COPA – Together for Sustainable Refrigerant Management

Ellen Michel, GIZ Proklima

OZONE COOL ZONE

30 Nov–12 Dec
COP28 UAE

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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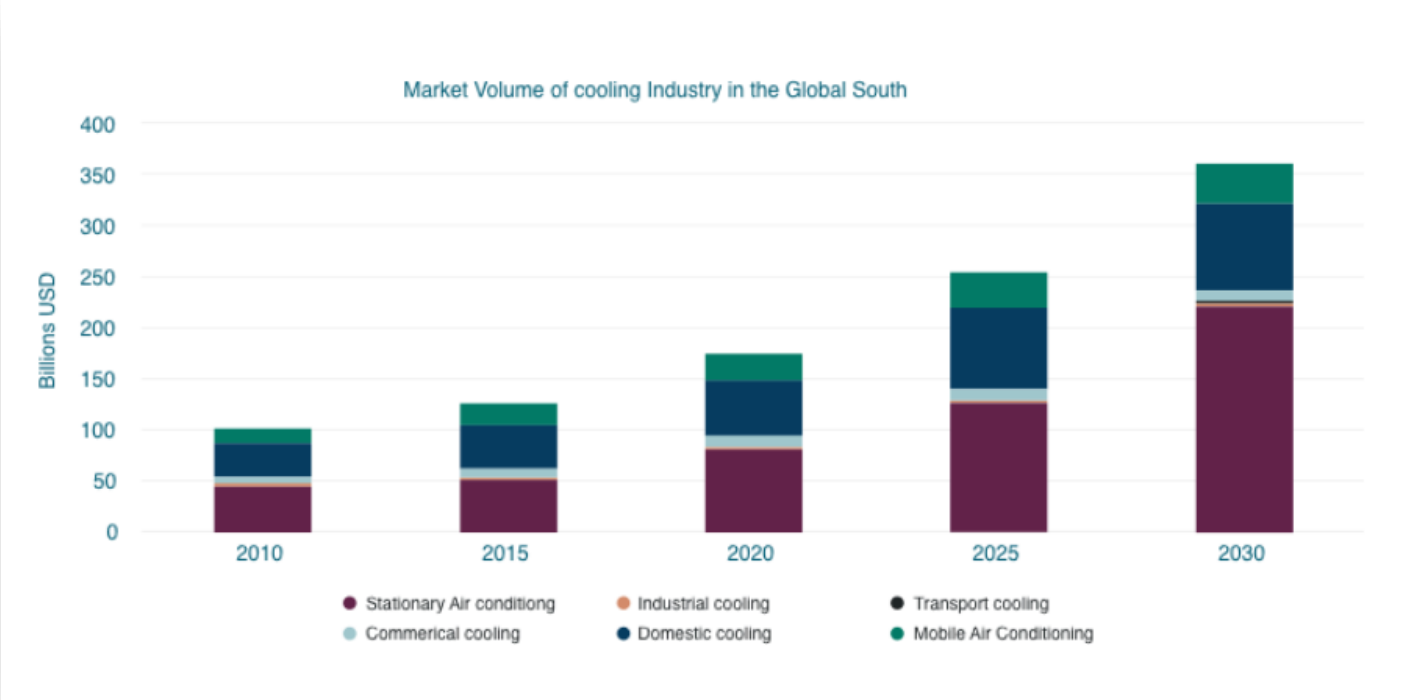
The challenge:
The demand for cooling and air conditioning units
is rising sharply.



Rising GHG Emissions from Global ODS and HFC Banks

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

COPA is pointing a light on a blind spot

Neither the Montreal Protocol, nor any other international environmental convention regulates the management and destruction of existing ODS and HFC banks.

COPA's contribution to the Agenda 2030

- GOAL #12: RESPONSIBLE CONSUMPTION & PRODUCTION
- GOAL #13: CLIMATE ACTION
- GOAL #17: PARTNERSHIPS FOR THE GOALS
- GOAL #9: INDUSTRY, INNOVATION & INFRASTRUCTURE
- GOAL #11: SUSTAINABLE CITIES & COMMUNITIES

COPA – our 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**.

