



# COPA 2nd Plenary Meeting

18-19 June 2024



1. COPA Plenary Day 1 -18 June 2024  
Moderator Ellen Michel, GIZ, Head of COPA Secretariat

## GROUND RULES FOR ONLINE SESSIONS



- Please **use headphones** or **earphones** in order to prevent echoing-effects



# Session 1

2 pm-3.30 pm (CEST)

Agenda

Steering  
Committee &  
Secretariat

COPA  
Celebrates

TWG Reports

Welcoming:  
Rachel Pekker,  
BMWK

Group Photo



# AGENDAS (CEST)

## Day 1 – 18<sup>th</sup> June

<b>14:00</b>	<b>Plenary Opening</b>	
(CEST)	Welcoming	The Federal Ministry for Economic Affairs and Climate Action Steering Committee
	COPA celebrates with members	
	Thematic Working Groups reports	Coordinators of Thematic Working Group
<b>15:30</b>	<b>Break</b>	
<i>Parallel sessions</i>		
<b>15:45</b>	<b>COPA Positions</b> ( <i>stay in MS teams link</i> )	<b>COPA meets</b> ( <i>switch to this MS teams link</i> )
	Position Paper "COPA Safeguards"	I. Papst (Steering Committee)
	Position Paper "COPA Position on HFO"	A. Bukmanis (Steering Committee)
	Position Paper "COPA Position on Carbon Credits as financing source for management of ODS / HFC bank management activities"	T. Nickson (Steering Committee)
<b>16:45</b>	<b>Break</b>	
<i>Parallel sessions</i>		
<b>17:00</b>	<b>COPA learns: Best Practice from Grenada and Mexico</b> ( <i>stay in MS teams link</i> )	<b>COPA looks ahead</b> ( <i>switch to this MS teams link</i> )
	How to establish a refrigerant recovery and recycling centre?	L. Smith (NOU Grenada) (tbc)
	Country experience: Mexico	S. Merino (NOU Mexico)
<b>17:45</b>	<b>Wrap Up &amp; Closing of Day 1</b>	

## Day 2 – 19<sup>th</sup> June

<b>8:00</b>	<b>Welcoming</b>	
(CEST)	Recap Day 1	
	Welcoming	The Federal Ministry for Economic Affairs and Climate Action
	COPA celebrates with members	
<i>Parallel sessions</i>		
<b>8:30</b>	<b>COPA learns: Carbon Markets</b> ( <i>stay in MS teams link</i> )	<b>COPA meets</b> ( <i>switch to this MS teams link</i> )
	Experiences, Methodologies and national frameworks	H. Salway (Gold Standard)
		G. Keotsene, B. Gopolang (NOU Botswana)
<b>9:30</b>	<b>Break</b>	
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	Options for ODS and HFC Collection	J. Baffoe (NOU Ghana)
	Standard Operating Procedures for end-of-life Fridges & Freezers	T. Schleicher (Öko Institut)
		How to make COPA a sustainable and lasting Alliance? COPA Steering Committee and Secretariat
<b>10:30</b>	<b>Break</b>	
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	Position Paper "COPA Position on Carbon Credits as financing source for management of ODS / HFC bank management activities"	T. Nickson (Steering Committee)
		China Energy Efficiency Survey X. He (UNDP)
		Country experience: Tunisia Y. Hammami (NOU Tunisia)
<b>11:45</b>	<b>Wrap Up of 2nd Plenary Meeting &amp; Closing</b>	



## 2. Steering Committee & Secretariat

Ellen Michel, GIZ, Head of COPA Secretariat

# INTRODUCTION OF THE STEERING COMMITTEE

## *Civil Society (Group C)*



**Gift Richard Maloya**

**ICAD**

The Initiative  
for Climate Action  
and Development

**ICAD**

Member since: 2023  
Malawi

**Tom Nickson**



**EIA**

Member since: 2021  
United Kingdom

# INTRODUCTION OF THE STEERING COMMITTEE

## *Public Entity (Group A)*



**Rachel Pekker**



Bundesministerium  
für Wirtschaft  
und Klimaschutz

**Federal Ministry for Economic Affairs and Climate Action - BMWK**

Member since: 2021

Germany



## INTRODUCTION OF THE STEERING COMMITTEE

### *Private Sector (Group B)*



**Adrian Bukmanis**



**Veridien**

Member since: 2021  
Singapore, France

**Irene Papst**



**HEAT**

Member since: 2022  
Germany



# INTRODUCTION OF THE STEERING COMMITTEE

## *Academia (Group D)*



**Mustafa Hathal**

**The Scientific Society of Scientific Studies and Research - Iraq**  
Member since: November 2022  
Iraq

## INTRODUCTION OF THE STEERING COMMITTEE

### *Countries (Group F)*



**Rómulo Armas Real**

Ministerio de Producción  
Comercio Exterior,  
Inversiones y Pesca



GUILLERMO LASSO  
PRESIDENTE

**Elías Gómez Mesa**



## THE COPA SECRETARIAT



**Ellen Michel**  
Head of  
Secretariat



**Paola  
Bustillos  
Castillo**  
Advisor



**Tizian  
Pfeiffer**  
Junior  
Advisor



**Mareike  
Boll**  
Advisor



**Malin  
Emmerich**  
Advisor



**Theresa Bruns**  
Communication  
Specialist



**Juliette  
Noppe**  
Advisor



**Heidrun  
Steiner**  
Admin &  
Finance



**Paul  
Thielmann**  
Intern



### 3. COPA Celebrates Achievements Experiences and Highlights



## **COPA HIGHLIGHTS JUNE 2023 – JUNE 2024**

<https://youtu.be/3rl3zA3UCo8>



# 4. Thematic Working Group Reports

## REPORTING FROM COPA THEMATIC WORKING GROUPS (TWG)



### Policy Framework

Developing suitable policy measures for effective management of refrigerants and foams at their end-of-life stage.



