

Climate-friendly and energy-efficient cooling as a building block for low-carbon urban development in Indonesia

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Refrigeration and air-conditioning (RAC) in Indonesian urban areas

- Drivers for cooling in urban areas: increasing population, rising middle classes, growing cold chains to preserve food and other goods
- Indonesia's population: 305.6 Mio in 2035, 67% of population will live in urban areas
- Approx. 40% of energy consumption in urban areas for refrigeration and air conditioning
- GHG Emissions from RAC sector are estimated to make 15.4% of the national GHG emissions, excluding LULUCF (MEMR, 2017)
- Large potential to contribute to Indonesia's energy efficiency plans and climate targets (NDCs):
 - Energy elasticity less than one in 2025
 - Reduce energy intensity 1% per year until 2025
 - Realize energy savings of 17% compared to BAU in 2025
 - NDC target: 314-398 Mt CO₂eq in 2030



- Refrigeration, air conditioning, and foam for insulation can be found almost everywhere and are essential to reach or maintain adequate human living standards. Refrigeration includes applications that preserve food, beverages or medicine at a certain required temperature. Air conditioning includes cooling applications that maintain temperatures in buildings.
- Unitary AC market in 2015 ~ 2.4 Mio units, AC demand growth 27% within the last 5 years (MEMR, 2017)

Promoting climate-friendly RAC technology in Indonesian urban areas

- High GHG savings potential in cooling sector:
 - transitioning from HCFC and HFC –based refrigerants to low-GWP refrigerants
 - accelerating efficiency increase of RAC appliances
- Establishing a NAMA in the commercial and industrial RAC sector that addresses both refrigerant-related (HFC) and energy-related (CO₂) emissions in four working areas



Find out more about the Green Chiller NAMA project at:
<http://www.greenchillers-indonesia.org/index.php/en/>

- Kigali momentum

Enabling factors for climate-friendly refrigeration and air-conditioning (RAC) in urban areas

- Addressing refrigerant-related (HFC) and energy-related (CO₂) emissions together in the RAC sector requires cooperation among the key stakeholders, at national and urban levels
- Establishing and mainstreaming safety and performance standards (MEPS) are essential for accelerating deployment of best available technologies
- Transition to sustainable RAC technology application requires comprehensive training and certification of
 - manufactures/importers
 - installation and service technicians
 - energy auditors



Find out more in key pieces for climate-friendly cooling at: <https://www.giz.de/expertise/downloads/giz2016-en-proklima-ndcs-through-refrigeration-guidance.pdf> and <https://www.giz.de/expertise/downloads/giz2017-en-klima-poster.pdf>