

Proklima – naturally cool!

Green Cooling – for the protection
of the climate and the ozone layer.

giz Deutsche Gesellschaft
für Internationale
Zusammenarbeit (GIZ) GmbH

On behalf of:



Federal Ministry
for Economic Cooperation
and Development



Federal Ministry
for the Environment, Nature Conservation
and Nuclear Safety

of the Federal Republic of Germany

Who are we?

Proklima is a globally active programme of GIZ. We promote environmentally friendly and energy-efficient cooling technologies - Green Cooling - in developing and emerging countries. In contributing to achieving the goals of the Montreal Protocol and the Paris Climate Convention, we act on behalf of the German Federal Government, in particular the Federal Ministry for Economic Cooperation and Development (BMZ) and the Federal Ministry for the Environment, Nature Conservation and Nuclear Safety (BMU).

What is our mission?

Germany is the third largest donor of the Multilateral Fund for compliance with the obligations of the Montreal Protocol. Up to 20 percent of the country's contributions into the Fund are made through bilateral projects. These projects are implemented by us – Proklima.

We are committed to the dissemination of environmentally-friendly technologies and processes in the field of cooling, while protecting the ozone layer and the climate. We are a technologically competent, innovative and well-networked contact partner for our partners. Proklima is also committed to fulfilling this role in climate protection – and we intend to create awareness and acceptance in this regard, since cooling also has a significant impact on climate change due to its high greenhouse gas emissions. Our goal is to significantly reduce these emissions through Green Cooling. From a technological point of view, there are no serious obstacles involved. However, we must dismantle mental barriers of politicians, the business world and the public if we are to preserve resources and livelihoods of human beings all over the world.

Green Cooling, stands for technologies which use natural refrigerants that neither harm the climate nor the environment, but possess the same or better energy efficiency.

The **Montreal Protocol** requires all participating states to phase out the production and consumption of **ozone-depleting substances**. It is the only universal **environmental agreement** signed by all member countries of the UN – and it is also the **most effective**. The supplementing **Kigali Amendment** now also regulates the use of climate-damaging alternative refrigerants.



Where does Green Cooling play a role?

In energy efficiency/technologies, buildings, health, food, etc.



Note: The term 'cooling' in this brochure means refrigeration and air conditioning.

How do we work?

We act locally, yet we achieve a global impact – and we have continued to accomplish a great deal in the years since the programme was launched in 1995. In over 40 developing and emerging countries, Proklima has implemented more than 240 projects that promote integrated ozone and climate protection through the use of natural refrigerants and energy-efficient applications.

125 million tonnes of CO₂-eq have been



saved – and that corresponds to the annual emissions of 37 coal power plants.

Our results statistics?

We have contributed to avoiding more than 8,100 tons of ozone-depleting substances – and this has saved around 125 million tons of CO₂-eq. We have helped around 100 companies in the refrigeration, air conditioning and foam production sectors to make their products ozone and climate-friendly. Proklima uses its 'Cool Training' to teach important skills in climate-friendly cooling and air-conditioning technology to around 50 international trainers, experts, refrigeration technicians and political decision makers every year.

550.000

refrigeration technicians have been trained worldwide

(Status 2019)

5 million tonnes of CO₂-eq.

per year have been saved thanks to a Chinese company which converted to climate-friendly foam production for building insulation.¹



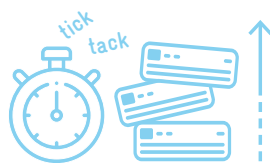
Cooling – a cross-cutting topic.

The need for cooling is rising drastically – especially in emerging and developing countries. The blame for this cannot be laid at the door of the global climate conditions and climate change alone. Demographic change is also increasing the need for cooling for buildings, food and medicines. The world population continues to grow, and more and more people are drawn to live in the cities. Densely-populated areas, modern construction methods and an increased standard of living demand more air conditioning. The standard of living is also rising outside the cities, and more refrigerators are being used as a result.