### Technology Solutions

Working towards the best technical solutions for ODS and HFC recovery, reclamation and destruction



### Financing Mechanism

Developing financial mechanisms for sustainable GHG mitigation measures in ODS and HFC banks



### Implementation Models

Putting theory into practice – demonstrating how sustainable refrigerant management can be implemented



# COPA TWG on Policy Framework

18<sup>th</sup> June 2024

## COPA TWG POLICY FRAMEWORK

- Launched beginning of 2023
- To bring together interested COPA Members to jointly work on **identifying and developing policy interventions** suitable for GHG mitigation measures in the ODS and HFC banks sector
- **Co-Coordinator**s

Thank you to ...



**Ken Logan**  
Sustainability  
Director of A-Gas  
International

&



**Ellen Michel**  
Head of COPA  
Secretariat



## COPA TWG POLICY FRAMEWORK

- **Activities**

5 meetings took place

EPR regulations

Export/import  
regulations and  
transboundary  
movement - Basel  
convention

Guidelines

National  
policies

Exchange on  
practical  
experiences



## POTENTIAL POLICY FRAMEWORK FOR THE PROMOTION OF SUSTAINABLE ODS/HFC BANKS MANAGEMENT

Deliverable under the Project:  
"Climate and Ozone Protection Alliance"

Presented to GIZ Proklima by HEAT GmbH  
September 2023

[COPA Publication Policy Study 23.pdf](#)  
 [\(copalliance.org\)](http://copalliance.org)



## COPA TWG on **Technology Solutions**

18<sup>th</sup> June 2024, Yunrui Zhou, UNIDO & Mareike Boll, GIZ

# Milestones



# Key deliverables of the Technology Solutions Working Group

## Publication: ODS/HFC Reclamation and Destruction Technologies

- Introduction
- Background on ODS/HFC banks
- Reclamation of ODS/HFCs
- Destruction of ODS/HFCs
  - Cement kiln
  - Municipal Solid waste incineration
  - Rotary kiln incineration
  - Argon Plasma Arc
  - Comparison of the technologies
- Policy framework
- Recommendations and conclusions



Link of the report:  
[COPA Publication ODS HFC Destruction Reclamation.pdf](https://www.copalliance.org/COPA_Publication_ODS_HFC_Destruction_Reclamation.pdf)  
[copalliance.org](https://www.copalliance.org)

## Technical webinar on ODS destruction technologies

- Webinar in English took place in Jan 2024
- Webinar in Spanish took place in May 2024

## Virtual Study Tour

- "travel" to Regener plant, Chile, 18 March, 2024
- "travel" to company UNACEM, Ecuador, 21 March, 2024



## Way forward: Collection of ideas

- In-depth study on business models of reclamation centres and refrigerant life cycle management
- In-depth study on ODS/HFC destruction technologies incl. installation and operational cost
- Review of destruction emissions on various destruction technologies
- PFAS emissions after refrigerant destruction

## Upcoming COPA Events

- **OEWG side event:** Accelerating the destruction of ODS waste: an open discussion on the role and lessons-learned of the Climate and Ozone Protection Alliance
  - ❑ **Date: Thursday, 11 July 2024 at 1.00 to 3.00 p.m.**
  - ❑ **Location: Room CR-6**



## COPA TWG on Financing Mechanisms

18<sup>th</sup> June 2024, Louis Potok

## COPA THEMATIC WORKING GROUPS (TWG)



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### Financing Mechanism

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### Implementation Models

Putting theory into practice – demonstrating how sustainable refrigerant management can be implemented

**Louis Potok, Chair**  
**Adrian Bukmanis, Vicechair**

## MATERIALS ONLINE:

- Meetings & documentation; presentations
- [Webinar Sessions](#) (video recording)
- Studies, reports, tools
- Workplan
- Overview of the work in 2023
- Contact information
- [TWG FM Website link](#)



## GOALS

- Gather and develop financing options (in use and potential)
- Education and shared learning around financing options
- Provide options to COPA members, especially country members
- Develop COPA financing mechanism



**Financing  
Mechanism**



## MAJOR ACTIVITIES AND ACCOMPLISHMENTS

- **March 2023: Election of Chair and Vice-Chair**
- **April 2023: Publication of [Review and Concept Note](#)**
  - Summarize mechanisms in use
  - Compare pros and cons
  - Propose a COPA financing mechanism
- **May 2023: [UNDP Carbon Market Report](#)**
  - Describe historical use of carbon markets for ODS
  - Detailed look at business model and considerations
  - Includes financial model tool in Excel
- **October 2023: [TWG Brainstorm Session](#)**
  - Eergize COPA project submissions
- **Ongoing: Financing Mechanism 101**
  - Accessible introduction to several options
  - **April 2024:** Carbon Markets ([recording](#))
  - **Upcoming:** Beyond Value Chain Mitigation



**Financing  
Mechanism**

## AMBITIONS FOR THE UPCOMING YEAR

- (Speculative)
- Continue 101 Series
- More member participation
- Engage more outside of COPA, eg with potential financial institutions
- Consultation to member countries as needed
- Additional case studies on successful mechanisms, especially outside carbon markets



**Financing  
Mechanism**

## GET IN TOUCH

We would love to hear from you

- ✓ Via e-mail: [Louis@recoolit.com](mailto:Louis@recoolit.com)
- ✓ How can we be helpful to you? What are you interested in learning more about?





## **COPA TWG on Implementation**

18<sup>th</sup> June 2024, Paola Bustillos Castillo, GIZ

# IMPLEMENTATION WORKING GROUP

✓ First Implementation Working Group Meeting on 20.03.2024

## Call for ideas

- Eight ideas were submitted under the Call for Ideas, encompassing diverse proposals such as capacity building initiatives, facility destruction projects in India and Thailand, EPR Schema for Pakistan and Support for the Art.6.
- All submissions underwent rigorous evaluation and were subsequently recommended to the Steering Committee for further backing through COPA.
- These initiatives exemplify COPA's commitment to fostering innovative approaches and promoting international cooperation.
- With COPA's support, these projects aim to significantly contribute to climate protection and the preservation of the ozone layer, enhancing global sustainability efforts.



