COPA
Cutting refrigerant emissions

COP27

Shedding light on a blind spot through the Climate and Ozone Protection Alliance: leveraging the vast emissions reduction potential of correct disposal of ODS and HFC banks

12 November 2022, Sharm El-Sheikh, Egypt

AGENDA

Welcoming Remarks	Rachel Pekker, German Federal Ministry for Economic Affairs and Climate Action
The Climate and Ozone Protection Alliance	Ellen Michel, GIZ Proklima, Head of COPA Secretariat
COPA activities in Tunisia and the general need for ODS and HFC banks management	Youssef Hammami, National Ozone Unit Tunisia
Solutions for ODS and HFC banks management	Dietram Oppelt, HEAT GmbH
Q&A	All
Conclusion and closing remarks	Sophie Geoghegan, EIA

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1. Welcome Remarks
Rachel Pekker, BMWK

Supported by:

Federal Ministry
for Economic Affairs
and Climate Action

IKI INTERNATIONAL CLIMATE INITIATIVE

on the basis of a decision
by the German Bundestag

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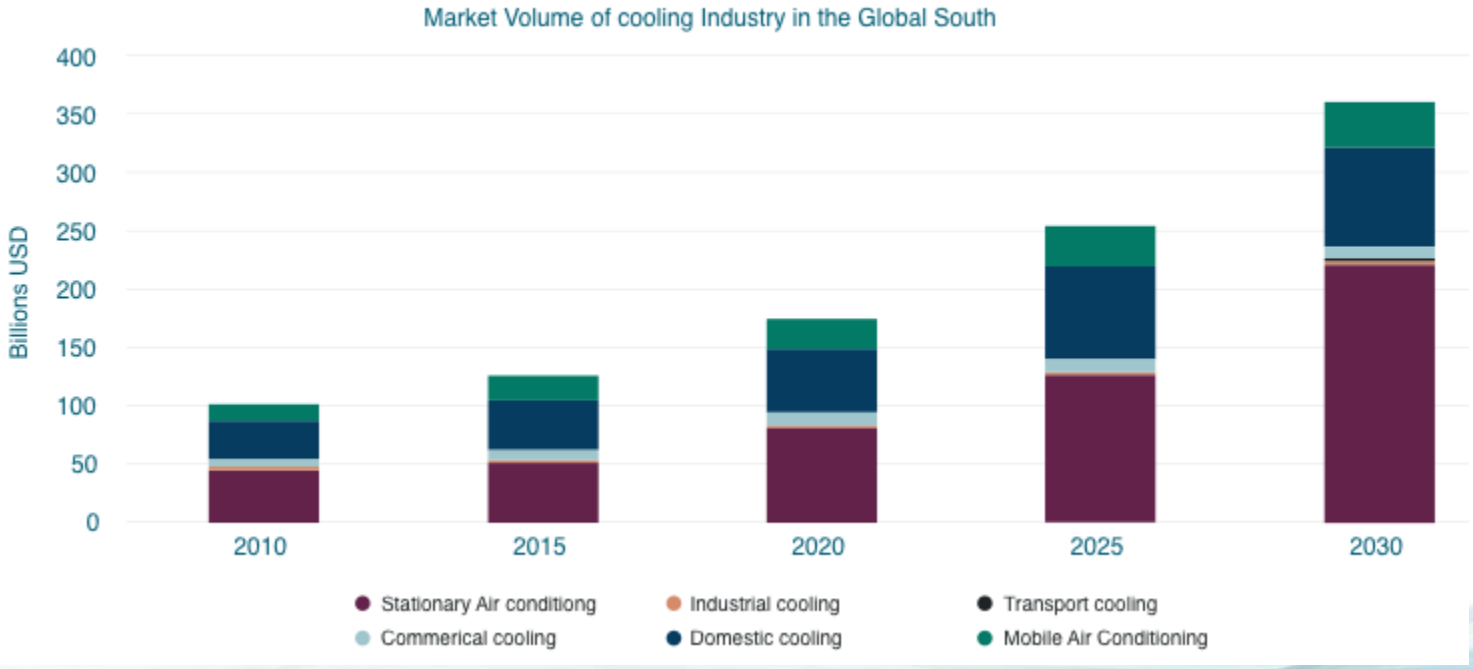
2. The Climate and Ozone Protection Alliance

Ellen Michel, GIZ

THE CHALLENGE



Source: own research, HEAT GmbH

Substance		(ODP)	(GWP)					
CFC	CFC-11	1,0	4.750					
	CFC-12	1,0	10.900					
	R-502	0,2	4.667					
HCFC	HCFC-141b	0,11	725					
	HCFC-22	0,055	1.810					
	HCFC-123	0,022	77					
	HCFC-124	0,02 a 0,04	609					
	HCFC-142b	0,065	2.310					
HFC	HFC-134a	0	1.430					
	R-404A	0	3.922					
	R-32	0	675					
	R-410A	0	2.100					
	R-407C	0	1.800					
	R-415B	0,013	550					
	R-507	0	3.300					
	HFC-125	0	3.500					
HFO	R-1234yf	0	4					
	HFO-1336mzz-Z	0	4					
Natural Refrigerants	R-290 (propane)	0	3					
	R-600a (isobutane)	0	4					
	Ciclopentane	0	< 0.1					
	R-1270 (propylene)	0	3 a 5					
	R-744 (CO_2)	0	1					
	R-717 (Ammonia)	0	0					

Table 1: Comparative ODP and GWP values of the main refrigerants with past and current uses in the refrigeration and air-conditioning sectors.

