



## DEVELOPMENT OF A NAMA FOR EFFICIENT COOLING AND THE SUPPLY OF COOLING SYSTEMS IN INDUSTRY AND TRADE (“GREEN CHILLERS”) IN INDONESIA

As of: October 2021

In Indonesia, the demand for refrigeration and air conditioning continues to rise. In the past, the potential for energy efficiency through appropriate cooling technologies had not been fully exploited. The project supported Indonesia in creating reliable framework conditions to promote energy efficiency in the cooling and air conditioning sector. For this, the reduction potentials in industrial and commercial cooling and air conditioning were analysed. The project advised relevant stakeholders on the development of a NAMA with specific measures for using energy-efficient cooling technologies. In addition, the compilation of a financing strategy and an economic analysis were supported, both of which are submitted to the Secretariat of the United Nations Framework Convention on Climate Change (UNFCCC). The project results can be applied worldwide and are relevant for all subtropical and tropical countries that implement NAMAs in the cooling sector.

### State of implementation/results

- Project completed.
- Sector analyses started for developing NAMA
- Website for existing training materials on NAMA established
- Main responsibility for developing national GHG inventory for the cooling sector established with the Directorate General of New, Renewable Energy and Energy Conservation (EBTKE)
- Workshop on "Developing a RAC NAMA"
- Event on "Promoting Green Chillers" in Jakarta
- Technical workshop on "Safety and Energy Efficiency Standard of Green Chiller" in Bogor
- MoU between EBTKE and PERTAMINA for piloting energy efficient cooling appliances using natural refrigerants signed for the sites of PERTAMINA
- Indonesian delegation in Germany: Chillventa participation and organization of the first „German-Indonesian Dialogue on Energy

## PROJECT DATA

### Country/Countries:

Indonesien

### Implementing organisation:

Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ) GmbH

### Political partner(s):

- State Ministry of National Development Planning (BAPPENAS) - Indonesia

### Implementing partner(s):

- Ministry of Energy and Mineral Resources (MEMR) - Indonesia
- Ministry of Environment and Forestry (KLHK) - Indonesia
- Ministry of Finance - Indonesia
- Ministry of Industry - Indonesia
- State Ministry of National Development Planning (BAPPENAS) - Indonesia

### BMU grant:

€ 4,953,805.45

### Duration:

06/2014 till 12/2019

### Website(s):

<http://www.greenchillers-indonesia.org/index.php/en>





Efficiency: Climate-friendly refrigeration and air conditioning (RAC) in commercial and industrial applications“

- MoU between EBTKE and Phapros on the implementation of two propane-based chillers for the pharmaceutical production signed
- Three green chillers installed at universities
- Two "train the trainer" trainings on the safety and energy efficient handling of natural refrigerants conducted, including a final examination through the Indonesian certification body BNSP in July 2017
- First Indonesian inventory of the RAC sector completed and presented to more than 70 representatives of ministries and of private economy
- In 12/2017 a propane-based "roof-mounted air-conditioning system" for room air-conditioning with an output of 60 kW was put into operation in an office building of Pertamina R&D
- In 12/2017 and 01/2018, two 231.9 KW propane-based refrigeration systems were installed on the production site of the pharmaceutical company PT Phapros in Semarang for the production and storage of medical products.
- A total of 87 refrigeration technicians were trained in the safe and energy-efficient use of flammable refrigerants in six one-week trainings at the Bandung and Bali Polytechnic Colleges, of which 68 subsequently passed the assessments of the National Certification Body for Professions
- In March 2018 EBTKE submitted a NAMA project proposal to the NAMA Facility in cooperation with the project: The Indonesia Green Cooling Program NAMA aims to introduce energy-efficient and climate-friendly split appliances into the Indonesian refrigeration market in order to make a significant contribution to Indonesia's NDCs, with the aim of saving 12.72 Mt CO<sub>2</sub>eq emissions by 2030, increasing national added value and raising the level of training for refrigeration technicians
- In April 2018, a training course for auditors and planners on the safe and energy-efficient use of flammable refrigerants took place at Polytechnic Bandung, where 62 participants received practical and theoretical instructions on the planning, final inspection and maintenance of refrigeration plants using hydrocarbons as refrigerants.





- In May 2018, a pilot plant consisting of two propane-based chillers with a capacity of 230 KW each was put into operation at the pharmaceutical company PT. Phapros
- In July 2018, the German Institute for Refrigeration, Air Conditioning and Energy Technology conducted safety assessments on four pilot plants. The inspection of the refrigeration plant in the Makara Art Center took place in the presence of 20 auditors, who had previously undergone a half-day training course by IKET
- On August 6, 2018, a Memorandum of Cooperation between the hotel "Novotel Lombok Resort and Villas" and Green Chillers was signed with the aim to install the first pilot plant of Indonesia in the hotel industry
- During the largest Indonesian refrigeration fair (Refrigeration & HVAC), a pilot measure of the Green Chillers project in cooperation with the project "Cost-Benefit Optimized Promotion of Renewable Energies" (LCORE) was officially presented; this is a propane-based, photovoltaic ice machine for local fisheries which was developed in cooperation with the Institute for Air and Refrigeration Technology Dresden.
- By the end of September 2018, the five pilot plants implemented to date had prevented 296 tonnes of CO<sub>2</sub> and saved 345 MWh of electricity.