**CALL FOR IDEAS – FORM**

Together with member countries and diverse actors, the Alliance aims to develop measures to reduce emissions from ODS and HFC banks. Therefore, COPA encourages all its members to communicate and submit their project ideas as a first step of a project preparation process that aims to introduce effective solutions with regard to ODS and HFC banks management collaboratively.

Please fill out the form and submit to the COPA Secretariat: [contact@copalliance.com](mailto:contact@copalliance.com)

**Project Title:**

**Applicant(s)**

Name(s) of institution(s):

Type(s) of institution(s):

Website(s):

**Contact Person(s)**

Name(s) of Contact Person(s):

Role(s) in the Project:

E-Mail Address(es):

Telephone Number(s):

**Date of Submission:**





**5.** Welcoming Remarks  
Rachel Pekker, German Federal Ministry for Economic Affairs and  
Climate Action



Group Photo



**Break**  
3.30-3.45 pm (CEST)

to be followed by  
Session 2: COPA Position Papers  
Parallel Session: COPA Meets - Networking  
3.45-4.45 pm (CEST)





## Session 2

3.45 pm-4.45 pm  
(CEST)

Graphic  
Recording

COPA  
Positions

COPA  
Meets  
“Parallel session”

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	Country experience: Mexico	S. Merino (NOU Mexico)		
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## COPA positions in Main room (here)

- HFO refrigerants
- Safeguards
- Carbon Credits & Carbon Markets (ongoing)

## COPA Networking Session in Breakout rooms

- ✓ Random exchanges of members in breakout rooms
- ✓ Click **[MS Team-link in Chat](#)** or in the Agenda to join



# 1. **COPA Position Paper - Safeguards** Irene Papst, COPA Steering Committee (Private Sector)

# Why are we taking a position on Safeguards?

- COPA considers wider environmental and social justice impacts of their projects and implements a set of **safeguards to avoid undue effects**.
- Those safeguards are **used as checklist** for any project that receives COPA support during the kick-off, implementation and evaluation.
- COPA aims to collect experience and possibly data to draw **attention to otherwise overlooked issues**.

# 1. DO NO HARM PRINCIPLE

- Mitigation activities should minimize and, wherever possible, avoid producing any negative environmental, economic, or social effects.
- Any potential environmental and social risks and impacts arising from mitigation activities should be assessed.
- Environmental and social safeguards should be implemented to **avoid, minimize, and compensate** potential risks and harms.

## 2. POSSIBLE ELEMENTS OF SAFEGUARD LIST

Aspect	Specific issues	Safeguards
Environmental pollution near destruction facilities	Pollutants from the destruction process, such as particulate matter, carbon monoxide, PFAS in combustion by-products	Implement highest internationally recognized environmental standards (e.g. EU Air Quality Standards),  conduct regular testing and monitor air and water quality and waste residues around the facilities. Use best-available filtration and scrubbing technologies to minimize emissions.
Gender balance in project beneficiaries	Varies with project activities	Encourage gender diversity in employment and training programs. Implement policies that support the inclusion and advancement of women in all project roles.
Effects on informal market	Impact on informal sector workers and businesses	Consider special needs when conducting capacity development measures.  Facilitate the transition of informal workers to the formal sector.
Worker Health and Safety	Occupational hazards associated with handling and destroying ODS, HFC and HFO	Provide comprehensive safety training, personal protective equipment, and health monitoring for workers. Establish emergency response protocols.
Community Engagement and Impact	Local community concerns about facility operations, health risks, and property values	Engage with local communities through regular meetings and information sessions. Implement community feedback mechanisms and ensure transparency in operations.
Waste Management and By-Product Disposal	Safe disposal of waste and by-products from the destruction process	Develop and adhere to strict waste management protocols. Explore recycling and safe disposal options for by-products.
Climate Change Considerations	Contribution of ODS destruction processes to greenhouse gas emissions	Implement strategies to minimize carbon footprint, such as using renewable energy sources and optimizing energy efficiency.  (Link to Scope 3 GHG Protocol considerations)



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**QUESTIONS?**  
**COMMENTS?**

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## 2. **COPA Position Paper - HFO** Adrian Bukmanis, COPA Steering Committee (Private Sector)

# Why are we taking a position on low-GWP HFO refrigerants?

- Concern over primary and secondary degradation products
- Full lifecycle impacts
- Growing banks (e.g. vehicles)
- Limited awareness

## 1. POLICY

- Inclusion with similar diligence as ODS / HFCs
- Best practice management
- Raise awareness with policymakers



Photo by Jacek Dylag - Unsplash

## 2. DESTRUCTION

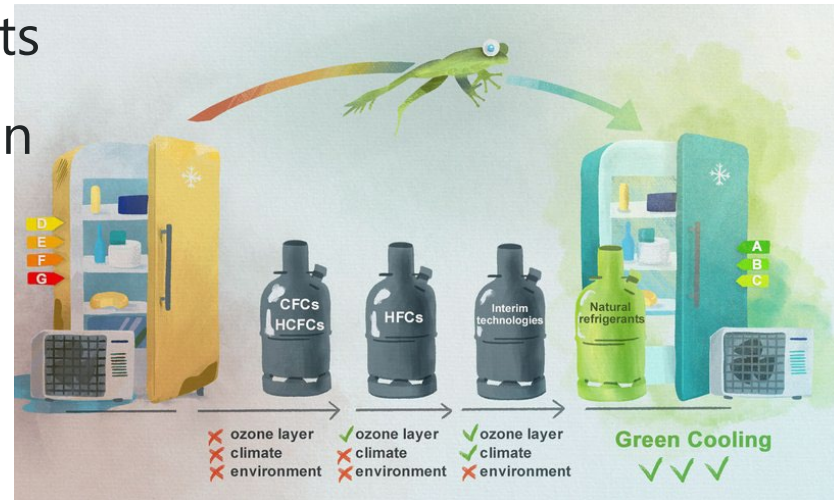
- Development and promotion of suitable technologies
- Evaluation of existing facilities
- Management of PFAS
- Work on financing mechanisms





