



# Proklima – Protection of the ozone layer

## Technology transfer in cooperation with private industry

### The challenge

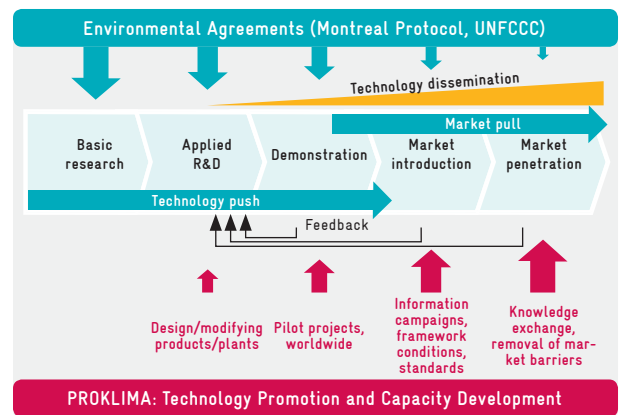
Initiated by the detection of the so called “ozone hole” over the Antarctic, the Montreal Protocol on Substances that deplete the Ozone Layer came into force in 1987. The Protocol regulates the phase-out of production and consumption of ozone-depleting substances, such as chlorofluorocarbons (CFC) in refrigeration and air conditioning. This phase-out has led to the introduction of new, environmental-friendly technologies in industrialized countries. These technologies are now gradually being transferred to developing countries with the help of the Multilateral Fund of the Montreal Protocol.

For almost all applications in refrigeration and air conditioning technology, ozone- and climate-friendly alternatives such as Hydrocarbons, CO<sub>2</sub> or ammonia, which occur in nature and don't have to be synthetically produced, are available. These so called natural refrigerants have negligible global warming potential and further energy-saving advantages. To implement the use and dissemination of these natural refrigerants in developing countries, technical know-how, such as security standards for combustible gases, special workshops and technical trainings are needed. This is exactly the focus of the GIZ-Programme Proklima. It supports partner countries in overcoming barriers in technology transfer and facilitates the access of technology suppliers to growing markets in developing and emerging countries.

### Approach

The approach of Proklima has to be regarded in holistic terms: it comprises all sectors which are connected with ozone-depleting gases (e.g. refrigeration plants, air conditioning, agriculture, textile production etc.) and aims at the entire lifecycle of a product (production, utilization, recycling). This is only possible through a close cooperation with the private sector, which relates to almost all steps of the technology cycle, from technology adaptation to market penetration (as you see in the illustration).

### Technology cycle



Proklima supports German and European enterprises through close contacts with ministries and associations and helps to spread the knowledge about modern, environmental technologies in the fields of refrigeration, air conditioning and foam technology via workshops, trainings and publications.

### Examples from practical work

One focus of the cooperation with the private sector is the development of demonstration products or plants, such as air conditioners using natural refrigerants.

In China, Proklima works together with European technology suppliers and local manufacturers of air conditioners and foam panels, supporting them with technical consultancy, safety trainings and information activities. The aim is to spread these technologies not only in China, but throughout the entire Asian region. An example of best practice is the production of foam panels with a natural CO<sub>2</sub> blowing agent. This project was so successful that the Chinese government considered its implementation for the whole sector within the framework of the “HCFC Phase-Out Management Plan” under the Montreal Protocol.



Other current projects include a company in Swaziland switching their entire manufacturing line (also including a solar refrigerator) to natural refrigerants, as well as supermarkets in South Africa converting to sustainable refrigeration with CO<sub>2</sub> and ammonia.

### Impacts

Proklima acts as a pioneer for the introduction of environmentally-friendly, alternative technologies into emerging and developing countries.

A great success was the transfer of the “Greenfreeze-Technology”, developed in Germany and propagandized by Greenpeace, to China and India. This sustainable hydrocarbon cooling technology was introduced in 1995, together with the US Environmental Protection Agency (EPA), Greenpeace and a market-leading Chinese company. This cooperation revolutionized refrigeration production in Europe and Asia. Meanwhile more than 400 million units of these environment-friendly fridges are in use worldwide. According to conservative estimates, this has helped to avoid 160,000 tons of ozone-depleting substances which is equivalent to over 600 million tons of CO<sub>2</sub>.



**At the end of the 1990s, the “Greenfreeze Technology”, supported by Proklima, revolutionized the fridge production in Europe and Asia. Until today, 600 million tons of CO<sub>2</sub> have been avoided.**

Since 2008, Proklima has encouraged India and China to follow with comparable developments in the rapidly growing household air conditioning market. Thereby all costs and risks of technological innovation will be shared among the companies involved.

Proklima projects are getting a high level of media attention because of their innovative characteristics. In 2010 for example, several reports about Proklima projects were broadcasted by Deutsche Welle TV which made some of the Proklima partner companies known worldwide.

### Chances for the private sector

Reaching 100 billion euro, the market for refrigeration, air conditioning and foam technology in developing countries is already significant and will be tripled in the next 20 years (estimation from US EPA, 2010). This means an enormous business potential for German and other European technology suppliers as well as for licenses in developing and emerging countries.

Proklima’s role consists of supporting demonstration projects, promoting technology partnerships, being engaged in capacity building, providing access to information networks and assisting with the removal of market barriers (e.g. regulations, standards), in order to optimize the chances for rapid enforcement and distribution of ozone- and climate-friendly technologies. Proklima, therefore depends on the know-how of private companies; while at the same time supports them with entrance into new markets.

The projects supported by Proklima aim to reach a wide audience and create a bandwagon effect. The greater this effect is the faster will developing countries move to ozone- and climate-friendly technologies.

### Imprint

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