Promoting **international dialogue** and **knowledge transfer**

International Exchange and Collaboration

Positioning sustainable refrigerant management at the **global level**

Global Alliance

Enhancement of policy frameworks to drive the shift to sustainable refrigerant management

Policy Framework

Conception and implementation of **mitigation projects**

Implementation Models

Mobilization of funds for concrete mitigation projects

Financing Mechanism

COPA Members

Pilot activities & country members

COPA Members

Public entities, private sector, civil society, academia & financing institutions

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UNIDO UNITED NATIONS INDUSTRIAL DEVELOPMENT ORGANIZATION

UNDP

Federal Ministry for Economic Affairs and Climate Action

on the basis of a decision by the German Bundestag

PureSphera Leader in GHG reductions

excel Fluorochem Pvt. Ltd.

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NOVA SCHOOL OF SCIENCE & TECHNOLOGY

CHEAA 中国家用电器协会

ZEAL ENVIRONMENTAL TECHNOLOGIES

AFS Energy

eia environmental investigation agency

Yale Carbon Containmen Lab

REFRIGERATING ASSOCIATION OF UKRAINE PUBLIC UNION

VERIDIEN REFRIGERANT MANAGEMENT

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ecosave.mx

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Tradewater

ICAD The Initiative for Climate Action and Development

Frankfurt School FS-UNEP Collaborating Centre for Climate & Sustainable Energy Finance

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COPA's achievements so far

✓ **Around 500 people** were informed about the cost-efficient mitigation potential of ODS and HFC banks management.

✓ **Around 61 COPA members** are working together in **3 Thematic Working Groups** that were established to advance innovative solutions for ODS and HFC banks management.

✓ **6** Public entities …
✓ **17** Countries …
✓ **3** Partner/pilot countries
✓ **25** Companies from the private sector …
✓ **5** Civil society organisations …
✓ **4** Academic institutions …
✓ **1** Financing institution …

… joined COPA

COPA's achievements so far

Many Webinars & publications

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COPA
Cutting refrigerant emissions

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COPA
Cutting refrigerant emissions

MONTREAL PROTOCOL
ADVANCING
CLIMATE ACTION

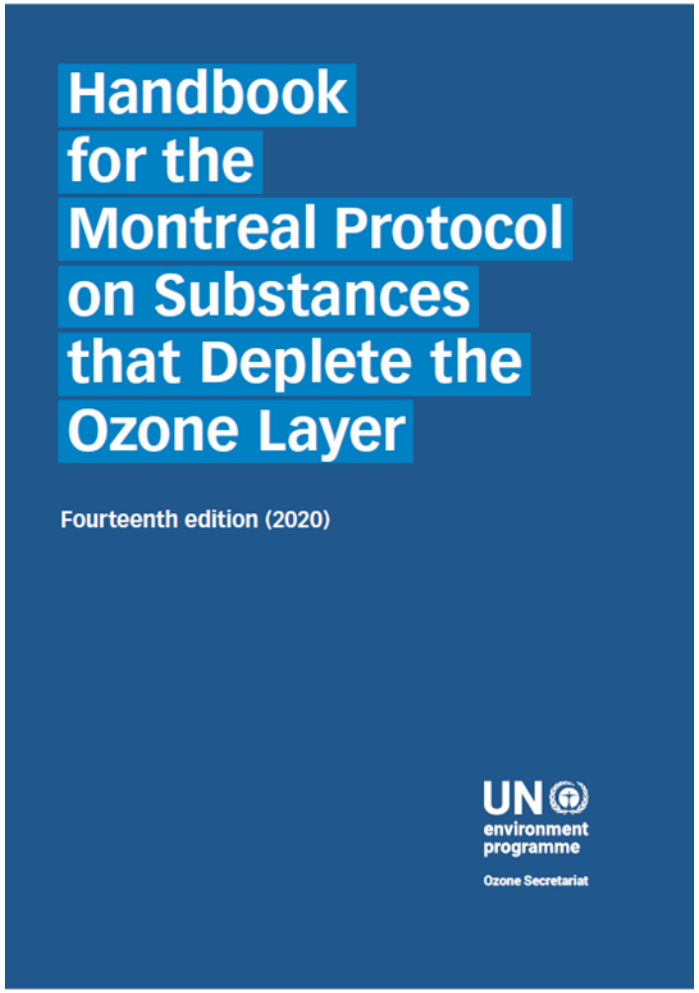
COP28 UAE 30 Nov–12 Dec

Thank you for listening!