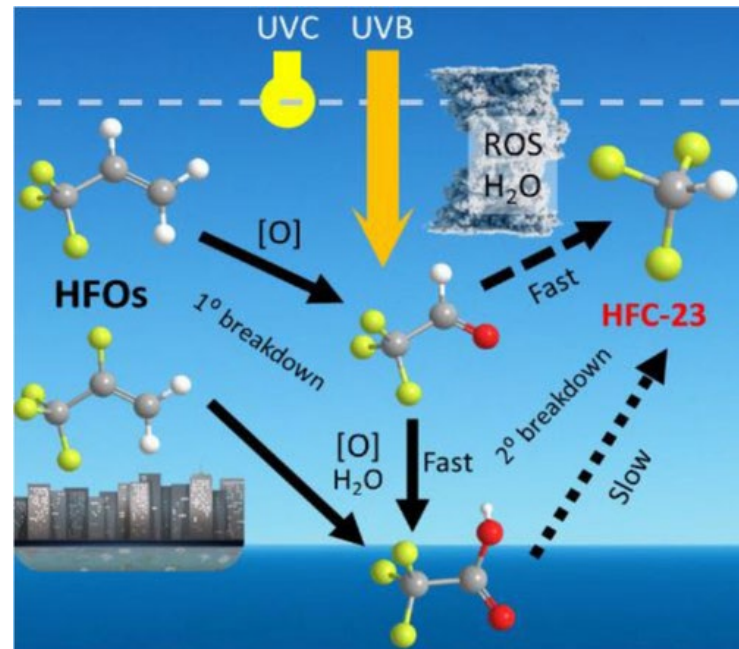
### 3. ALTERNATIVES

- Non-fluorinated, natural refrigerants
- Leapfrog to avoid another transition
- All refrigerants need management



## 4. RESEARCH

- Support further research into atmospheric degradation
- Destruction byproducts
- Full-lifecycle impacts



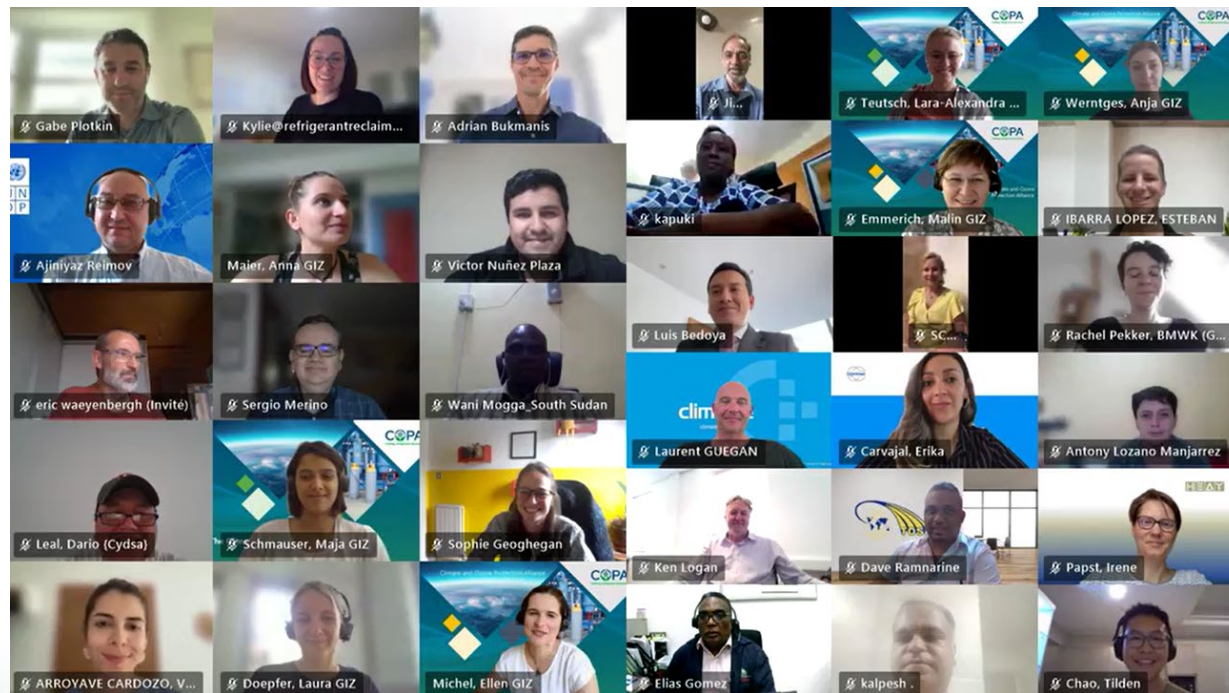
Salierno, *ChemSusChem* 2024, e202400280

## 5. STAKEHOLDER ENGAGEMENT

- Public outreach
- Education and training
- Early intervention to limit banks



# What would COPA of 2040 ask of us?



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**QUESTIONS?**

**COMMENTS?**

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## **COPA Position Paper – Carbon Credits**

- 3.** Tom Nickson, COPA Steering Committee (Civil Society)  
Malin Emmerich, COPA Secretariat (TWG FM Coordinator)

# Why are we taking a position on Carbon Credits?

- Idea of funding ODS/HFC bank management activities through the generation and sale of carbon credits
- An opportunity worth considering for COPA activities
- Brings both potential risk and benefits
- Position paper is in draft version – overview of discussion today

## OVERVIEW OF DRAFT POSITION PAPER

1. Carbon Credits & Carbon Markets
2. Opportunities
3. Risks & concerns
4. Orientation & Guidance; COPA as compass?



# 1. CARBON CREDITS & CARBON MARKETS

Three core aspects to the carbon markets today:

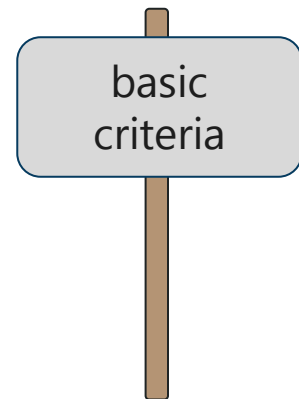
- **The mandatory or compliance markets**  
trade government issued/permitted emissions allowances within a structured market;
- **Sovereign carbon markets**  
national level for emissions reduction and removal
- **Voluntary carbon markets (VCMs)**  
trade credits based on carbon offsets for emissions avoidance, reduction or removal on a voluntary basis.