Larger Supermarket refrigeration systems are charged with around 4000 $tCO_2Eq.$

Applications worldwide

Widely used refrigerants

GHG EMISSIONS FROM GLOBAL ODS AND HFC BANKS

	Current	Through 2050	Through 2100
Global ODS & HFC Refrigerants banks (GtCO2e)	24	61	91

„By 2100, the global total of ODSs and HFCs in use or expected to be produced rises to approximately

91 GtCO2e

– nearly equal to three full years of global energy-related carbon dioxide emissions today"

Environmental Investigation Agency

HIGH POTENTIALS TO RAISE NDC AMBITIONS THROUGH ODS & HFC BANK MANAGEMENT

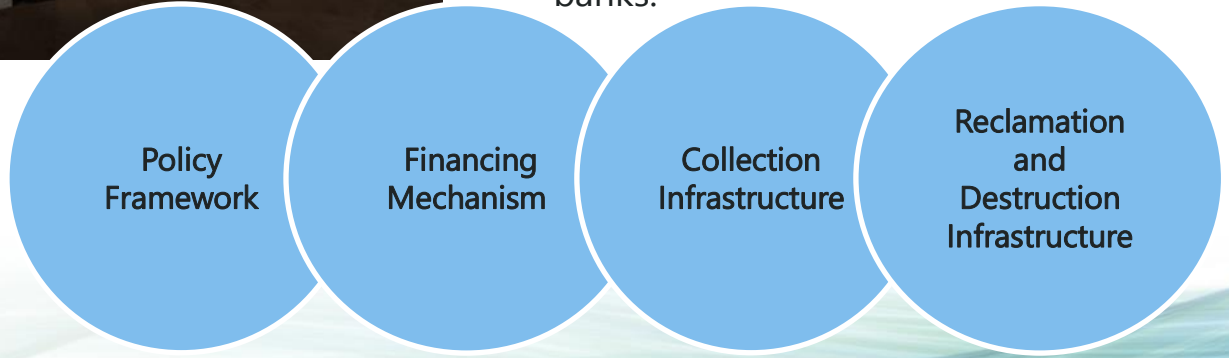
- HFCs are part of the Kyoto basket of GHG gases
- Provide a cost-effective option to raise NDC ambitions

First steps towards ambitious ODS and HFC banks NDC components in the NDCs

1. An ODS and HFC banks Inventory to define the baseline of banks and emissions
2. Formulate mitigation strategies and implementation plans
3. Design and anchor ambitious mitigation measures in the NDC update
4. Establish a monitoring, reporting and verification (MRV) system to track mitigation progress

THE GAP

- Due to a general lack of appropriate political and regulatory frameworks as well as infrastructure, the collection, reclamation and destruction of waste containing ODS and HFC presents a major challenge.
- Neither the Montreal Protocol nor any other international environmental convention regulates the management and destruction of existing ODS banks.



INTRODUCTION

Approach

COPA works jointly with partner countries and diverse actors across private and public sectors to advance the holistic solutions needed to reduce ODS and HFC banks, and ultimately complete the shift in the cooling sector to sustainable refrigerant management.

Implemented by:

giz Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ) GmbH

In cooperation with:

UNIDO UNITED NATIONS INDUSTRIAL DEVELOPMENT ORGANIZATION

UNDP

Supported by:

Federal Ministry for Economic Affairs and Climate Action

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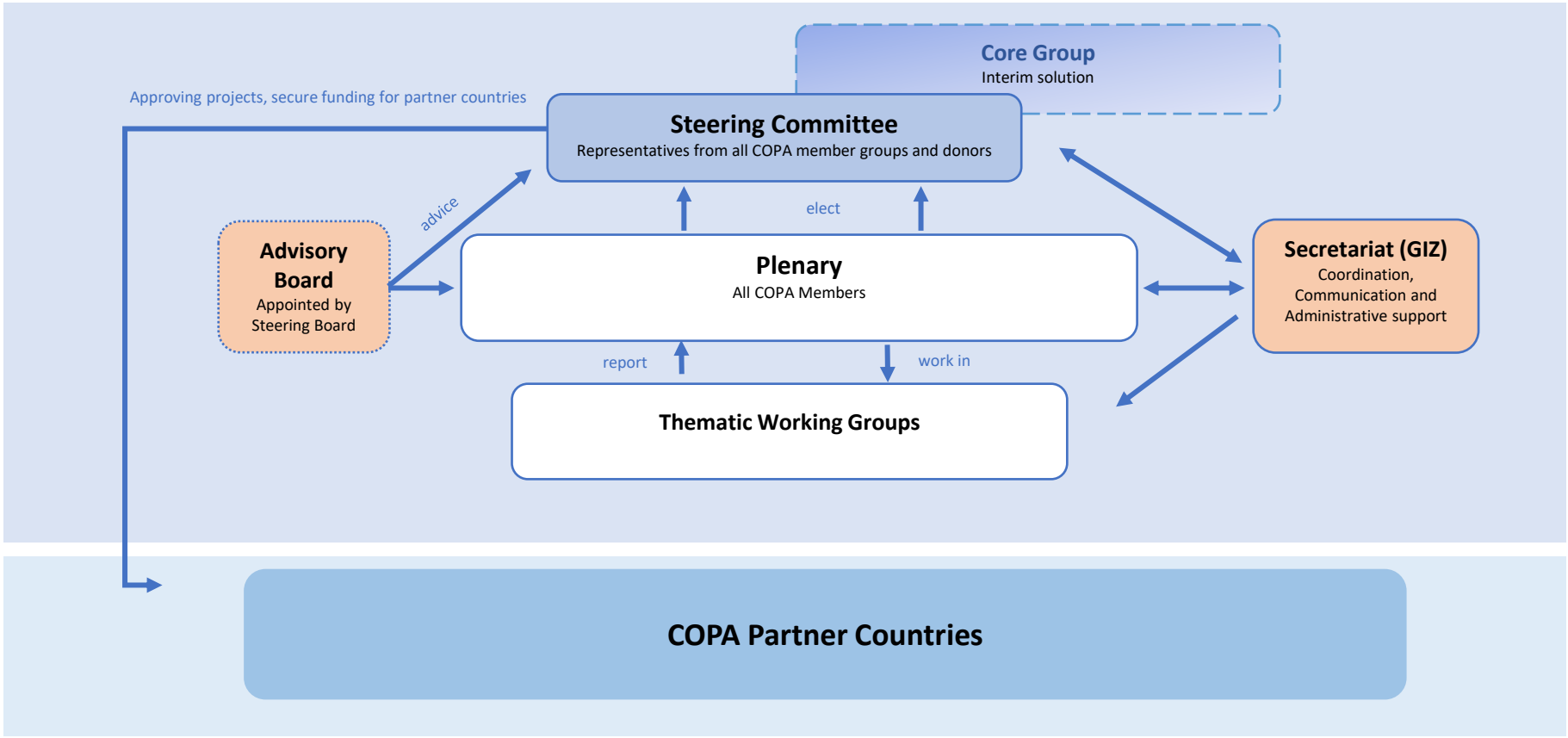
Core Group
Interim solution
Approving projects, secure funding for partner countries
Steering Committee
Representatives from all COPA member groups and donors
advice
elect
Advisory Board
Appointed by Steering Board
Plenary
All COPA Members
Secretariat (GIZ)
Coordination, Communication and Administrative support
report
work in
Thematic Working Groups
COPA Partner Countries

