

*Country situation - strengthening
of capacities under the HPMP,
stakeholder involvement and
communication tools*



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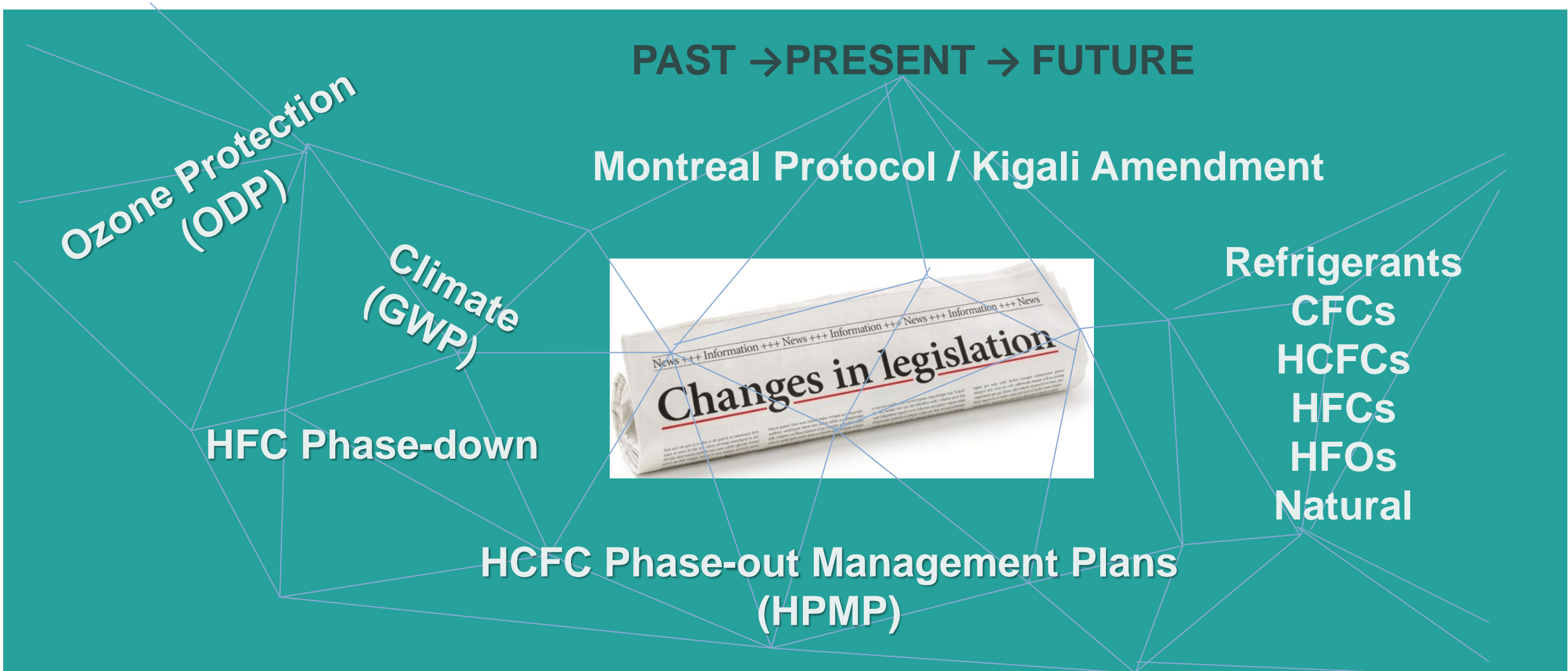
Chillventa, October 2018

euramm^on
refrigerants delivered by mother nature

Presentation Contents

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 - *System for recovery and recycling of refrigerants*
 - *System for recording and labeling of equipment containing refrigerants/database*
 - *Communication tools and awareness raising*
 - *Capacity strengthening*

International Agreements on ODS and Climate



Ozone Depleting Substances (ODSs)

Ozone-depleting substances (ODSs)

- chemical substances (chlorinated, fluorinated or brominated hydrocarbons)
- Have potential to react with ozone molecules in the stratosphere