## Carbon Credit:

- ✓ emission reductions equivalent of one ton CO<sub>2</sub> = CO<sub>2</sub>eq
- ✓ Validated and certified

# 1. CARBON CREDITS / VALIDATION & CERTIFICATION

- **Quantification**  
Emissions reductions or removals used to generate a credit must be robustly quantifiable
- **Additionality**  
The activity generating the credit would not have occurred in the absence of the incentive created by selling the credits
- **Permanence**  
The activity generating the credit must lead to a permanent reduction or removal of emissions
- **Transparency**  
Comprehensive information is available on methodology employed, monitoring and reporting involved, and all mitigation activities undertaken





## 2. OPPORTUNITIES

In optimal circumstances carbon markets:

- can *allocate capital* towards low-carbon solutions and emission reductions
- create an *economic incentive* for reducing greenhouse gas (GHG) emissions as cost-effectively as possible
- support increased *involvement of the private sector* in climate mitigation



### 3. RISKS AND CONCERNS

#### Broader issues with carbon offset credits:

- Greenwashing & delaying real climate action
- Carbon market integrity cannot be assured
  - Scandals past & present
  - No control over who buys credits
- Carbon credits risk disincentivising the significant investments needed to tackle the climate crisis

#### Issues specific to ODS & HFC credits:

- Lack of additionality (and permanence)
- Undermining the incentive to legislate
- Risk of creating perverse incentives
- 'Bringing forward' emissions
- Not a sustainable model in the long-term
- Potential derogation from Vienna Convention

## 4. COPA ORIENTATION & GUIDANCE

- Should / Can the COPA position paper function as compass and guidance for members on carbon credits and carbon markets?
- What should be included resp. not included?
- What are COPA members experiences with carbon credits & carbon markets?



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**QUESTIONS?**  
**COMMENTS?**

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***Welcome Back!!***



***Question:***

***How do you stay motivated in the fight for climate/ ozone protection?***

***Please write your answer in the chat.***





**Break**  
4.45-5.00 pm (CEST)

to be followed by  
Session 3: COPA Learns Best Practice from Mexico  
Parallel Session: COPA Looks ahead - Sustainability  
5.00-5.45 pm (CEST)



## Session 3

5.00 pm-5.45 pm  
(CEST)

COPA Learns  
Mexico

COPA Looks  
ahead  
“Parallel session”

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	Welcoming	COPA celebrates with members
	<i>Parallel sessions</i>	
<b>8:30</b>	<b>COPA learns: Carbon Markets</b> <i>(stay in MS teams link)</i> Experiences, Methodologies and national frameworks H. Salway (Gold Standard) G. Keotsene, B. Gopolang (NOU Botswana)	<b>COPA meets</b> <i>(switch to this MS teams link)</i> Networking Session
<b>9:30</b>	<b>Break</b>	
	<i>Parallel sessions</i>	
<b>9:45</b>	<b>COPA learns: Best Practice from Ghana</b> <i>(stay in MS teams link)</i> Options for ODS and HFC Collection J. Baffoe (NOU Ghana) Standard Operating Procedures for end-of-life Fridges & Freezers T. Schleicher (Öko Institut)	<b>COPA looks ahead</b> <i>(switch to this MS teams link)</i> How to make COPA a sustainable and lasting Alliance? COPA Steering Committee and Secretariat
<b>10:30</b>	<b>Break</b>	
	<i>Parallel sessions</i>	
<b>10:45</b>	<b>COPA Positions</b> <i>(stay in MS teams link)</i> Position Paper "COPA Safeguards" I. Papst (Steering Committee) Position Paper "COPA Position on HFO" A. Bukmanis (Steering Committee) Position Paper "COPA Position on Carbon Credits as financing source for management of ODS / HFC bank management activities" T. Nickson (Steering Committee)	<b>COPA learns: Best practices</b> <i>(switch to this MS teams link)</i> China Energy Efficiency Survey X. He (UNDP) Country experience: Tunisia Y. Hammami (NOU Tunisia)
<b>11:45</b>	<b>Wrap Up of 2nd Plenary Meeting &amp; Closing</b>	

## COPA Learns – Best Practices in Main room (here)

- Mexico country experience on ODS destruction

## COPA Looks ahead in (parallel session)

- ✓ A vision session on how COPA can become a sustainable and lasting alliance
- ✓ Click **[MS Team-link in Chat](#)** or in the Agenda to join







## **COPA Learns - Mexico**

- 1.** ODS Destruction experiences and future activities in Mexico  
Sergio Merino, NOU Mexico



# ODS Destruction experiences and future activities in Mexico

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Climate and Ozone Protection Alliance  
2<sup>nd</sup> Plenary Meeting

June 18, 2024



GOBIERNO DE  
**MÉXICO**

**MEDIO AMBIENTE**

SECRETARÍA DE MEDIO AMBIENTE Y RECURSOS NATURALES



# Background

*“Change your old one for a new one”*  
RAC equipment replacement Program (2009-2012)

Trust	Refrigerators	AC	Total	%
FIDE	952,027	1,193	953,220	50.60
FIPATERM	730,775	200,134	930,909	49.40
<b>Total</b>	<b>1,682,802</b>	<b>201,327</b>	<b>1,884,129</b>	<b>100.00</b>

Proveedor Autorizado




**PUEDES CAMBIAR TU VIEJO POR UNO NUEVO O TU VIEJA POR UNA NUEVA Con cargo a tu recibo**

**Arma tu paquete**







- minimos requisitos
- sin enganche
- sin aval
- sin buró de crédito
- entrega inmediata

# Waste of RAC equipment by the replacement program



Refrigerant	Amount (kg)
R-12	14,820.00 Kg
R-22	32,524.79 Kg
R-134a	22,433.03 Kg
Oil	412,641.53 Lt.