ODS disposal demonstration projects and the new funding window under the Multilateral Fund

Sonja Wagner, UNEP OzonAction

Destruction of unwanted ODS under the Montreal Protocol - background



- Historically, destruction of obsolete and unwanted ODS was not considered as a compliance issue under the Montreal Protocol
- Definition of consumption was based only on production, import and export; originally it was assumed that all ODS used will eventually be released
- For that reason, ODS destruction was not eligible for funding under the Multilateral Fund
- Parties kept and updated the list of approved destruction technologies

Pilot destruction projects (2009)

- Concerned about climate warming implications of ODS emissions, Parties to the MP adopted ***Decision XX/7: Environmentally sound management of banks of ozone depleting substances*** in 2008.

- The decision requested the Executive Committee of the Multilateral Fund to consider as a matter of urgency commencing pilot projects that may cover the collection, transport, storage and destruction of ozone-depleting substances, with a focus on assembled stocks of ozone-depleting substances with high-GWP.

- Under this pilot window, a total of 18 ODS disposal preparation and 15 ODS disposal demo implementation projects was approved, with a total budget of 11,5 million USD

Completed ODS disposal projects

392 mt of ODS destroyed resulting in 2,229,777 CO2 eq tonnes of emission reduction

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Challenges

(a) For project preparation, on average, it took between nine to 40 months before the final projects were submitted for consideration of the Executive Committee, and between five to 72 months for the projects to be completed and final reports submitted;

(b) The information that needed to be included in the proposals was not easy to obtain; frequently, it was cited as the reason for the delays in submitting the project for funding. Specifically:

- (i) Difficulties were encountered in examining the national policy and regulatory infrastructure in place, and to link the potential project with existing similar initiatives for chemical waste management to develop synergies for the projects; and
- (ii) Identifying sources of co-financing the project and developing the business model, and in some cases, the downturn in the carbon markets made this an unsustainable source of co-financing;

(c) Delays were experienced in getting agreement with the country with respect to the approach for ODS disposal;

(d) The survey and aggregation of already collected ODS took longer than expected; and

(e) Some countries gave priority to completing HPMPs both during project preparation and implementation of the ODS disposal projects.

Cost effectiveness
9-550 USD/kg

Cost of destruction
2-30 USD/kg

Demonstration of a Regional Strategy for ODS Waste Management and Disposal in the ECA Region

UNIDO

UN environment

BACKGROUND

The project "Demonstration of a Regional Strategy for ODS Waste Management and Disposal in the ECA Region" was prepared jointly by UN Environment and UNIDO, on behalf of the Governments of Bosnia and Herzegovina, Croatia, and Montenegro.

It was approved and accepted for funding by the Multilateral Fund in April 2013 under a funding window for the destruction of ozone-depleting substances (ODS) in low-volume-ODS-consuming (LVC) countries.

The objective of the project was to evaluate a regional approach for ODS waste disposal in terms of cost-effectiveness and sustainability, particularly in LVC countries that do not have ODS destruction facilities. The project proposal aimed at environmentally sound destruction of 29.07 MT of ODS waste from the participating countries.

KEY ELEMENTS OF THE PROJECT

Component 1: Aggregation of ODS waste at the national level, included identification and selection of three recovery and recycling centers to collect and store national ODS waste, provision of necessary equipment, including the storage cylinders, technical assistance for the analysis of the composition of the ODS waste, and preparation of required permits in accordance with the requirements of the Basel Convention.

Component 2: Transportation of ODS waste, and destruction, included the assessment of eligible EU destruction facilities that allow import of waste ODS for destruction; bidding procedures for selection of destruction facilities; and transportation, destruction, verification, and monitoring of destroyed quantities.

Component 3: Establishment of a regional cooperation forum on ODS waste disposal, as a communication platform that promotes the information and experience exchange on success stories and lessons learned related to ODS destruction activities in the Europe and Central Asia region. Three meetings were organized during project implementation.

Component 4: Awareness raising, training, and project monitoring. Three national training workshops on aggregation of ODS stocks for destruction and improvement of the recovery and recycling systems were organized in Sarajevo, Podgorica and Zagreb.

RESULTS

In total, 41.37 metric tonnes (MT) of refrigerant waste were destroyed, including 32.79 MT of ODS waste.