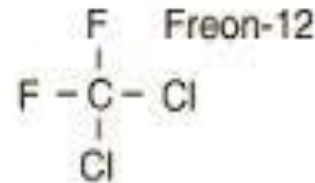
ODS include:

- Chlorofluorocarbons (CFCs)
- Hydrochlorofluorocarbons (HCFCs)
- Halons
- Hydrobromofluorocarbons (HBFCs)
- Bromochloromethane
- 1,1,1-trichloroethane (methyl chloroform)
- Carbon tetrachloride
- Methyl bromide

The ability of these chemicals to deplete the ozone layer is known as their

ozone depletion potential (ODP)

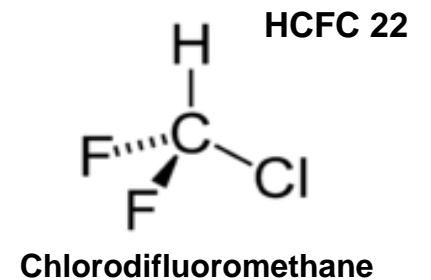
Each substance is assigned an ODP relative to CFC-11 whose ODP is defined as 1



Dichlorodifluoromethane

ODP values of selected ODS

CFC-11	1.0
CFC-12	1.0
Halon-1301	10.0
Carbon tetrachloride	1.1
Methyl chloroform	0.1
HCFC-22	0.055
HBFC-22B1	0.74
Bromochloromethane	0.12
Methyl bromide	0.6



How are ODSs released in the atmosphere?

- **Traditional uses:** cleaning solvents, paint, fire extinguishing equipment, spray cans that emit ODS
 - **Venting and purging** during servicing RAC systems
 - Use of **methyl bromide** in soil fumigation, in post-harvest pest control and for quarantine and pre-shipment applications
 - **Disposal** of ODS-containing products and equipment such as foams and refrigerators
- **Leaks** in equipment (such as refrigerant circuits, fire extinguishers) and products that contain ODS

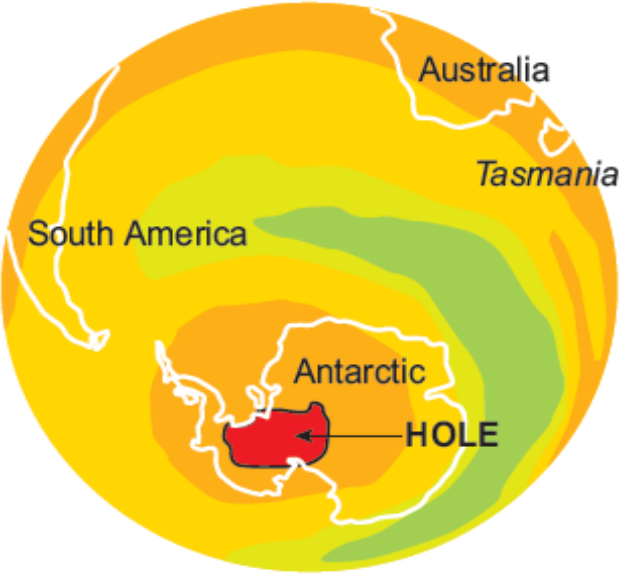
Once released into the atmosphere, ODSs are diluted into the ambient air. They can reach the stratosphere through air currents, thermodynamic effects and diffusion.