IMPACT THROUGH ACTION

- Raise global awareness
- Bring actors together
- Advance holistic solutions
- Promote a global shift

Closing the loop to a circular economy in the cooling sector through sustainable refrigerant management

FIRST RESULTS & WORK IN PROGRESS

Global Activities

1. Set-up of an international Alliance → COPA

2. Establish Thematic Working Groups (TWGs)

3. Promote International dialogue & knowledge transfer

Technical advice & Mutual learning

Mobilize financial capacities for continuous sector emission mitigation

Partner Countries activities

Pilot project development:

- Status Quo Analysis
- Concept development
- Assistance in acquiring international finance

Pilot project implementation in selected metropolitan regions:

- Services and infrastructure
- Training of technicians
- MRV systems

Pilot projects advance…

1. **Technical and financial capacities** (reclamation and destruction technologies, skilled servicing industry, recovery and collection infrastructure)
2. **Policies and regulations** on sustainable ODS / HFC banks management
3. **NDCs** inclusion of HFC (ODS) banks management & emission reduction ambitions

COPA SERVICES

COPA Services

Expertise

- Fostering expertise across all sectors
- Provide access to technical know-how and mutual learning
- Prepare market studies and concepts for the pilot implementation of mitigation measures in diverse regions.

Networking

- Create a platform to network with all relevant actors from private sector, public sector, civil society and academia
- Connect experts on sustainable refrigerant management
- Enable international positioning
- Setting the scene: achieve amplified reach and enhanced impact

Mitigation Action Support

For COPA partner countries [1] :

- Support in conceptualization of mitigation action
- Support in mobilizing finance
- Support in implementing action

COPA Tools

Working Groups

The core of **COPA's** work is driven by members-led working groups on:

- Policy measures
- Financing mechanisms
- Implementation models
- Recovery, reclamation and destruction technologies

for the management of ODS and HFC banks

International Alliance

- Organisation of regular exchange and network meetings
- Participation in international events
- Organisation of Study Tours
- Raising awareness on the topic of ODS and HFC banks through global dialogue and exchange.

Technical Support

- Baseline Assessment
- Project conceptualization
- Implementation Support

Financing Mechanism

- Assistance in applying for international climate finance
- Access funding through COPA financing mechanism

[1] **COPA partner countries must commit to meeting the minimum criteria of the Climate and Ozone Protection Alliance. For more information, see the section "Become a member"**

THEMATIC WORKING GROUPS (TWG)

COPA PILOT ACTIVITIES IN

Ghana

First COPA partner country

China

Colombia

COUNTRY MEMBERSHIP APPLICANTS

Tunisia, COPA partner country

Mexico, COPA partner country

Grenada

Dominican Republic

The Gambia

Ecuador

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COPA MEMBERS

BECOME A MEMBER

Enjoy the following benefits

- Membership free of charge
- Many networking opportunities
- Shape the future of COPA
- Technology and solution exchange
- Early access to publications, newsletters, events
- Support in designing and implementing mitigation actions

COPA is open to all countries and organisations willing to support the global shift to sustainable refrigerant management and closing the loop to a circular economy in the cooling sector.

Find more Information on our Website:
https://www.copalliance.org/

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3. Tunisia perspective: The need for ODS and HFC banks management

Youssef Hammami, National Ozone Unit Tunisia

APPROACH FOR THE IMPLEMENTATION OF NDC IN TUNISIA

- The Ministry of the Environment began in early 2020 the development of a national development strategy with reduced GHG emissions adapting to climate change by 2050,

Based on:

- The revision of Tunisia's NDC in the climate change sector, following the requirements of the Paris Agreement (PA).

- The implementation of the NDC by the Ministry of the Environment and co-steered by a technical advisory committee appointed by the Minister of the Environment (created in early 2020).
- The NOU is a member in this committee

DEVELOPMENT OF SNBG 2050

- National strategy for low-carbon (SNBG), based on the revised NDC (article 4.19 of the Paris Agreement: PA)
- Strategic Vision 2050
- The Tunisian NOU is a member in this SNBG committee

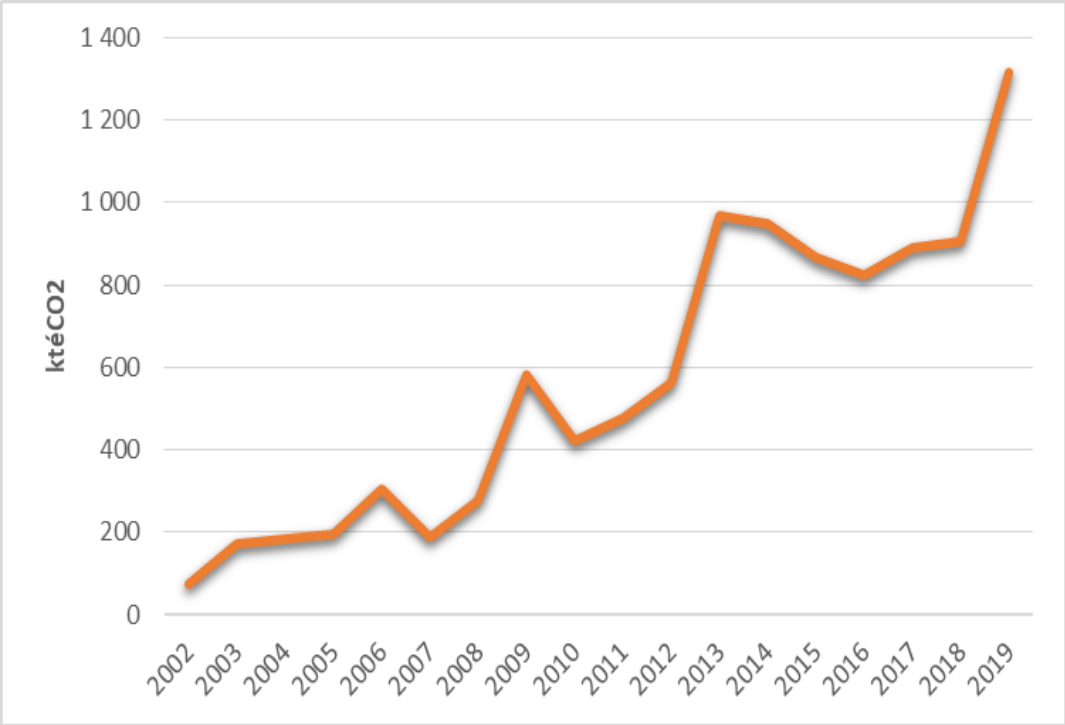
BILATERAL/NATIONAL PARTNER FOR UPDATING THE TUNISIAN NDC

- The International Cooperation Agency: GIZ
- The National Energy Management Agency: ANME