Source: FIDE, 2013. Informe final “Programa de sustitución de equipos electrodomésticos – Cambia tu viejo por uno nuevo-”, Secretaría de Energía.

Material	Amount (kg)
Copper	1,690,461.61 Kg
Aluminium	3,119,180.94 Kg
Steel	54,619,420.33 Kg
Other materials	17,690,517.33 Kg
<b>Foams</b>	<b>5,400,953.34 Kg</b>

Source: FIDE, 2013. Informe final “Programa de sustitución de equipos electrodomésticos – Cambia tu viejo por uno nuevo-”, Secretaría de Energía.



# CRRR network during RAC replacement program



- 104 CAyD (Collection and Scrapping centers)
- 10 CRRR (Recovery and recycling of refrigerant Centers)

# Demonstration project - ODS destruction



1. The project was approved in 2011
2. Preliminary activities were implemented between 2011 and 2013.
3. A relevant aspect which delayed the project implementation was the difficulty to consolidate ODS banks, as HARP centers were not recovering predicted amounts of waste refrigerant.
4. Preliminary activities consisted of:
  - Training and recovery equipment endowment to HARP centers
  - Design of MRV system
  - Organization of awareness workshop
  - Execution of ODS destruction pilot tests
  - Licensing approval for Mexican companies



# Stages of the demonstration project - ODS destruction



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1

- The implementation of the Demonstration Project began in 2014.
- It was intended to export the ODS banks to the US for disposal, because there were no authorized facilities in Mexico but the handling and export costs were higher than expected.
- Only ODS banks were consolidated.

2

- In March 2014, the Mexican company Quimobásicos with the technology of an argon plasma arc obtained approval to destroy ODS.
- This stage was implemented in autumn 2015 and finished in early 2016.
- About 74 tons of ODS banks were destroyed in the Argon plasma arc, mitigating the equivalent of 351 thousand tCO<sub>2</sub>e. Average cost: USD 9.2 per kg of ODS destroyed.

3

- Holcim Mexico acquired a license to co-process ODS at its cement kiln located in Tecomán, Mexico.
- A second batch of SAO banks was collected and stored.
- Between 2016 and 2017 Holcim Mexico destroyed around 39 tons of ODS, mitigating an equivalent of 153 thousand tCO<sub>2</sub>e. Average cost: USD 8.0 per kg of ODS destroyed.



# ODS/HFC destruction technologies installed in Mexico



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Currently, there are two technologies available for the destruction of ODS/HFCs in Mexico (authorized and complying with national and international legal provisions)

## Quimobásicos with 2 PDU units, Monterrey, México



With innovative technology and in compliance with national and international standards,



## Holcim México with cement kiln technology, Tecomán Colima



Holcim-México performs the co-processing of these substances...


and Holcim Mexico with the use of the cement kiln...

## Registration of companies for the management of ODS as hazardous waste


Only two technologies have been authorized in Mexico for the final disposal of ODS

Argon Plasma Arc Unit

Clinker rotary kiln

 Hazardous waste registry

 Registration in SISSAO

 Companies authorized for destruction of ODS



# Plasma Arc Destruction Unit



## Quimobásicos, S.A. de C.V.

# Authorization 19-VI-43-22

Validity ~~21.09.2022~~ Extension 21.09.2022 – 21.09.2024

Capacity 525.6 mt/yr

Trichlorofluoromethane (CFC-11); dichlorodifluoromethane (CFC-12); chlorotrifluoromethane (CFC-13); chlorodifluoromethane (HCFC-22); trifluoromethane (HCFC-23); difluoromethane (HFC-32); 1,1,2 trichlorotrifluoroethane (CFC-113); 1,2 dichloro-1,1,2,2 tetrafluoroethane (CFC-114); chloro-1,1,2,2,2 pentafluoroethane (CFC-115); hexafluoroethane (HCF-116); 2,2 dichloro 1,1,1 trifluoroethane (HCFC-123); 2,3,3,3 tetrafluoro 1 propene (HFC-123yf); pentafluoroethane (HCFC-125); 2-chloro 1,1,1,2 tetrafluoroethane (HCFC-124); 1,1,1,2 tetrafluoroethane (HCFC-134a); dichlorofluoroethane (HCFC-141b); chlorodifluoroethane (HCFC-142b); 1,1,1 trifluoroethane (HCFC-143a); 1,1 difluoroethane (HCFC-152a); octafluoropropane (HC-218); 1,1,1,2,3,3,3 heptafluoropropane (HFC-227ea); 1,1,1,3,3,3 hexafluoropropane (HFC-236a); 1,1,1,3,3 pentafluoropropane (HFC-245fa); propane (HC-290); 1,1,1,3,3 pentafluorobutane (HFC-365mfc); n-butane (HC-600); isobutane (HC-600a); isopentane (HC-601); propylene (HC-1270); including their chemical families.

# Clinker rotatory kiln Co-processing



## Holcim Mexico Operaciones, S.A. de C.V. (before Cementos Apasco, S.A. de C.V.) (Planta Tecoman)

# Authorization: 06-IV-01-19 (Extension)

Validity: 15.01.2019 – 15.01.2029

Alternative fuel substitution percentage:  
80% replacement in clinker oven 1  
30% replacement in clinker oven 2

Energy recycling and co-processing of hazardous waste such as formulated or recovery fuels, hazardous waste such as chlorofluorocarbons, hydrochlorofluorocarbons and hydrofluorocarbons, as well as their mixtures; containers with propellant (“loosens everything” in spray) empty and perforated.