Batch number	Country of destruction	Quantity of collected refrigerant waste (MT)	Quantity of ODS waste (MT)	Quantity of non-ODS waste (MT)
Batch 1	Germany	7.38	7.38	0
Batch 2	Poland	25.64	19.12	6.52
Batch 3	Poland	8.35	6.29	2.06
Total:		**41.37**	**32.79**	**8.58**

Taking into account the reported expenditures of USD 262,622 and the 32.79 MT of ODS waste destroyed, the cost effectiveness for the project is 8.01 USD/kg, which exceeds the initially expected cost effectiveness of 12.02 USD/kg.

Aggregation of the ODS waste on the regional level, synchronization of the shipments from different countries, as well as finding synergies with the destruction of persistent organic pollutants were not possible, due to obstacles in both legislation and institutional arrangements of the beneficiary countries.

Lessons learned

(a) Systematic collection of ODS waste results from coordinated and synchronized efforts between appliance/equipment replacement and recovery-and-recycling programmes, including incentives to encourage collection, requires regulatory support to be successful;

(b) Long-term sustainability of ODS waste management remains a challenge without further involvement and cooperation from collection centres, and without institutional support, including policies for destruction;

(c) Awareness on the importance of developing concrete procedures for the management and disposal of ODS waste needs to be raised among waste management operators;

(d) While co-financing continues to be pursued, the currently low price of carbon credits and the downturn in the carbon markets had made it difficult to search for co-financing options that would support the sustainable disposal of ODS waste; and

(e) The establishment of a sustainable business model entails complex coordination arrangements with various stakeholders, and private sector commitment and involvement in these activities is necessary in order for these initiatives to be successful.

New funding window

- With the adoption of the Kigali Amendment, and in the context of operationalizing paragraph 24 of decision XXVIII/2 - ***Decision related to the amendment phasing down hydrofluorocarbons***, the parties requested the Executive Committee to consider funding the cost-effective management of stockpiles of used or unwanted controlled substances, including destruction.
- The new FUNDING WINDOW FOR AN INVENTORY OF BANKS OF USED OR UNWANTED CONTROLLED SUBSTANCES AND A PLAN FOR THE COLLECTION, TRANSPORT AND DISPOSAL OF SUCH SUBSTANCES is a direct response to this request

Criteria for funding

- A funding window for an ***inventory of banks*** of used or unwanted controlled substances and a ***plan*** for the collection, transport, and disposal of such substances (Decision 91/66)
  - The funding window is limited to ExCom-93 through ExCom-97
  - Available funding 70,000 – 100,000 USD/country (based on the HCFC baseline)
  - 24-month implementation period
  - Countries that included the preparation of an inventory and plan in either HPMPs or KIPs are not eligible for funding under this window
  - Actual disposal is not eligible for funding

Elements of National Plans

a. Coordination with development and implementation of HPMPs and KIPs and taking into account existing national legislation and policies related to the environmentally sound management of chemical and unwanted controlled substances;

b. The concept, methodology and approach to be taken for the preparation of the national inventory/action plan, including consultations with relevant stakeholders to help verify data collection, would be clearly described;

c. For the plans where destruction is proposed, the description of a potential business model detailing the arrangements with the various stakeholders and the private sector commitment and involvement in those activities, from waste collection to eventual destruction;

d. The final plan would also contain a description of the policies and regulations describing the roles and obligations of manufacturers and distributors, including any recovery, recycling and reclamation programmes;

e. For the plans where export for destruction is proposed as the most cost-effective disposal option, they would contain an indication that national legislation and policies that were consistent with the requirements of the relevant conventions, particularly in relation to the transboundary movement of those wastes, needed to be in place;

f. Consideration of the development of regulations under national phase-out/phase-down plans (i.e., HPMPs or KIPs) on refrigerant recovery, recycling and reclamation that would support the actions identified for the collection, transport, storage and disposal of those used and unwanted waste-controlled substances;

Thoughts on systematic solutions on refrigerants management from the perspective of green supply chain

FECO/MEE Guo Xiaolin

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Contents

1. The Concept of Green Supply Chain

- Green supply chain is a management model that comprehensively considers both **environmental impacts** and **resource efficiency** throughout the entire supply chain.
- Green supply chain management aims to **reduce the environmental impacts of the entire product lifecycle**. Through the combination of environmental and economic policies and market measures, it drives the upstream and downstream of the industrial chain to adopt energy-saving and environmentally friendly measures, in order to achieve the green and sustainable development of the whole industry.