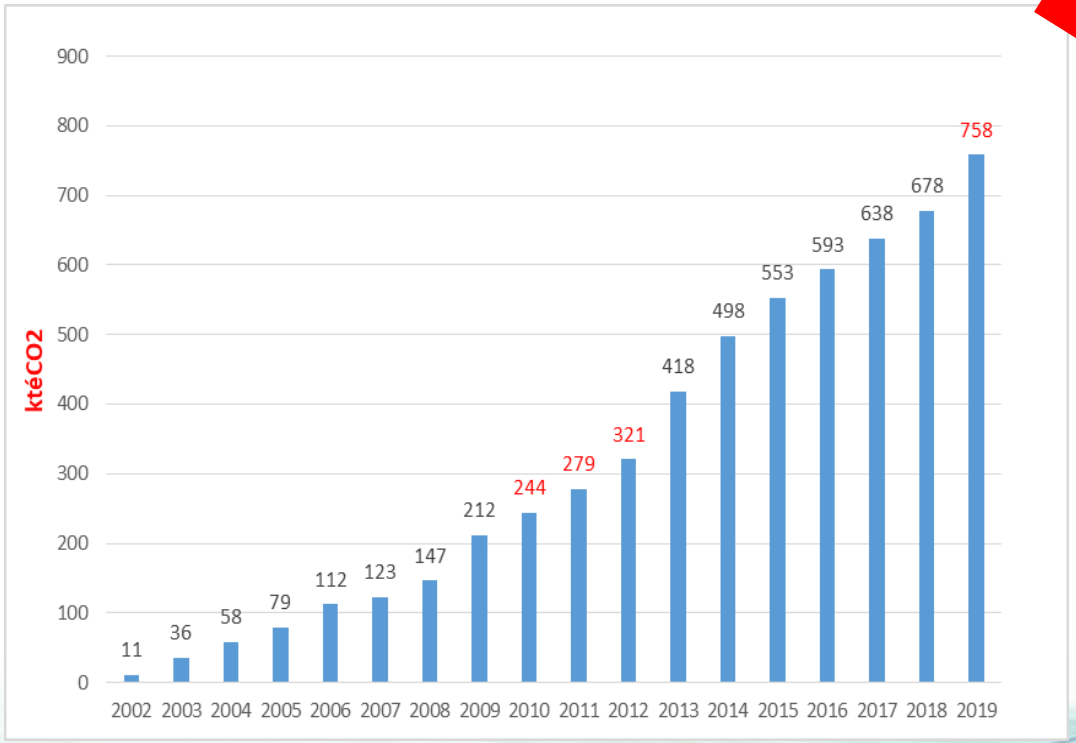
The updated NDC was finalized and sent to UNCCC – October 2021

Including GHG (HFC) reduction plan in the RAC sector and HFC emission from banks

HISTORY OF ANNUAL HFC IMPORTS 2002-2019



HFCS IN GHG INVENTORIES

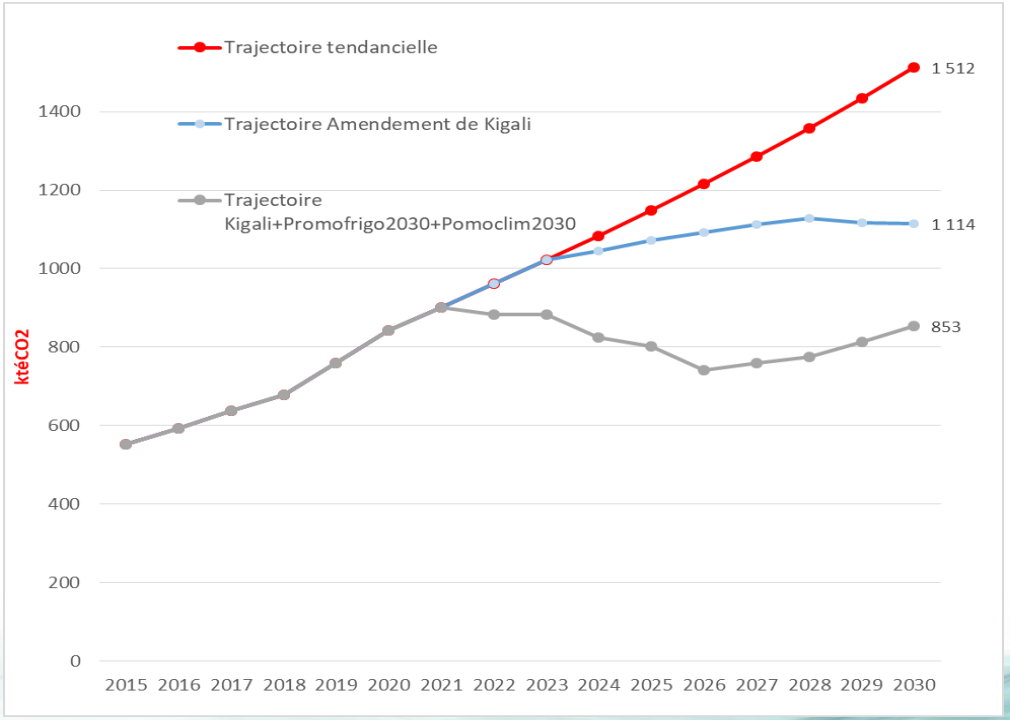


PROMOFRIGO AND PROMOCLIM PROJECTS TARGETING ODS (HCFC-22) & HFC STOCKS

- **PROMOFRIGO:** is a specific national program aimed at **replacing old refrigerators** (more than 10 years old) **with class 1 refrigerators**. Promofrigo should rely on a financial mechanism based on a subsidy and an FTE (Energy Transition Fund) credit.

