

**Strategic considerations for the wider use of low-emission refrigeration
and air conditioning equipment in Central and South America**

1. Webinar „Capacity Building“

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13. April 2021

1. Why is this workshop relevant to you?

(1) Combating global warming is essential to maintain sufficient living conditions for human race. The use of refrigeration and air conditioning technology contributes with the

- **indirect emissions of carbon dioxide from electricity generation and**
- **the direct emissions especially synthetic refrigerants due to leakage**

significantly to the increase in the concentration of these substances in the Earth's atmosphere.

At present about 15 % of the electricity consumption worldwide is used for air conditioning and for cooling, mainly food. According to the International Energy Agency, consumption for air conditioning is expected to triple by 2050. This is a huge amount.

- (2) The extensive phase-out of greenhouse-effective hydrofluorocarbons (HFCs), which are primarily used as refrigerants, has been agreed internationally within the framework of the Kigali Amendment to the Montreal Protocol.
- (3) In Europe, the restriction of the quantities of HFCs available on the market has already begun, which has led, among other things, to a price jump for these refrigerants. In Central and South America, the Kigali process will start in 2024.

2. New Investments in Refrigeration and Cooling are needed in Latin America and Worldwide! (1)

- A large number of plants are worn out and need to be replaced or at least partially refurbished.
- In the case of newly constructed plants, the lowest possible investment costs are usually the deciding factor. However, due to their lower energy efficiency, such plants are not only more harmful to the climate, but also significantly more expensive than the state of the art due to the higher electricity costs over their lifetime.
- In addition, the use of "traditional" refrigerants with a high GWP contributes to the negative climate balance.
- Investments in refrigeration systems also have a long service life. If today systems with too high energy consumption and refrigerants with a high GWP are realised at a low technical level, the corresponding climate protection potentials cannot be realised in the coming decades.
- Cost-effective climate-friendly technologies are now available for almost all technical applications over the lifetime of the plants.
- The reduced costs from the saved electricity consumption can be used for the financing of plants with low or nearly zero emissions of greenhouse gases. This can help to bring forward the phase-out of HFC's too.

2. New Investments in Refrigeration and Cooling are needed in Latin America and Worldwide! (2)

- Cost-effective climate-friendly technologies are now available for almost all technical applications over the lifetime of the plants.
- The reduced costs from the saved electricity consumption can be used for the financing of plants with low or nearly zero emissions of greenhouse gases. This can help to bring forward the phase-out of HFC's too.
- In regions of Latin America and other parts of the world without electricity grid the use of sorption refrigeration systems powered by solar heat can be attractive and allows also the production of technical cold. This can help to save feeding of local population.
- There are numerous obstacles to the widespread application of modern efficient cooling technologies. These include e. g. a lack of Information, knowledge of innovative technical-technological solutions and financial resources.
- To overcome these obstacles **capacity building** in the respective fields are necessary, e. g. planning incl. independent advice, craft, education and training, financial services, economic incentives.
- An example for capacity building in Germany is the program for commercial refrigeration systems.

3. Successful programs from Germany could be also transferred to Latin America or already exist (1)

- For more than 10 years the German Federal Environment Ministry has got a very successful refrigeration system promotion program.
- Systems developed in Germany – also as a result of the requirements of the program - have made it onto the market that decisively reduce energy consumption, can use renewable energies, operate without HFCs as refrigerants and can thus even be emission-free.
- Over this time more than 3,650 plants have been promoted with 232,6 million Euro.
- Alone in the period of 2015 to 2017 the new plants saved approx. 34.000 t CO_{2equ} per year.
- Cumulated about 15 years this sums up to 505.000 t CO_{2equ}, 77 % as result of the reduction of CO₂-Emissions.
- The efficiency of this state subsidy is approx. about 11 kg CO_{2equ}/Euro.

3. Successful programs from Germany could be also transferred to Latin America or already exist (2)

- In the framework of this program the Ministry also offered the so called **“German Refrigeration Award”** for different efficient cooling technologies and equipment.
- The awards help enterprises to place their products in the market. This is a very cost effective measure.



4. The motivation and reasons for these webinars

The moderator, Dr. Felipe Toro, continues in Spain.

All of us three interesting and fruitful 2-hour-webinars and especially for today the hope for success.