2. Refrigerant Supply Chain in China

- As one of the main ODS and HFC production and consumption countries, China has always adhered to the principle of **green, low-carbon and sustainable development** when implementing the obligations under the Montreal Protocol.
- In the past 3 decades, China has conducted a series of actions in both production and consumption sectors, with wide supports by international organizations/agencies/partners, with the aim to effectively managing controlled substances.
  - ✓ projects under MLF for the phase-out and management of ODS
  - ✓ cooperation with COPA on the refrigerant management, esp. city project on refrigerant recycling.
- **China is also aware of the importance of the lifecycle management in key sectors,** such as the refrigeration sector, within the context of China's industrial structure, in order to achieve the synergy of ozone layer protection and climate benefits in a more systemic way.

2. Refrigerant Supply Chain in China

Refrigerant producers
- ✓ Reduce emission in the production process;
- ✓ EPR: play a more active role in refrigerant RRR.

Dealers
- ✓ Take appropriate measures to avoid emission.

Refrigeration manufacturers
- ✓ Improve technologies/ product designing;
- ✓ To be encouraged to procure refrigerants from responsible producers
- ✓ Conduct trainings for distributors /after-sales, users and servicing.

Distributors and after-sales
- ✓ Conduct good practice;
- ✓ Recycle, reclaim and reuse.

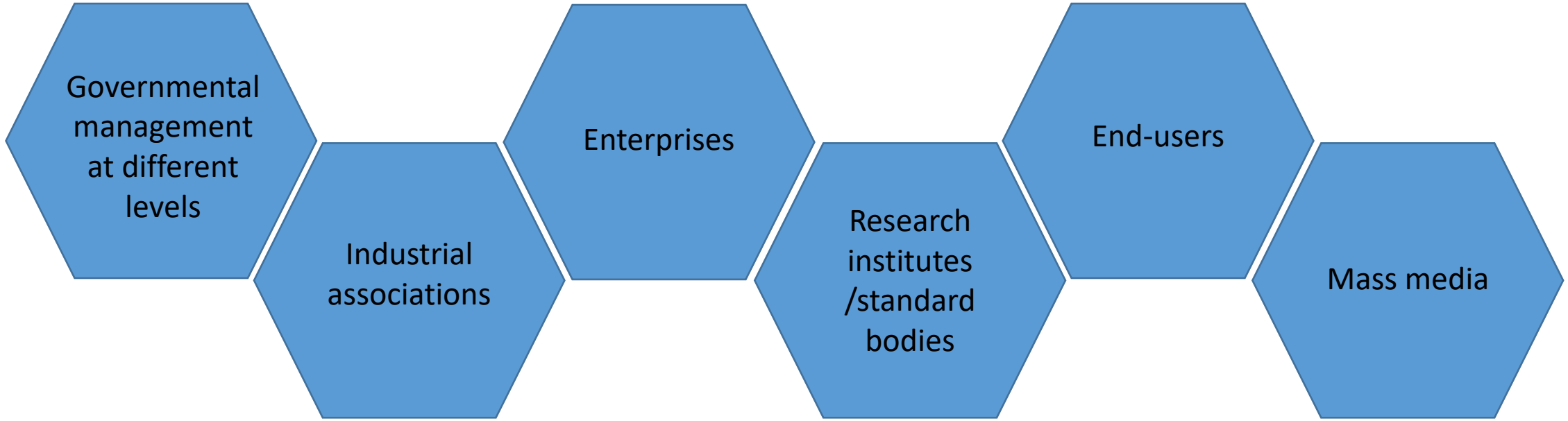
End-users
- ✓ Rational use;
- ✓ Promote the awareness on recycle.

Disposal and recovery
- ✓ Enhance RRR capability;
- ✓ Refrigerants RRR.

- China has the complete refrigerant supply chain, including all above key actors.
- Exploring to strengthen ODS and HFC banks management from the perspective of the whole supply chain, with the involvement of key actors and stakeholders, as a cost-efficient and effective way, with the aim to contributing to national climate targets such as the Nationally Determined Contributions (NDCs) and the dual goal with the peak of CO_2 emissions by 2030 and carbon neutrality by 2060.
- These objectives align in its views with COPA's aims.