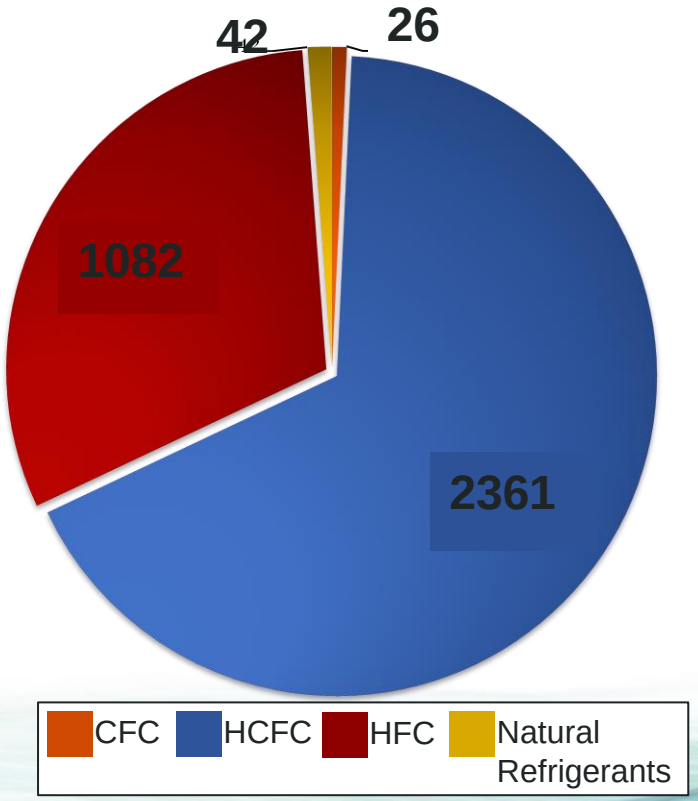
- **PROMOCLIM:** would be a national program aimed at **replacing old Air Conditioners** (more than 10 years old, and generally of class greater than or equal to 4) **with class 1** appliances. This program has not started either, but it was supposed to rely on a financial mechanism based on a grant and an FTE credit.

PROSPECTS FOR THE EVOLUTION OF GHG EMISSIONS DUE TO HFC ACCORDING TO 3 SCENARIOS WITH THE ASSUMPTION OF AN EXTENSION OF PROMOFRIGO UNTIL 2030 (KTÉCO2)



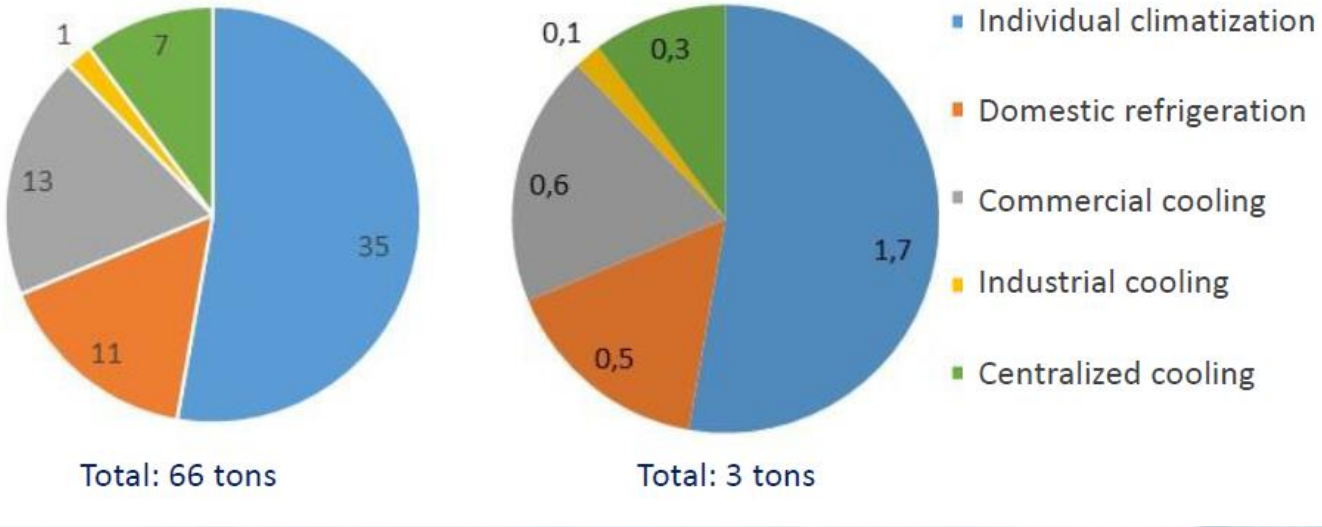
ODS/HFC DISTRIBUTION (BY REFRIGERANTS TYPE IN KTÉ CO_2)

SURVEY OF 2015



POTENTIAL IN ODS/HFC (LEFT) AND ODS/HFC AVAILABLE (RIGHT) FOR MANAGEMENT

Source: 2015



THE NEED TO CONDUCT AN UNPDATE INVENTORY OF ODS/HFC IN STOCKS (BANKS)

Why ?

- Determination of business requirements for ODS/HFC management,
- Determination of environment benefits: the ozone layer , the climate protection..
- Allow to choose between the export for the recovered ODS/HFC for their destruction and the local solution (recycling/reclaiming facility)
- Optimal capability design for destruction technologies in case of local ODS/HFC destruction /recycling/reclaiming option
- Assess long-term availability to ensure economic viability of the ODS/HFC destruction or recycling/reclaiming
- Development of appropriate regalotory framework

KEY PROCESSES FOR ODS/HFC INVENTORY MANAGEMENT

For successful ODS /HFC inventory management, the following key processes must be established:

- Appropriate policy measures
- A sustainable financing mechanism
- An effective collection mechanism
- An operational recycling/reclaiming and destruction infrastructure

TUNISIA – NEW COPA MEMBER

- Tunisia joined COPA Program in 2022
- Implementation :with GIZ/UNIDO and related stackeholders in Tunisia (Waste management agency / energy efficiency agency…)

What we can do with COPA?

