Bangladesh National Cooling Plan for the Implementation of the Montreal Protocol

Ozone Cell, Department of Environment
Ministry of Environment Forest and Climate Change

Bangladesh National Cooling Plan for the Implementation of the Montreal Protocol

Ozone Cell, Department of Environment

Ministry of Environment Forest and Climate Change

KIGALI
COOLING EFFICIENCY PROGRAM

Department of Environment

UNDP

Prepared by:

Ozone Cell
Department of Environment
Ministry of Environment, Forest and Climate Change
Poribesh Bhaban
E-16, Agargaon, Sher-e-Bangla Nagar
Dhaka-1207, Bangladesh

December 2021

Contents

Acronyms and Abbreviations

AC	Air conditioner or air conditioning
ASHRAE	American Society of Heating, Refrigerating and Air-Conditioning Engineers
BBS	Bangladesh Bureau of Statistics
BCCSAP	Bangladesh Climate Change Strategy and Action Plan
BHBFC	Bangladesh House Building Finance Corporation
BIDS	Bangladesh Institute of Development Studies
BMD	Bangladesh Meteorological Department
BNBC	Bangladesh National Building Code
BRAMA	Bangladesh Refrigeration Air Condition Merchant Association
BRTA	Bangladesh Road Transport Authority
BUET	Bangladesh University of Engineering and Technology
CAGR	Combined annual growth rate
CPD	Centre for Policy Dialogue
DoE	Department of Environment
EE&C	Energy efficiency & conservation
EECMP	Energy Efficiency & Conservation Master Plan
GHG	Greenhouse gas(es)
GoB	Government of Bangladesh
GSP	Good service practices
GWP	Global warming potential
HBRI	House Building Research Institute
HCFC	Hydrochlorofluorocarbon
HFC	Hydrofluorocarbon
HPMP	HCFC Phase-Out Management Plan
HVAC	Heating, ventilation and air conditioning
LGED	Local Government Engineering Department
MAC	Mobile air conditioner (or air conditioning)
MDI	Metered dose inhaler
MEPS	Minimum energy performance standards
MLF	Multilateral Fund
MoEFCC	Ministry of Environment, Forest and Climate Change
MPEMR	Ministry of Power & Energy and Mineral Resources
Mtoe	Million tonnes of oil equivalent
NBR	National Board of Revenue
NDC	Nationally Determined Contributions
NHI	National Housing Institute
NOU	National Ozone Unit
NCP	National Cooling Plan
ODP	Ozone depleting potential
ODS	Ozone depleting substances
OEM	Original equipment manufacturer

PKSF	Palli Karma-Sahayak Foundation
PWD	Public Works Department
R&D	Research and development
RAC	Refrigeration and air conditioning
RAJUK	Rajdhani Unnayan Kartripakkha
REHAB	Real Estate and Housing Association of Bangladesh
RHD	Roads and Highways Department
SDG	Sustainable Development Goals
SME	Small and medium enterprise
SREDA	Sustainable and Renewable Energy Development Authority
TEAP	Technology and Economic Assessment Panel
Toe	Tonnes of oil equivalent
UNDP	United Nations Development Programme
UNEP	United Nations Environment Programme
UNFCCC	United Nations Framework Convention on Climate Change
VRF	Variable refrigerant flow

Executive Summary

Context

Cooling is a developmental need as well as a cross-sector requirement. In future, demand for cooling in Bangladesh will grow due to global warming, the rapid pace of economic growth, rising per capita income, population growth, and rapid urbanization.

Much of the country's cooling requirement is met using refrigeration and air-conditioning (RAC) technologies. These are based on the use of either synthetic or natural refrigerants. Most synthetic refrigerants have either an ozone depleting potential (ODP) and/or a global warming potential (GWP), and they are regulated for phasing out/phasing down to agreed schedules under the Montreal Protocol on Substances that Deplete the Ozone Layer, to which Bangladesh is a party. Bangladesh accessed the Montreal Protocol in August 1990 and ratified all the subsequent amendments. The Kigali Amendment to the Montreal Protocol provided an opportunity for maintaining and/or enhancing energy efficiency, while transitioning away from hydrofluorocarbons (HFCs). A significant proportion of total carbon emissions from RAC equipment is due to energy consumption, with the rest due to refrigerant leakage.

The building sector is one of the most important sectors of the economy, and its growth is linked with the country's development. The built environment will grow with rapid urbanization, leading to a growth in need for air conditioning and refrigeration. Energy efficiency in buildings is linked with the reduction of cooling requirements and energy consumption, thus delaying the phasing in of refrigerant-based RAC equipment.

Economic growth has led to a rapid increase in the automobile sector, and thus a significant rise in demand for transport air-conditioning, especially in-car air-conditioning. Cold chain and refrigeration – for the preservation of perishable foods, such as fruit and vegetables, dairy and fish and meat – has emerged as another large, rapidly expanding sector. There is scope for enhancing the energy efficiency of the cold-chain sector, while using new refrigerants which are economically viable and environmentally sustainable. The challenge for the industry is to move towards energy-efficient and