We find ourselves in a vicious circle, because the growing demand for cooling is also heating up our climate through increasing emissions, in turn increasing the demand for cooling...

Green Cooling protects the climate. We train technicians on site to deal with the technological transition, thereby creating qualified jobs and supporting the supply of food and medicines.

The number of refrigerators in emerging and developing countries is expected to double to around 2 billion by 2030 – and ten air conditioners will be sold every second for the next thirty years.^{7,9}



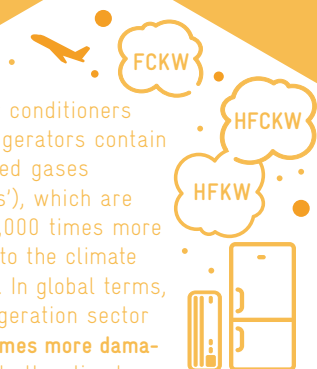
Over 50%

of vaccines are lost world-wide every year. One of the main reasons for this is interruptions in the cold chain.⁸



Cooling – the topic of the future.

Many air conditioners and refrigerators contain fluorinated gases ('F gases'), which are up to 15,000 times more harmful to the climate than CO₂. In global terms, the refrigeration sector is **four times more damaging** to the climate than air traffic.^{1,2,3}



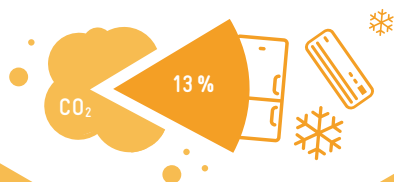
20% of all the world's food spoils due to poor cooling.⁴



Air conditioners and refrigerators today consume **17% of the electrical energy** all over the world – and this trend is increasing.⁵



It is estimated that by 2030 the cooling sector will account for **13% of global greenhouse gas emissions**.³



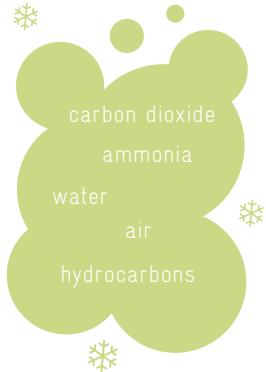
The solution? Green Cooling!

The term Green Cooling covers all the processes and technologies through which we can cool in an environmentally-friendly way, including the solutions that use natural refrigerants, consume little energy and conserve fossilised raw materials. In the long term, the growing need for cooling must be avoided or reduced, through better building design, for example, stricter building regulations and energy efficiency measures in existing buildings – for the protection of the ozone layer and the climate.

Three challenges – one goal: Green Cooling is ozone protection, climate protection and energy efficiency in one.

The Natural 5

Green Cooling is based on five natural refrigerants:



As agreed in the Kigali Amendment, reducing the production and consumption of climate-damaging HFCs (hydro-fluoro-carbons) can save 80 Gt of CO₂-eq. globally by 2050.¹⁰



Future-proof cooling.

Not only obsolete technologies cause enormous greenhouse gas emissions in cooling. Many new appliances promise to protect the ozone layer but still use climate-damaging refrigerants and consume unnecessary amounts of energy. Since the Montreal Protocol was signed, Proklima has been committed to promoting innovative technologies that work exclusively with natural refrigerants. We consider all other technologies that only achieve partial successes to be inappropriate and unsustainable.

For example, we do not support certain substitutes for the ozone and climate-damaging CFCs and HCFCs, because many of these are still extremely harmful to the climate. Such approaches fall short and do not bring comprehensive improvements. The change towards Green Cooling can be achieved in one jump – ‘Leapfrogging’. This not only protects the environment, but also relies on a technology that complies with increasingly stringent legal regulations from the outset.

Life cycle and recycling.