- Inventory for ODS/HFC banks will be updated
- Development and update of the ROADMAP regarding the best management of ODS/HFC banks in all retaed RAC sector.
- Capcities building of RAC actors (technicians, servicing sector…) for good handling and management of ODS/HFC

Thank you for your attention

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Follow us on the facebook page:

: National Ozone Unit-Tunisia

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4. Solutions for ODS and HFC banks management

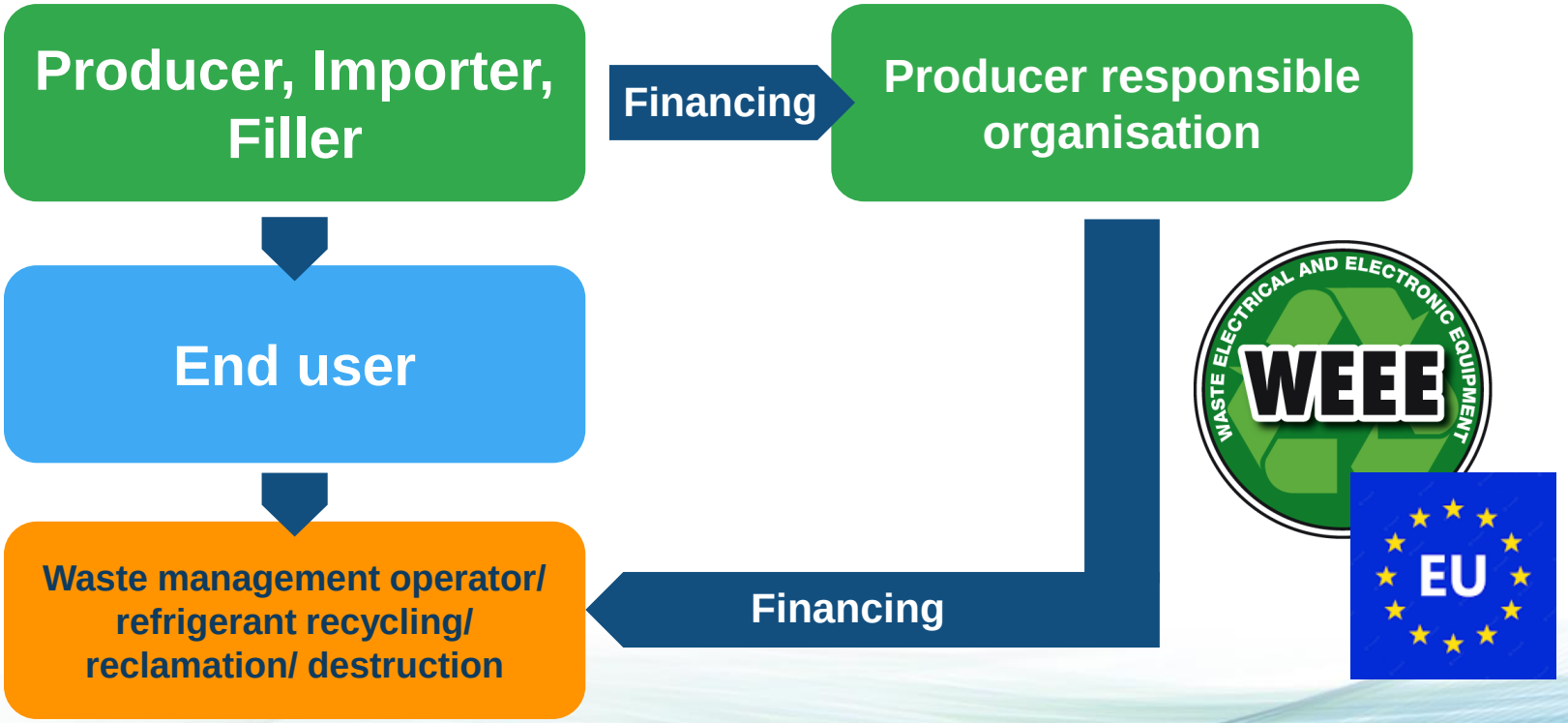
Dietram Oppelt, HEAT GmbH

INSTRUMENTS TO RAISE NDC AMBITIONS (EMISSION TARGETS) THROUGH ODS & HFC BANK MANAGEMENT

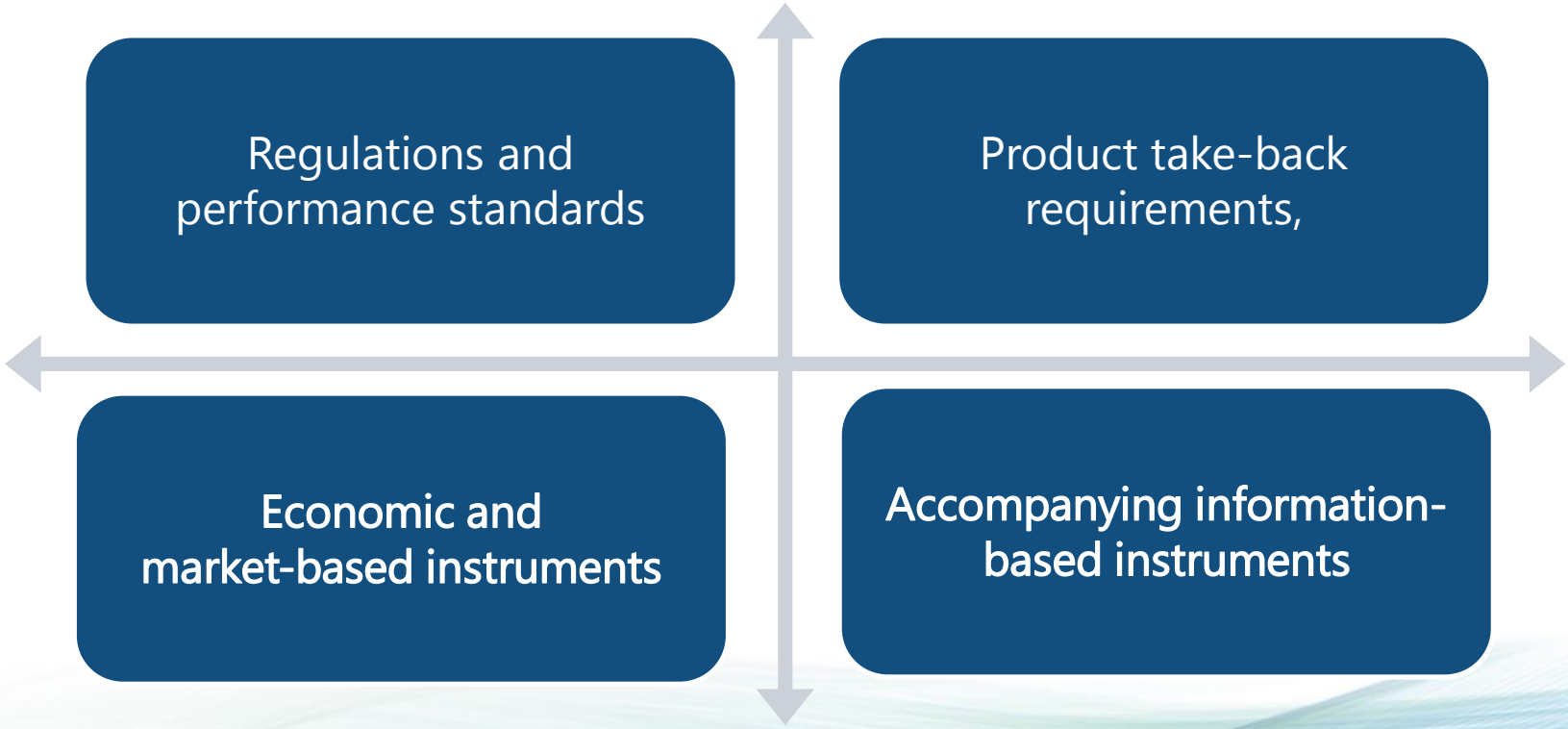
- **Enhanced Producer Responsibility (EPR)** schemes
- Refrigerant & cooling appliances **collection systems**
- **Mandatory on-site recycling** of refrigerants
- Establishment of **refrigerant reclaim facilities**
- **Certified technicians to** handle, install, service, and check leakages

More Information here

EPR SCHEMES AS A CRITICAL ENABLER



