NAMA Facility

Thailand Refrigeration and Air Conditioning Nationally Appropriate Mitigation Action (RAC NAMA)

Facts

Sector	Energy efficiency
NAMA Support Organisation	Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ) GmbH
Implementing Partners	Ministry of Natural Resources and Environment (MoNRE) Ministry of Energy (MoE) Electricity Generating Authority of Thailand (EGAT)
NAMA Facility Funding	EUR 14.7 million
Duration	2016-2021
Status	Implementation

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Toward a New Paradigm

The Thailand Refrigeration and Air Conditioning (RAC) NAMA Support Project is designed to support Thailand's energy savings and climate change targets through the utilisation of climate-friendly and energy-efficient cooling technologies. In its pledge to the UNFCCC, Thailand committed to reduce its CO_2 emissions by 20 to 25 percent against BAU by 2020. Increasing energy efficiency is one of the priorities defined to reach this target. The cooling sector contributes approximately 20% to Thailand´s total emissions - 88% of the emissions result from energy use and about 12% from the use of high global warming potential (GWP) refrigerants. In this context, the NSP aims to initiate a sector-wide transition towards the use of "green cooling technologies", contributing to a transformation towards a low carbon society by shifting investments and production towards climate-friendly solutions.

By promoting the use of natural refrigerants in cooling technologies, RAC NAMA facilitates a shift away from the production and use of fluorinated refrigerants (HFCs) in refrigeration and air conditioning systems in Thailand. Refrigerants are chemicals used in almost every refrigeration system. Natural refrigerants result in the emission of considerably less greenhouse gas (GHG) emissions, as compared with HFCs. Working with domestic producers, RAC NAMA assists manufacturers in a shift away from the conventional production of cooling equipment to those that are more modern and energy efficient. Furthermore, by building the necessary training infrastructure for service technicians, RAC NAMA helps ensure that green cooling technologies are embraced by the service industry. RAC NAMA also endeavours to create an attractive policy framework, coordinate support, develop the expertise and resources of private and public institutions, and leverage private and public financing to bridge prevailing investment gaps.

Change in the Face of Challenges

Refrigeration and air conditioning are increasingly essential for human comfort and daily life in Thailand, and with the growing ubiquity of their use, cooling technologies now account for nearly one quarter of all GHG emissions in the country. Estimates by the World Energy Council show that if the current trends persist, that figure could rise to half of all Thai GHG emissions by 2030.

Consumers in Thailand purchase nearly two million new air-conditioning units per year, and that figure is bound to grow as the economy develops and incomes rise. Thailand is the world's second-largest producer of cooling equipment, serving the domestic and international markets.

However, refrigeration and air conditioning systems produced in Thailand continue to rely on HFCs as refrigerants, which replaced the ozone-depleting chlorofluorocarbons (CFCs) when the Montreal Protocol took effect in 1989. While the disuse of CFCs has been a boon for the ozone layer, the release of HCFCs and HFCs is generally 1,000 (and even up 3,000) times more damaging to the climate than CO2 emissions. Moreover, the Intergovernmental Panel on Climate Change (IPCC) estimates that in countries with an inadequately trained service sector in good practices for maintenance of refrigeration and air conditioning systems, about ten percent of these refrigerants escape into the environment annually. In Thailand, climate-damaging substances are also released into the atmosphere when systems are scrapped. Assuming a technology lifetime of 20 years, the average AC system that runs on one kilogramme of refrigerant will lose approximately three kilogrammes of such gaseous substances throughout this period. In the case of a highly damaging refrigerant such as R410a, that corresponds to about six tons of CO_2e.

In an effort to combat this situation in line with Thailand's commitment at COP 21 and considering that such a large share of the country's emissions derived from the refrigeration and air conditioning sector alone, adapting the production and maintenance of green cooling technologies towards more energy efficient and climate-friendly practices will make a huge contribution in achieving this goal. Furthermore, with the foreseeable ratification of the Kigali Amendment to the Montreal Protocol, the Thai government would commit the country to a complete ban on HCFCs by 2024 and a stepwise phase-down of HFCs in the long run. This could result in a complete shift to the use of natural refrigerant alternatives.

Single split air conditioners (Source: fotolia)

Despite this positive momentum, there are considerable barriers in achieving the HFC phase-down and emission reduction. Thai manufacturers will need to adapt to remain competitive, as they adjust to the new requirements of these international agreements and expected domestic regulation. Concerns by producers that introduction of natural refrigerants will harm their market position, existing regulatory restrictions, lack of informative energy efficiency label and the lack of financing schemes targeted at climate-friendly and energy-efficient cooling technologies are being addressed by the RAC NAMA as it has deployed to assist the country in its GHG emission reduction strategy and shift to more climate-friendly and energy-efficient production.

Achieving Transformational Change

The RAC NAMA seeks to transform the cooling industry by introducing a shift toward more climate-friendly and energy-efficient technologies and practices. In undertaking this, the project targets policy, technical and financial considerations, with respect to both the demand and supply sides and hence a continuous cooperation with the RAC industry and its end-users:

- In the RAC industry, the NSP aims to improve the technical capacity of producers and the service sector to supply climate-friendly and energy efficient cooling equipment to the market and to guarantee product safety throughout the product lifecycle.
- On the demand side, the NSP develops instruments to support the market introduction of climate-friendly and energy efficient cooling technologies, such as awareness raising of end-users as well as the provision of attractive financing conditions for both commercial and domestic appliances.

The RAC NAMA is also assisting in the technical reconfiguration for complying with new production standards for cooling equipment. Producers are given support to bring these new products to the market and to comply with the new regulations. This also entails the training of production and service technicians in the proper handling and maintenance of natural refrigerants, with a focus on any potential safety challenges.

The project's financial support assists and incentivises producers in the switch to natural refrigerant products. For this, the RAC NAMA provides grants or soft loans for production line conversion and the purchase of necessary equipment. To boost consumers' demand for these new products, the RAC NAMA also offers consumer finance incentives with product dealers and financial institutions. These incentives include private credit offers with zero to low interest rates, flexible repayment terms and easy application processes.

Furthermore, in support of Thailand's Nationally Determined Contribution (NDC) pledges to UNFCCC, the RAC NAMA is also assisting in the development of enhanced measurement, reporting and verification (MRV) processes in order to measure achievements in the RAC subsector and beyond.

Expected Outcomes

After the end of the project, the cumulated mitigation potential of the NSP is anticipated at 1.6 Mt CO_2e. By the end of the NSP, the goal is that 20% of domestic and commercial refrigeration equipment and air conditioners and air conditioning chillers sold in Thailand are using natural refrigerants, are climate friendly and energy efficient. Therefore, the total financing volume to be mobilised for climate friendly and energy efficient cooling technologies is estimated at EUR 10.4 million of public finance and EUR 300 million of private finance within 5 years – an ambitious target given the size of the sector and the competition of green cooling technologies with existing, climate-damaging technology options.

Promoting energy-efficient technologies and practices in the cooling sector in Thailand is expected to have important impacts that promote sustainable economic, environmental and societal development by the end of the NSP and beyond, including:

- Improved skills of head technicians and chief trainers in the RAC sector by facilitating training on servicing RAC equipment using natural refrigerant for at least 222 technicians/trainers;
- Improved quality of technical training by establishing at least eight training centres;
- Improved competitiveness and technical capacities of the local RAC industry;
- Raising awareness by providing at least 10,000 consumers and 500 companies with information about the benefits of RAC technologies based on natural refrigerants;
- Strengthened policy framework by adopting or amending low-carbon policies, regulations or standards in the cooling sector.

Contact and Legal Notice

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