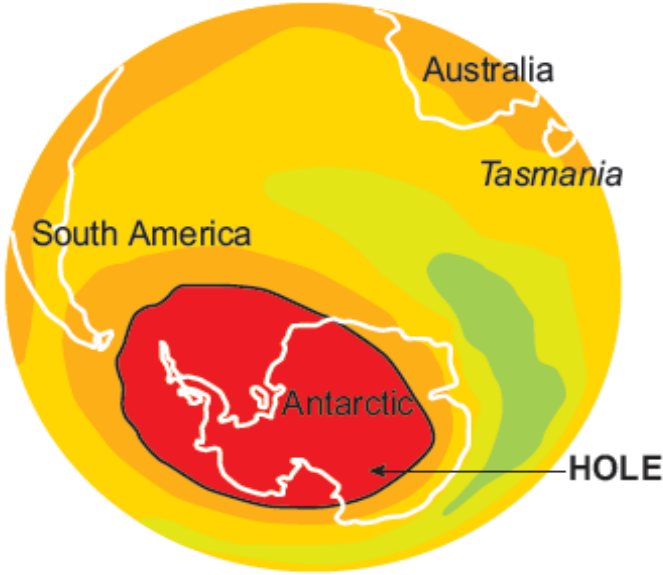
Discovery of Ozone Hole

THE ANTARCTIC HOLE

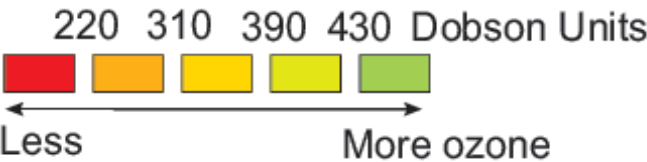
October 1981



October 1991



Total ozone column:
(monthly averages)



Source: US National Oceanic and Atmospheric Administration (NOAA) using Total Ozone Mapping Spectrometer (TOMS) measurements; US National Aeronautics and Space Administration (NASA), 2007.



International Environmental Agreements



**Global
Action**



needed!!!



Vienna Convention / Montreal Protocol

Vienna Convention for the Protection of the Ozone Layer (1985)

- 1st attempt to provide the framework: co-operative activities aimed at protecting the ozone layer; agreed to *'take appropriate measures to protect human health and the environment against adverse effects resulting or likely result from human activities which modify or are likely to modify the ozone layer'*.

Montreal Protocol on Substances that Deplete the Ozone Layer (1987)

- Protocol to the Vienna Convention
- International treaty
- Phasing out production and consumption of numerous ODSs
- Lists controlled ODSs and control measure to reduce

Controlled substance: a substance in Annex A, B, C or E of the Montreal Protocol, whether existing alone or in a mixture. It includes the isomers of any such substance, except as specified in the relevant Annex, but excludes any controlled substance or mixture which is in a manufactured product other than a container used for the transportation or storage of that substance.

Annex D: list of products containing controlled substances specified in Annex A.

HCFCs Phase-out Management Plans (HPMP)



Photo: Lake Ohrid, Macedonia

Country overarching strategy

- HCFCs consumption, planned measures (policy measures, legal measure) needed funding
- identified investment projects funding for industry to convert the technologies using HCFCs to non-ODSs technologies (with a view to additional climate benefits)

Ex.Com. Decision 54/39

Approved guidelines for a staged approach of the countries' strategy
The first stage of the HPMP should cover 2 targets:

- **Achievement of the HCFCs consumption freeze in 2013**
- **Achievement of 10% reduction in 2015**

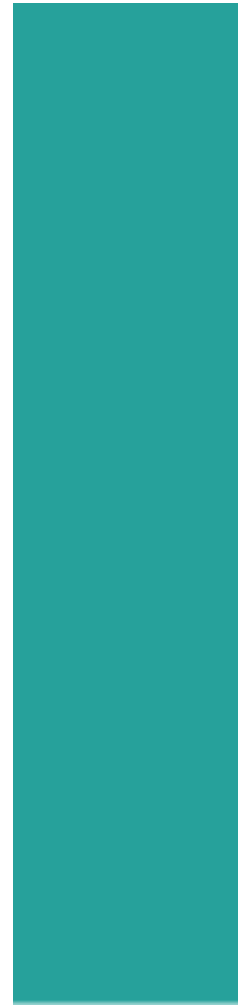
Staged approach allows the guidelines to be up-dated as new technologies are developed.

The guidelines stipulate that **Art. 5 countries** must have in place an appropriate **licensing system for HCFCs** and **HCFCs based equipment** as a condition for approving these plans.