EPR SCHEME AS A MIXTURE OF CRITICAL



BUSINESS CASE 1: REFRIGERATOR RECYLING BRAZIL

- Refrigerator Recycling, with the recovery and sale of recycled materials and F-gases
- Financing through “green utility take back programme”, exchange of old inefficient refrigerators against efficient households for poor households with good utility payment record
- Recycling program linking facilities; refrigerator manufacturers, retailers; servicing technicians; scrap collectors; utilities; private households

KEY FACTS REFRIGERATOR REFRIGERANTS RECYCLING PROMOTED BY PROKLIMA

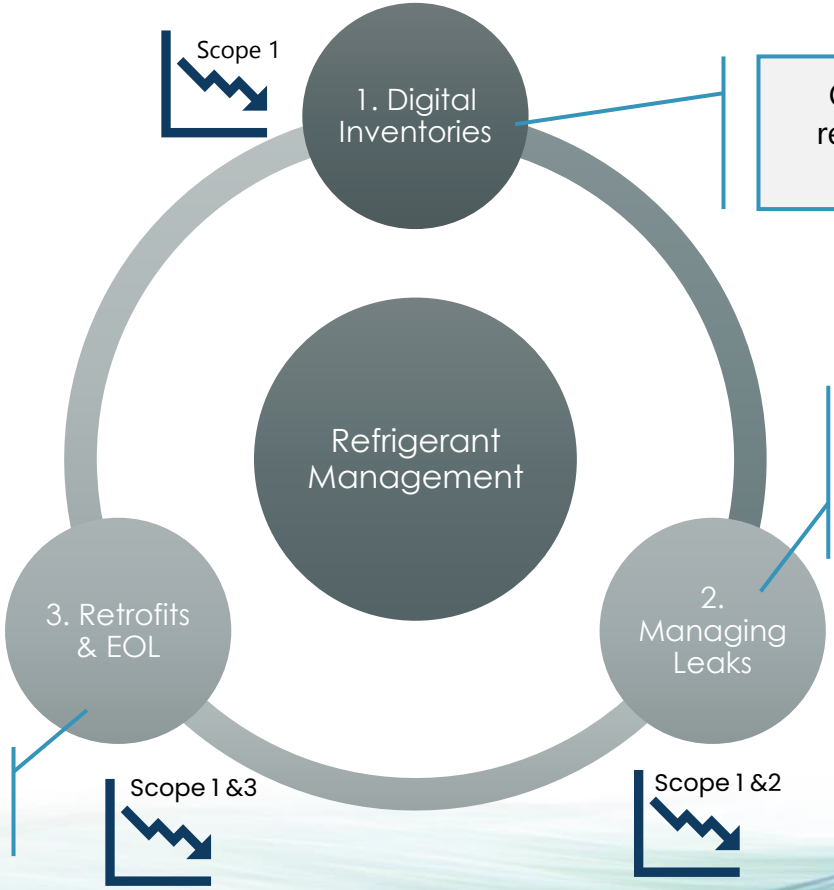
- Successful launch and implementation of WEEE regulation
- 218.065 recycled cooling appliances
- Recovery of 30.904 kg of ozone depleting and climate damaging substances (CFC-11, CFC-12, HCFC-141b, HCFC-22, HFC-134a)
- Destruction of 2,6 t recovered F-Gases in a national plant
- Avoidance of 155.663 t CO_2 eq. direct emissions
- Supported by Brazilian Ministry of the Environment
- Implemented by GIZ Proklima
- Operator: Revert Brasil Soluções Ambientais Ltda.