# Test protocol

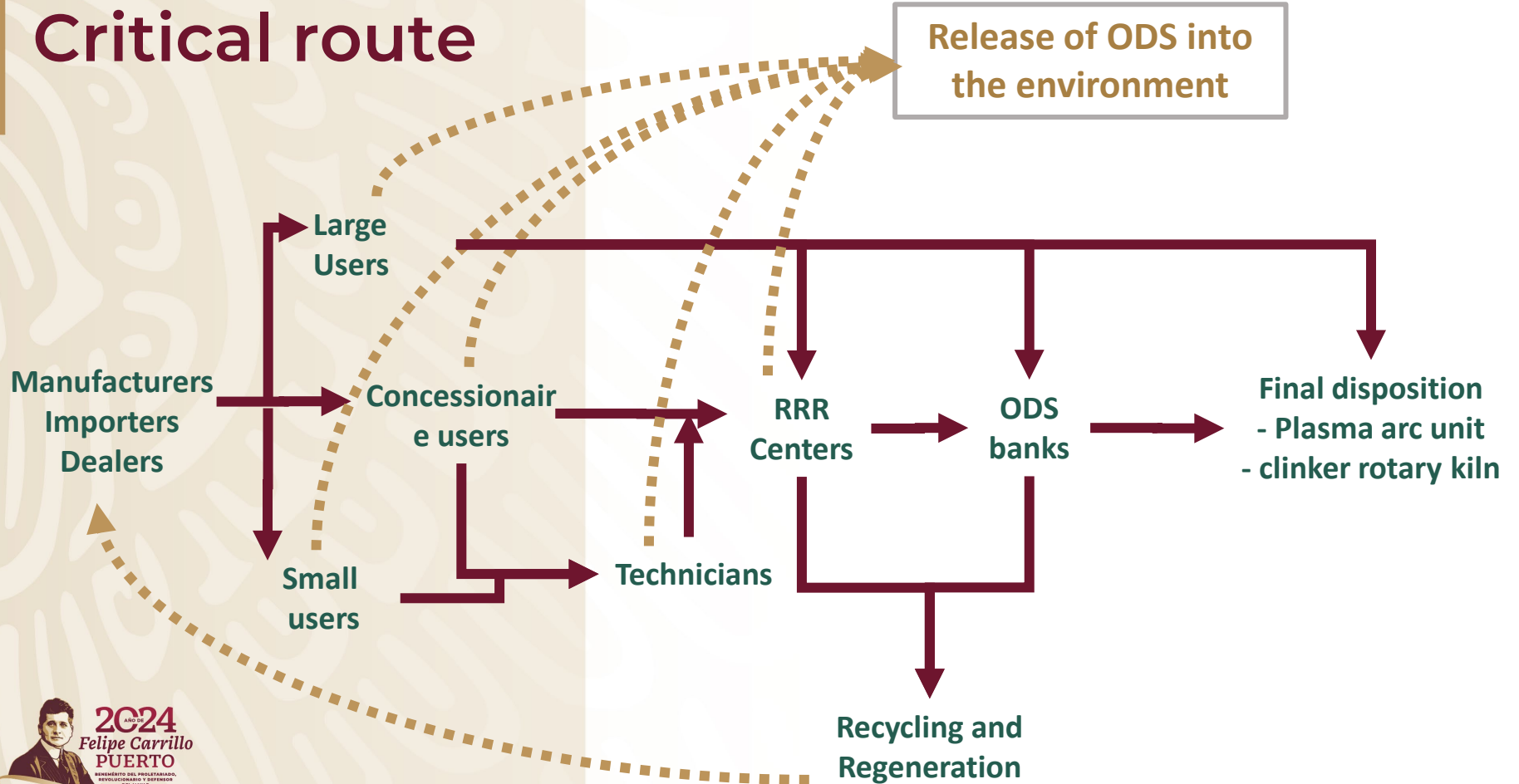


To verify the efficiency of the system:

- Compliance with legal provisions\*
- Analysis of the substances to be fed
- Control of operating conditions
- Determination of the level of destruction efficiency achieved by the combustion and emissions control systems.
- Continuous emissions monitoring systems: Particles, Nitrogen Oxides (Nox), Sulfur Oxides (Sox), Carbon Monoxide (CO), Total Hydrocarbons (HCT), Hydrochloric Acid (HCl)
- Test methods for other contaminants: dioxinas y furanos, metales pesados, entre otros
- Safe handling procedures for waste and byproducts.\*

\* NOM-040-SEMARNAT-2002 Protección ambiental- Fabricación de cemento hidráulico – Niveles Máximos de Emisión a la atmósfera.; SEMARNAT, 2012. *“Guía técnica para la elaboración del protocolo de pruebas de incineración de residuos peligrosos, validación y presentación de resultados”*

# Critical route



# Results of the demonstration project - ODS destruction



Project phases	Technology and destruction Facility	Status	Unwanted ODS destroyed (tonnes)	GHG emission reductions (thousand tCO <sub>2</sub> e)	Implementation costs (USD/kg ODS)	Cost-effectiveness (USD/tCO <sub>2</sub> e)
Stage 1A	Export to USA	Not executed	0	0	11.0 <sup>a</sup>	NA
Stage 1B	Quimobásicos Argon plasma arc	Completed	74	351	9.2	1.9
Stage 2	Holcim Mexico cement kiln	Completed	39	153	8.0	2.0
<b>Total</b>			<b>113</b>	<b>504</b>	<b>9.4<sup>b</sup></b>	<b>2.0</b>

<sup>a</sup> Intended but not implemented costs

<sup>b</sup> Average cost





# Recent activities on F-gases recovery /disposal and EOL of RAC equipment



## SPODS

- EOL Strategy\*
- 4-Best Practices Guidelines\*
- Circular Economy - Conceptual Model for Self-contained refrigerators\*

## KIP-CRRR COMPONENT

- CRRR Assessment
- Project portfolio (CRRR Strengthening)

*\*No actions implemented*



# Waste of RAC equipment (yearly generation)

- 3,550 t of refrigerant gases (mainly R-22 and HFC)
  - 189, 215 t of steel
  - 53,600 t of plastics
  - 19,650 t of aluminum
  - **13,700 t of foams**
  - 7,220 t of lubricating oils
  - 1,500 t of electronic cards and electrical components
- 
- Recovery rate of the F-gases <2%