2. Refrigerant Supply Chain in China

Refrigerant management also requires the joint participation and collaboration of various stakeholders.



3. Thoughts on Refrigerant Management from the Perspective of Supply Chain

Policy efforts on the lifecycle management

1

Made in China 2025 *(State Council, May, 2015)*

- Building a green supply chain, accelerating the establishment of a procurement, production, marketing, recycling, and logistics system guided by resource conservation and environmental friendliness, and implementing an extended producer responsibility system;
- Strengthen green enterprises, support the implementation of green strategies, green standards, green management, and green production by enterprises.

2

Guiding Opinions on Accelerating the Establishment and Improvement of a Green, Low Carbon, and Circular Development Economic System *(State Council, Feb, 2021):*

- Building a green supply chain. Encourage enterprises to carry out green design, to select green materials, to implement green procurement, to adopt green manufacturing processes, to promote green packaging, to carry out green transportation, and conduct good practice in waste recycling, in order to achieve green environmental protection throughout the entire product lifecycle.

3

Opinions on Accelerating the Establishment of a Product Carbon Footprint Management System *(NDRC and other 4 ministries, Nov, 2023):*

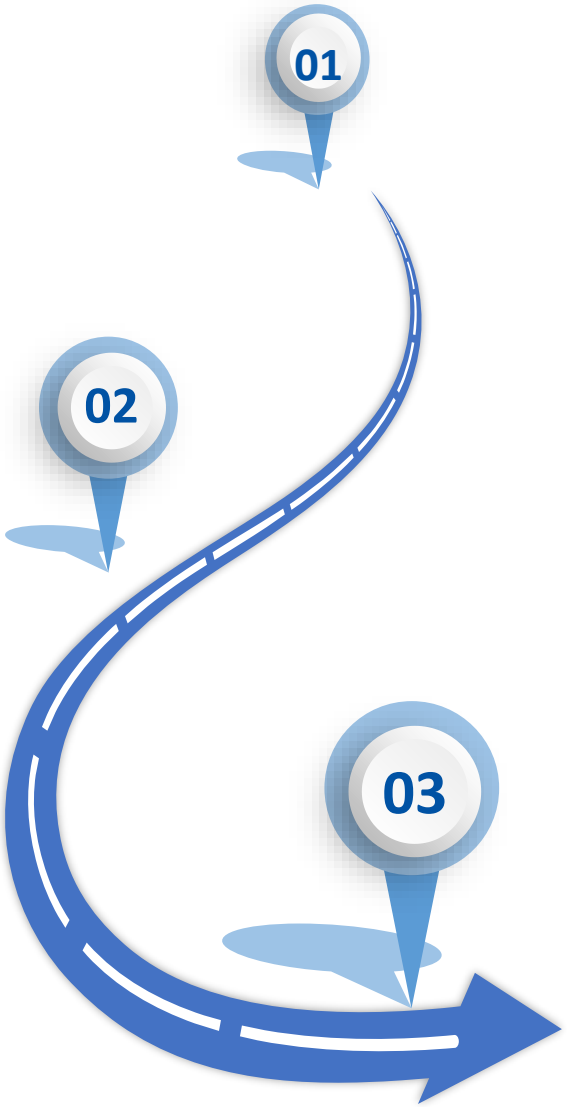
- Highlighted the concept of supply chain;
- Encourage key industries and leading enterprises to drive upstream and downstream industries to strengthen the carbon footprint management of the entire supply chain and their green and low-carbon transformation.

4

The Regulation on the Administration of Ozone Depleting Substances *(State Council, 2010):*

- Regulations on ODS production, consumption, sales, recycling and disposal, including ODS for controlled uses, such as refrigerants.

3. Thoughts on Refrigerant Management from the Perspective of Supply Chain



Practice and activities related to refrigerant management

Review and consultation

Extensive consultation and studies on refrigerant management are carried out with stakeholders, including associations, research institutes, industries, etc.

Capacity Building

Trainings have been conducted for various targeted groups. Training on good practices are provided to technicians.

Pilot activities

Pilot activities on ODS bank management were implemented with cities/provinces.