BUSINESS CASE 2: ORGANISATIONAL REFRIGERANT MANAGEMENT

Reduced Risk, Costs & Emissions

Lifecycle Objectives

1. Prevent 'polluting' banks from growing (ODS, HFCs)
2. Mitigate emissions from leaks & energy Use
3. Ensure no atmospheric release at end-of-life (EOL)



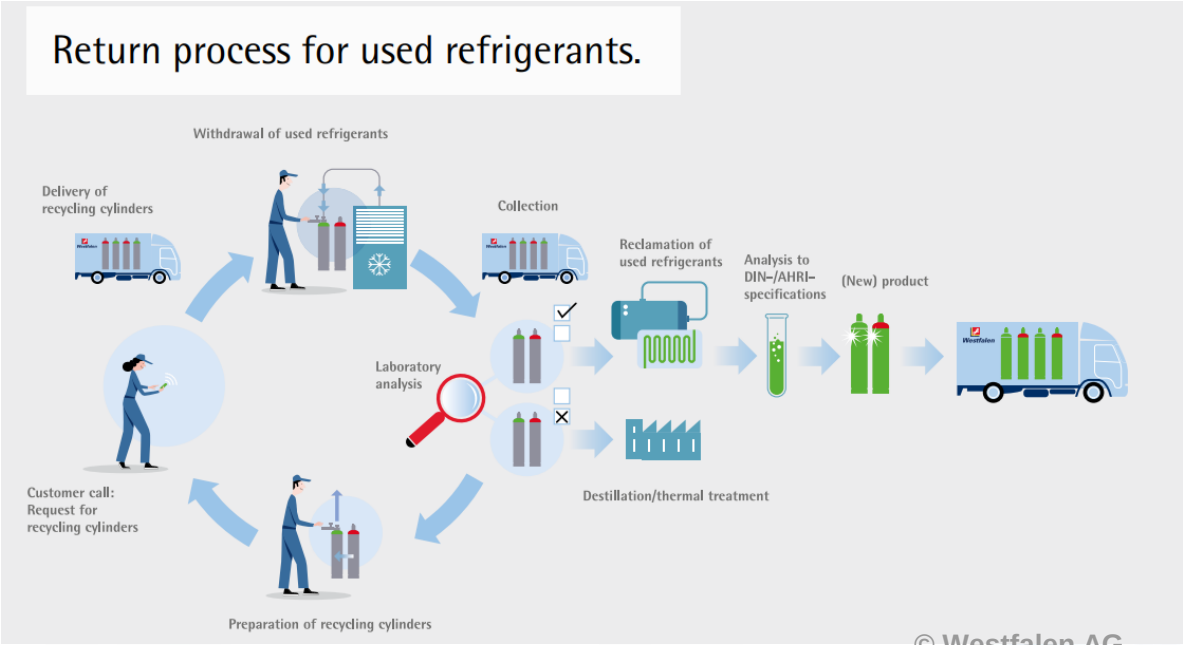
Centralised database of all refrigerant systems, types of gases and quantities

Technology and processes for locating leaks, reducing time to repair & mitigating new leaks

Refrigerant selection, disposal and capacity building

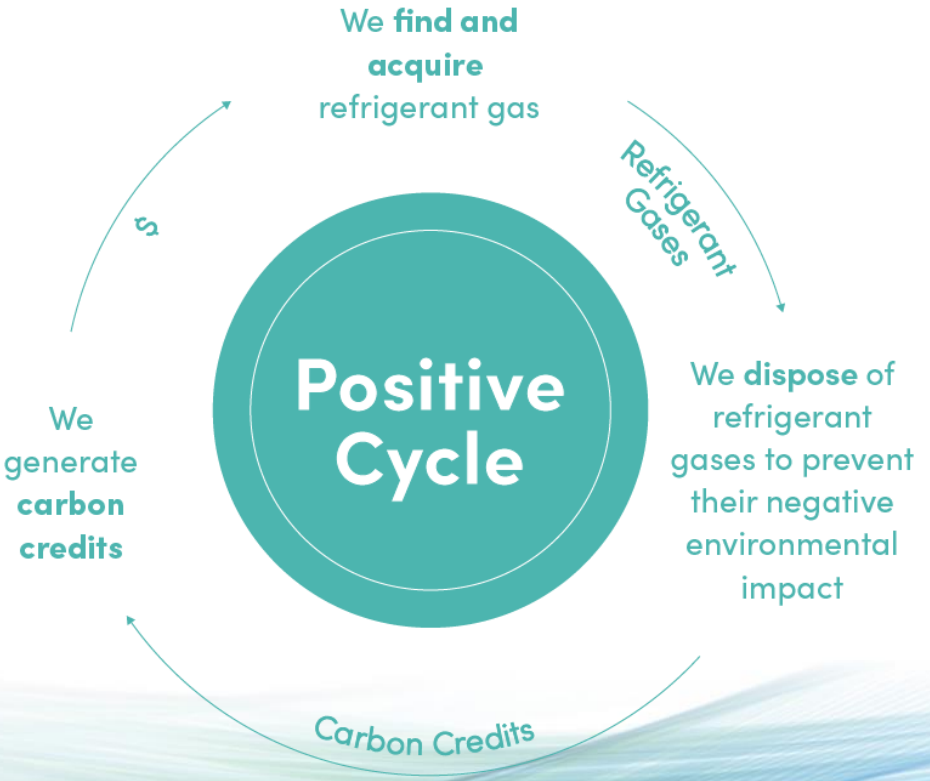
BUSINESS CASE 3: RESELLING RECLAIMED REFRIGERANT

- **Collect, recover and reclaim** used refrigerant (ODS) → getting rid of impurities
- Deliver refrigerant back to end users
- E.g Enviroserve in United Arab Emirates states: Reclaimed refrigerants are 45% **cheaper compared to virgin gases**



BUSINESS CASE 4: CARBON CREDITS

- **Identify and collect** refrigerant gases for their proper management.
- Once a sufficient amount has been accumulated through an authorized waste manager, the gases are **destroyed or reclaimed** locally or internationally, preventing a potential negative environmental impact.
- **Carbon credits** are generated through recognized and verifiable international protocols, and their sale finances the search and management of more refrigerant.



KEY TAKE AWAYS

- Importance of **EPR schemes as a key enabler**
- Importants for **tracking refrigerant flow** through **registries**
- Effective **refrigerant quota and pricing schemes**, to drive recycling and reclamation
- **Carbon credits** can facilitate the transition and financing of sustainable policy schemes
- **Qualified and certified technicians** to handle refrigerants

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5. Q&A
All participants

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6. Conclusion and Closing remarks
Sophie Geoghegan, EIA

CONTACT & EVENTS

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THANK YOU FOR YOUR PARTICIPATION