clean Energy, (8) Decent Work and Economic Growth, (10) Reducing Inequality, (11) Sustainable Cities and Communities, (13) Climate Action.

Development and implementation of NCAPs holds the unique potential: to integrate policies otherwise addressed separately and manifest integrative benefit; and, to advance three internationally agreed goals simultaneously—the Paris Climate Agreement, the UN Sustainable Development Goals, and the Montreal Protocol's Kigali Amendment—while pursuing national priorities and socioeconomic benefits.

Development of a Holistic Methodology: Underlying Approach and Objective

While there are many benefits of an NCAP, including long-term socio-economic benefits, developing one is a significant undertaking, both in terms of time and effort. The endeavor to create a holistic Methodology for NCAP is a step towards reducing this time and effort, by providing an overarching process as a guiding framework, and sharing important considerations to support the process.

Existing NCAP development methodologies demonstrate a variety of approaches ranging from comprehensive, data-rich, resource-intensive NCAPs to quick turnaround initiatives targeted on establishing the foundations and addressing some specific priority sectors. Both sides of the spectrum represent a step in the right direction and the underlying takeaway is that there is no one-size that fits all. Given the urgency of the cooling challenge, and the importance of timely interventions, for some countries starting small or in phases may have its merits over delayed action for the sake of comprehensiveness. The key determining factor should be: *what are the immediate priorities in the country and what is the opportunity cost of delayed action?*

Thus, the NCAP Methodology takes the approach of—**think holistically and plan strategically**. This approach implies that the inter-linkages and synergies between the various aspects of cooling should be kept in perspective, and any steps towards climate-friendly cooling, even if applied in phases, should be designed with this integrated perspective of cooling. While a comprehensive NCAP would be an ideal aspirational goal where possible, a country should strategically design the NCAP to best balance it's pressing priorities with its resources and capacities, and to minimize the opportunity costs of business-as-usual cooling, while keeping an integrated view of cooling in perspective.

With this underlying approach in view, the proposed Methodology draws upon the shared experiences of several NCAPs developed thus far and strives to create a uniform guide map for NCAP development that can be readily tailored for use by any aspiring country. The underlying objective of the Methodology is to:

- ***Chart a holistic but modular Methodology for the development of National Cooling Action Plans that covers cooling comprehensively, including various sectors and end-uses, and considers access to cooling for all.***

The term 'modular' implies that while the NCAP Methodology will have a common development process, it will lend itself to customization based on a country's unique context and circumstances including priorities, resources, data availability, and preferred timeframes. This will allow a country a range of workable options, such as: to undertake a comprehensive NCAP, or to develop it in meaningful (and inter-connected) phases depending on their circumstances.

To support this objective, two foundational characteristics are imbued in every step of the Methodology:

- Adaptability is critical: Recognizing that there is no cookie-cutter solution to an NCAP, the Methodology is meant to provide guidance while affording NCAP development teams high levels of discretion and flexibility to adapt to countries' unique context and needs characterized by national objectives, priorities, and development goals, the availability and quality of data and existing knowledge-base, and the availability of financial and human resources.
- Simplification and prioritization are important: The methodology must be simple and logical enabling countries to prioritize (and/or sequentially select) the scope based on their resources, capability, and immediate priorities. In particular, the data collection—which is an intrinsic part of the NCAP development—must be kept relevant and simple; excessive data requests can overwhelm the stakeholders and even cause resistance and add unnecessary complexity.

Scope and Structure of the NCAP Methodology

Understanding cooling needs

Countries will have a varying level of access to cooling across their population: that is, while the cooling demand is delivered, or 'met', for some portion of the population, there is part of the population that lacks access to cooling. Typically, the pace and quantity of the growth in cooling demand will be due to a combination of factors such as urbanization, economic progress and increased purchasing power, and