# CRRR network now

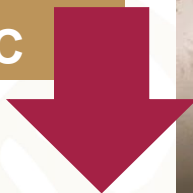


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- 24 C&DC

- 7 RRRC





# What is missing on CRRR and F-gases disposal/destruction?

- Account/characterize banks of HCFCs and HFCs (MLF)
- Strengthen the CRRR network (KIP)
- Increase F-gas recovery rates (COPA?)
- Establish extended/shared producer responsibility programs (COPA?)
- Work on the recovery of F gases from domestic RAC equipment (COPA?)
- Generate technology for the handling/recycling of foams (COPA?)
- Develop circular economy models in the RAC sector (COPA?)
- Reduce costs of destruction of F gases (contaminated, high GWP and remaining ODS) (?)
- Pilot project for destruction of existing F-gases banks (COPA?)
- Be prepared to recover and destroy HCFC-22 (HPMP closure) (MLF)





# Proposal: Study on ODS/HFC destruction

1. This project seeks to strengthen the network of destruction technologies, adding another company that has clinker kiln technology, that complies with the destruction test protocol required by current regulations, and that also has with increased ability to remove high GWP refrigerants as well as existing ODS banks.
2. Includes the preparation of a Demonstration Project for ODS/HFC Disposal
  - Detailed description of the destruction facility
  - Monitoring and measurement of emissions, emission values of the destruction technology
  - Develop an ODS/HFC destruction plan
  - Determine destruction costs (including destruction protocol cost, testing cost, capital cost, operational cost, etc.)
  - Environmental mitigation benefits.

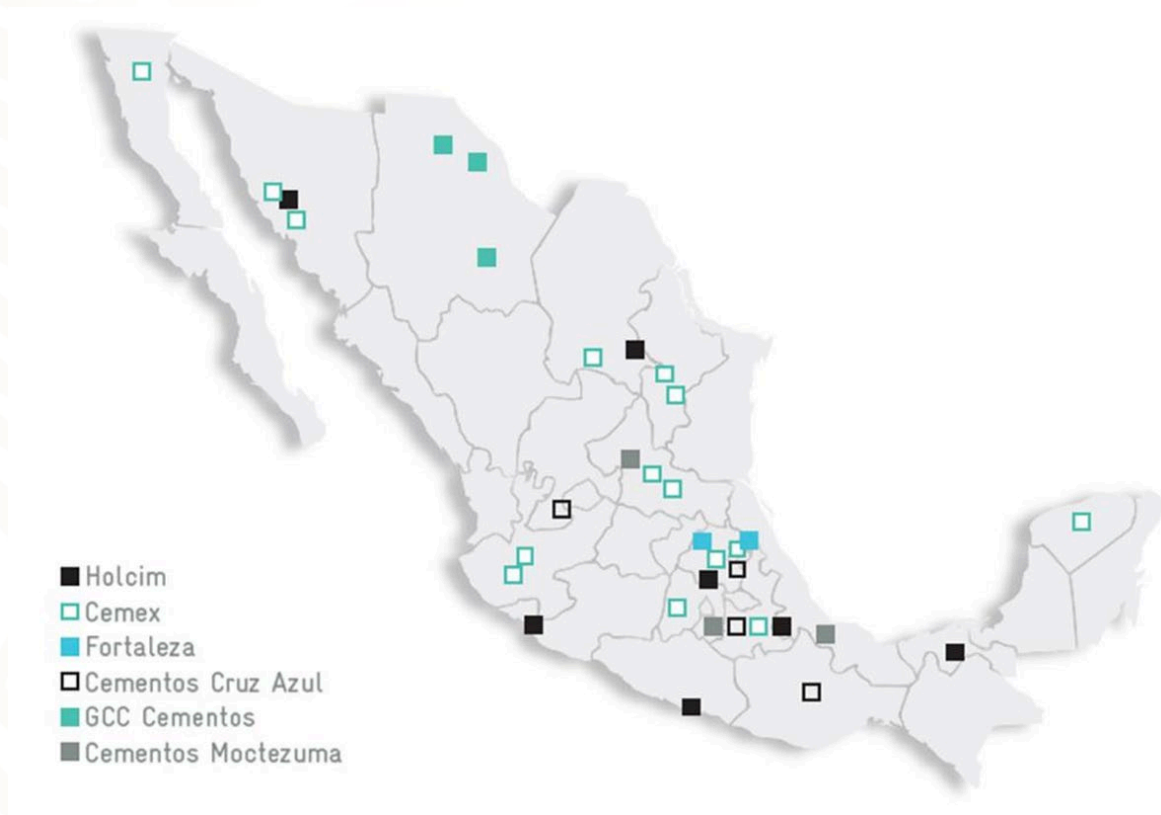


# Proposal: Study on ODS/HFC destruction Initial activities



1. Review Mexican regulations required for ODS/HFC banks management.
2. Evaluate previous experiences and pilots on ODS destruction in the country, and report on the lessons learned.
3. Analysis and integrated activities with the MLF portfolio and relevant national initiatives, policies, regulations, and standards associated with RAC waste and ODS/HFC management.
4. Coordinate meetings with local authorities or other relevant stakeholders.
5. Detailed description of Refrigerant Recovery and recycling centers (CRRR) operating in Mexico and the national RAC waste managers chain.
6. Identify installed/viable technologies for ODS/HFC destruction in the Country.
7. Estimate actual cost ratio for ODS/HFC destruction by available technologies in the Country.

# Co-processing potential in Mexico



Source: CANACEM



# Linked actions

- Kigali Implementation Plan: Recovery, Recycling, Reclamation of HFCs (RRR)
- Preparation of national inventories of banks of controlled substances, ODS/HFCs



Thank you!



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**DO YOU HAVE QUESTIONS?**

***Welcome Back!!***

***Let's get all together for the last session of today!***

***Day 1 – Meeting point  
COPA Plenary Meeting 2024***



## Session 4

5.45 pm-6.00 pm  
(CEST)

Wrap-up  
Day 1

Graphic recording





*Thank you for your participation! See you tomorrow 😊*