4. Looking to the Future…

Continue the efforts on refrigerant lifecycle management from the perspective of the supply chain…

- Policy instruments/ standard formulation and revision
- Leverage with market mechanism
- Mobilization the wide participation of stakeholders and key actors
- Pilot activities on technology and good practice
- Capacity building and public awareness promotion

FECO

Thank you for your attention

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United Arab Emirates: Insights from the Private Sector

Stuart Fleming, EnviroServe

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01. December 2023

Somewhere between Policy and Perfection.

Tales from the front line of refrigerant reclaim in the Middle East.

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VAPOR
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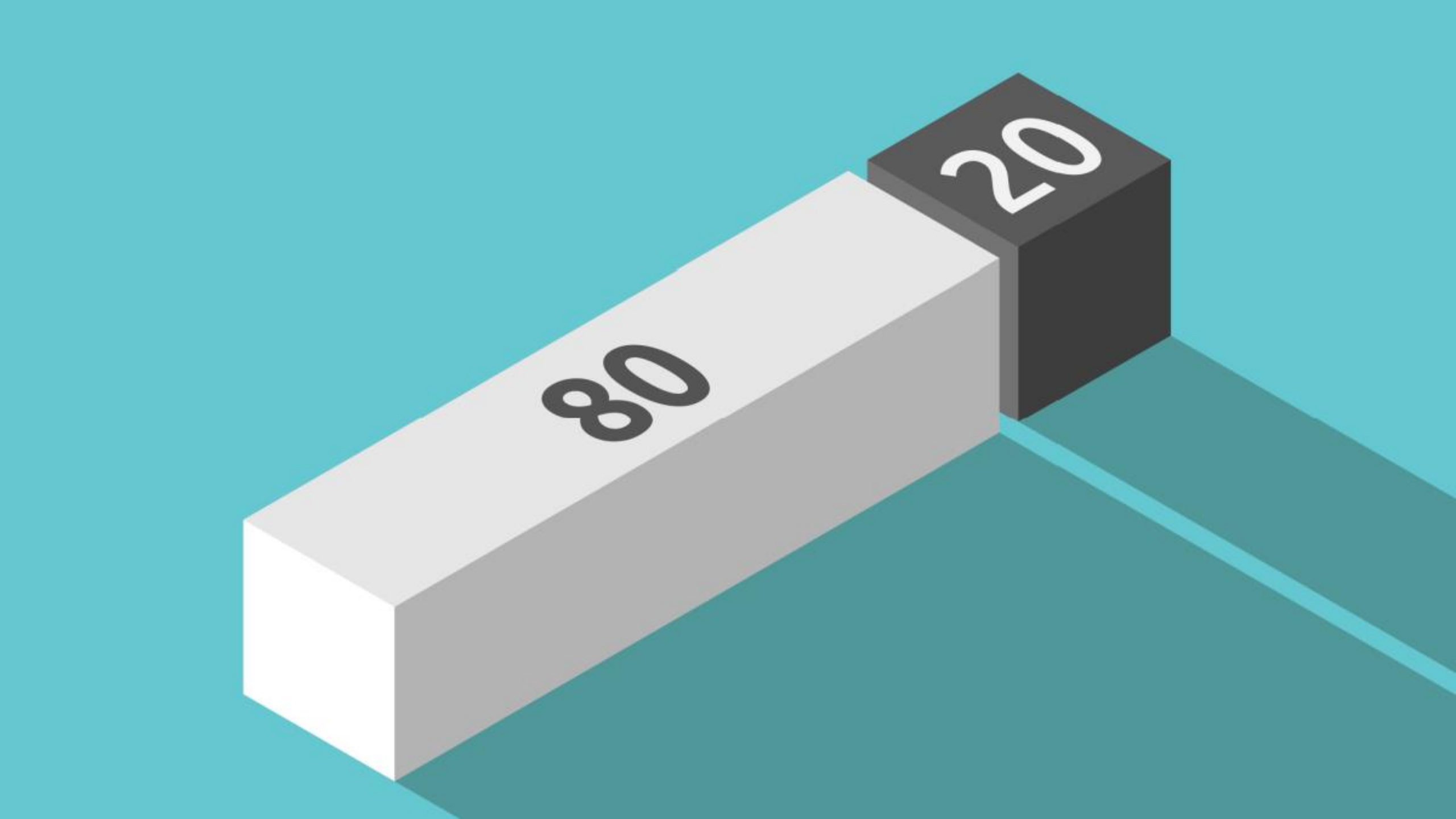
OFF
BREAKER
START STOP
YELLOW JACKET
RecoverXLT
Maxiflex