Not only the use of climate-damaging refrigerants, but also the disposal of the equipment itself causes problems. In many countries, the disposal is not even regulated by law. Equipment is thrown away as waste and harmful substances escape over time, polluting the climate and ozone layer far into the future – so management and disposal concepts for refrigerants and blowing agents, plus foams, old refrigeration & air conditioning equipment containing such substances are an important part of our advice to governments, ministries and municipalities.

Leapfrogging

One big jump instead of many small steps – that’s what makes the difference.



Green Cooling ✓✓✓

Interim technologies:

- ozone layer ✓
- climate ✓
- environment ✗

HFC-technology:

- ozone layer ✓
- climate ✗
- environment ✗

CFC & HCFC technology:

- ozone layer ✗
- climate ✗
- environment ✗

The ozone and climate-damaging refrigerants used in old appliances emit
1,5 Gt CO₂-eq.
every year.



This corresponds to the CO₂ emissions of 441 coal fired power plants in one year.¹

A panoramic view for sustainability.

The technological transition to Green Cooling requires a 360-degree view – and this is why we operate actively and cooperatively. Our projects in partner countries worldwide contribute to 11 of 17 sustainable development goals from the United Nations Agenda 2030.

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You will find more information and facts about Proklima here:

1. www.giz.com/Proklima

2. Bundesverband der Deutschen Luftverkehrswirtschaft (2018): Klimaschutzreport 2018.

3. Green Cooling Initiative (2019).

4. International Institute of Refrigeration (2009): The Role of Refrigeration in Worldwide Nutrition.

5. International Institute of Refrigeration (2015): The Role of Refrigeration in the Global Economy.

6. International Climate Initiative (2012): New production plant for climate-friendly air conditioners in India.

7. UN Environment (2017): How to keep cool without heating up the planet.

8. WHO (2005): Monitoring vaccine wastage at country level.

9. IEA (2018): The Future of Cooling.

10. European Commission (2018): EU ratifies Kigali Amendment to the Montreal Protocol.

Details of sources as of 17.05.2019



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Our services.



In the fields of climate, ozone and energy,

- we advise politicians and governments and advocate changes in the framework conditions.
- we participate in the elaboration of safety and health standards, norms and laws.

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- we evaluate technological developments and devices and assist in technology selection and adaptation.

- we accompany the technology transfer to Green Cooling and advise on the financing.

- we convince by demonstrating new technologies.

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- we impart knowledge, build competencies and train experts.

- we work together with educational institutions and help the participants to network.

Worldwide: on-site solutions.

In our projects we show how ozone and climate protection work hand-in-hand. We offer our partner countries tailor-made solutions. Human beings and the environment benefit from the effects, both locally and globally.

Innovative cooperations and partnerships

We act as an interface between the most important stakeholders. These include government agencies in the fields of energy efficiency and climate protection plus the private sector, such as developers and manufacturers of air conditioning and refrigeration systems and their end users. In addition, civil society, NGOs (non-governmental organizations) as well as training, educational & research institutes are addressed.



Funded by:

- The Federal Ministry for Economic Cooperation and Development (BMZ)
- The Federal Ministry for the Environment, Nature Conservation and Nuclear Safety (BMU)
- Other clients: European Commission, French Development Bank (AFD), Bavarian State Office for the Environment (LfU), NAMA Facility, Climate Technology Centre and Network (CTCN)

Latin America and the Caribbean:

Over 30,000 refrigeration technicians have been trained in the installation, maintenance and recycling of air conditioning & refrigeration equipment and the use of natural refrigerants – making a significant contribution to climate-friendly cooling.¹

Asia:

Proklima supported the development and piloting of the first climate-friendly air conditioners in India and China. In India alone, the transition in production to 180,000 units per year will save 1 million tonnes of CO₂-eq.⁶

**Africa:**

In Africa, the introduction of innovative solar-powered refrigerators will ensure the availability of life-saving vaccines, medicines and fresh produce in areas which have no access to electricity.¹



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