NAMAs in the refrigeration, air-conditioning and foam blowing sectors

Background

The fast growing refrigeration, air-conditioning and foam blowing sectors have a huge and growing potential for greenhouse gas (GHG) emission reductions. In particular, electricity consumption from air-conditioning and refrigeration constitutes a main and significant driver for energy consumption in many developing countries. Most applications and systems in these sectors currently use ozone depleting hydrochlorofluorocarbons (HCFCs) as cooling or foam blowing agents (typical applications include domestic and commercial installations, such as chillers, heat pumps, air-conditioners, and refrigeration equipment). HCFCs will be phased out under the Montreal Protocol on Substances that Deplete the Ozone Layer within the next years. However, the most common replacement options for HCFCs are hydrofluorocarbons (HFCs) which do no longer deplete the ozone layer but have a very high global warming potential (GWP), typically between 700 and 4000 times that of CO_2 [1] and are regulated under the Kyoto Protocol to the United Nations Framework Convention on Climate Change (UNFCCC). Recent projections show a massive growth in HFC emissions in developing countries. If no measures are taken to introduce climate-friendly alternatives already now, HFC emissions could increase up to 2.8 GT CO_2 equivalents by 2050. This corresponds to approx. 7% of the global GHG emissions projected according to a recent study by the German Environmental Protection Agency.
Today there are many alternative technologies available with low-GWP refrigerants and foam blowing agents. Many of these technologies have significantly improved energy efficiencies. These technologies are currently not widely used in developing countries (Non-Annex-1-Countries under the Kyoto Protocol), as cheap but environmentally harmful fluorinated gases are still dominating.
Nationally Appropriate Mitigation Actions (NAMAs) are voluntary emission reduction measures by developing countries that are directly reported to the UNFCCC Secretariat. NAMAs offer a big potential for developing countries to introduce low carbon technologies in the addressed sectors and to significantly reduce GHG emissions.

Project Description

As part of its International Climate Initiative the German Federal Ministry for the Environment, Nature Conservation and Nuclear Safety funds innovative projects in partner countries which contribute to reducing GHG emissions or support adaption to the impacts of climate change. Under this initiative four selected partner countries are currently supported with the development of their national strategies and preparation of requests for funding of NAMA proposals in the refrigeration, air-conditioning and foam sectors.
On a country level, the project comprises the following activities:

- Assessment of the HFC consuming sectors, development of an inventory of emission data/ production and consumption data
- Evaluation of technology and development needs in the refrigeration, air-conditioning and foam sectors
- Establishment of a technology road map to show major milestones towards the development of a low carbon pathway in the selected subsectors

1 According to the 4th Assessment Report, IPCC

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- Selection of best options for mitigation actions in major subsectors and selection of priority areas
- Assessment of mitigation costs and identification of financial support mechanisms
- Capacity development for acceleration of technology innovation and implementation
- Propose and initiate technology demonstration projects as part of the mitigation plan
- Support for the formulation of national strategies and mitigation plans in close cooperation with private and public stakeholders (industry, private investors) in order to transfer state-of-the-art climate-friendly technologies
- Development of appropriate target benchmarks, indicators, monitoring, reporting and verification building on the current reporting for established GHG inventories
- Support to submit NAMA proposals at the UNFCCC registry

On a global level, a handbook for Non-Annex-1 Countries is currently under development to provide guidance on how to design step-by-step and implement NAMA proposals on a country level.

Project Impact

The domestic HFC mitigation strategies, including direct and indirect emission reductions from the relevant applications, which are developed and implemented within this project, will effectively reduce the dependency on HFCs and carbon-intense energy consumption in the long-term and lead to a sustainable shift to climate-friendly and highly energy-efficient technologies.
The partner countries will have improved access to state-of-the-art technologies with significant energy savings and lower operating costs through the use of cheaper low-GWP refrigerants and foam blowing agents and efficient cooling system technology. This will lead to long-term GHG emission reductions through both indirect and direct emission savings which will contribute to the partner countries' commitments to mitigate emissions under a post-Kyoto regime.
The project will also initiate access to new sources of funding and establish the groundwork for international financing support (through means such as international, regional or bilateral concessional financing, access to the Green Climate Fund, bankable carbon revenues or other ways of co-financing).
The NAMA plans will substantially build on the already existing sector activities under the Montreal Protocol related to the HCFC phase-out in the refrigeration and air-conditioning sector and thus prevent a phase-in of yet another damaging chemical by leapfrogging HFCs and by directly moving to low-GWP alternatives, whilst bypassing inefficient system designs.
The NAMA proposals will include the establishment of an appropriate MRV (measurable, reportable, verifiable) system, which may also be employed in other sectors/countries after acceptance. This is a further contribution to the development of guidelines and institutions for a MRV system under the UNFCCC.

Title Development of NAMAs in the refrigeration, air-conditioning and foam manufacturing sectors
Country India, Mexico, South Africa
Sector Refrigeration, air-conditioning and foam manufacturing
Objective Development of NAMA proposals in selected partner countries in the refrigeration, air-conditioning and foam manufacturing sectors
Target Group Climate Change and Ozone Units of partner countries, industry stakeholders of refrigeration, air-conditioning and foam sectors
Project Executing Organization BMU (German Federal Ministry for the Environment, Nature Conservation and Nuclear Safety)
Implementing Partner Organization Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ) GmbH; India: National Ozone Unit (MoEF), Mexico: SEMARNAT = Secretaría de Medio Ambiente y Recursos Naturales, South Africa: Department of Environmental Affairs (DEA), invited
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