EKOTEZ
Refrigerant Reclaim System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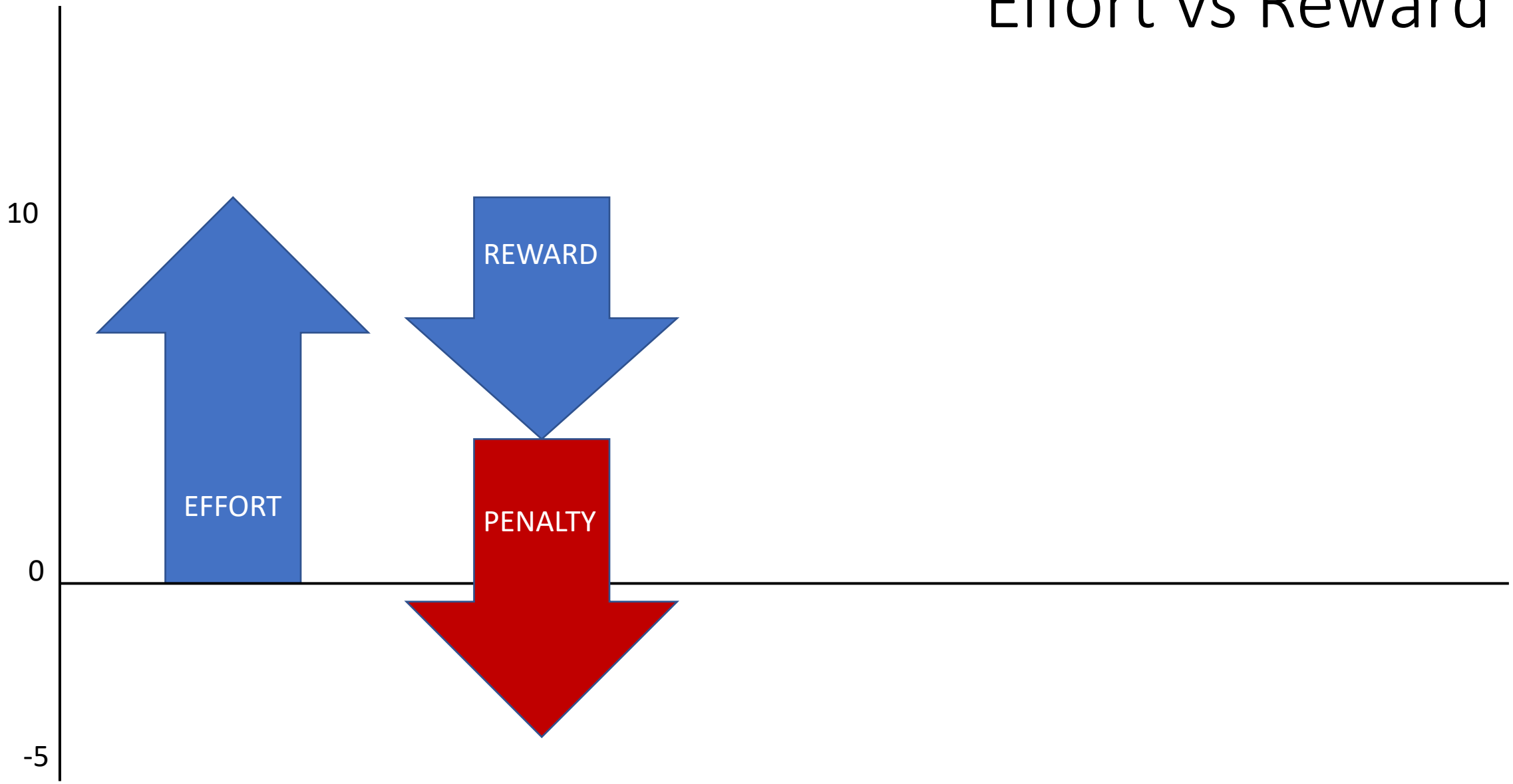
SAFETY

Effort vs Reward



Effort & Reward… and little force

STAY THE COURSE

- Commitment
- Legislation
- Training
- Certification
- Monitoring
- Enforcement
- Reporting

Thank you

and Welcome to the UAE