HFC Phase-down

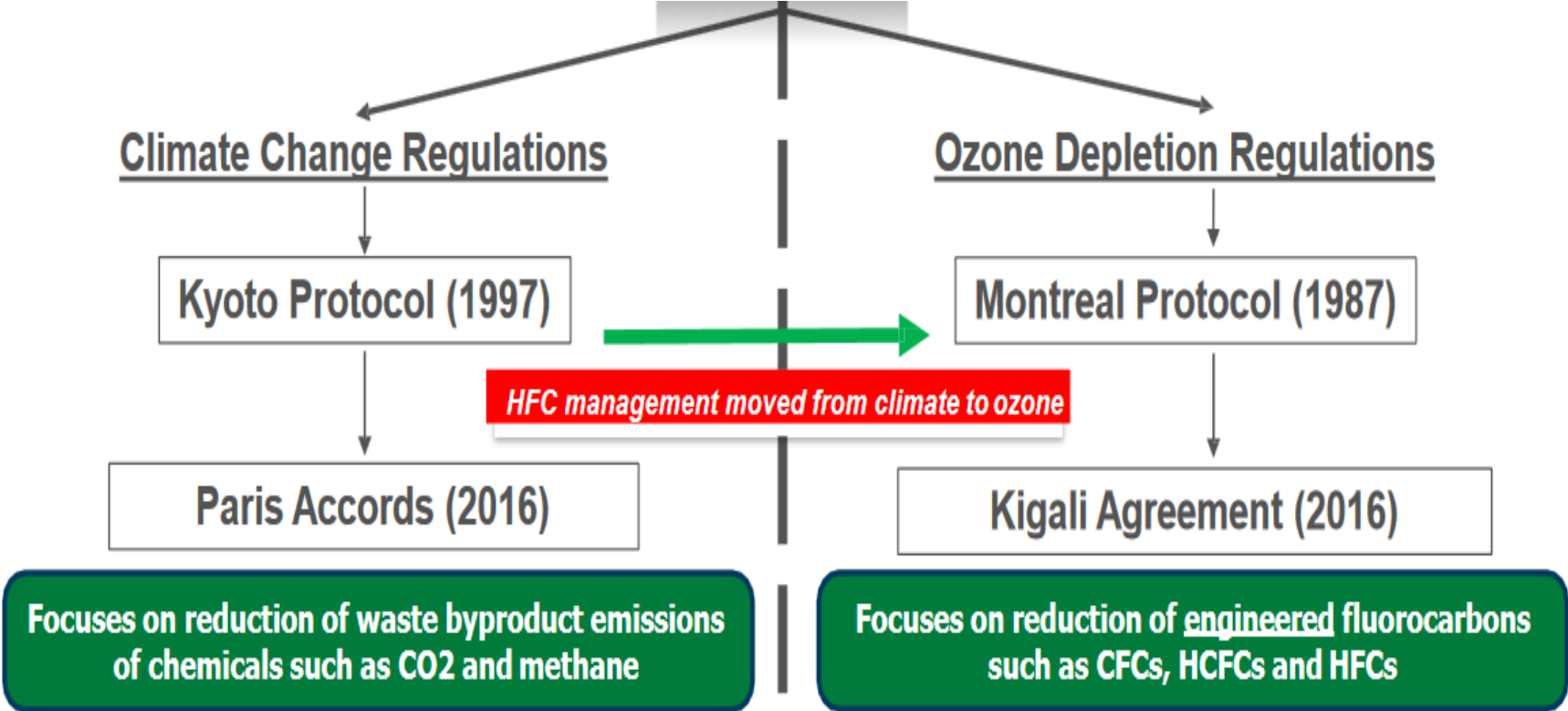


Photo: *Sky after storm, Mavrovo, Macedonia*



Kigali Amendment

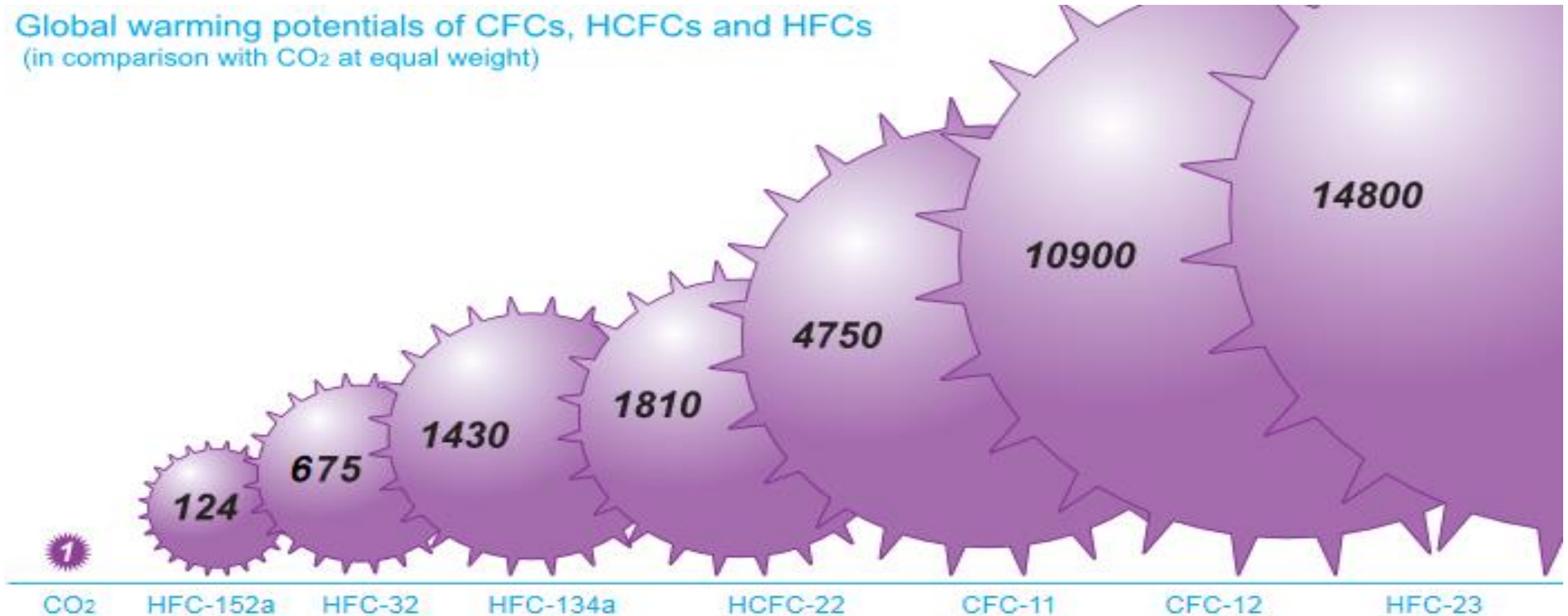
OZONE and CLIMATE Regulations



Source: UN Environment

GWP of Refrigerants

Global warming potentials of CFCs, HCFCs and HFCs
(in comparison with CO₂ at equal weight)



Figures have been taken from IPCC fourth assessment report (2007)

Substances used in different applications



Multilateral Fund
for the Implementation of the Montreal Protocol

Substances used in different applications

Applications

Substances (HFCs and non-HFCs)

Refrigeration and air-conditioning

HFC-134a, HFC-125, HFC-143a, HFC-152a, HFC-32, HFC-23, R-401A, R-401B, R-402A, R-402B, R-407A, R-407F, R-408A, R-413A, R-417A, R-417B, R-419B, R-422A, R-422D, R-424A, R-425A, R-427A, R-437A, R-438A, R-507C, R-508A, R-508B, R-YH222A, YH-222, YH12

HC-290, HC-600a, HC-600, HC-601a, HC-602, HC-1270, R-717, R-744, R-704, R-718, R-764, R-436A,

Foam

HFC-227ea/HFC-365mfc, HFC-245fa, HFC-365mfc, HFC-152a, HFC-134, HFC-134a, HFC-365mfc/245fa,

Blend: propane/butane, cyclopentane, Pentane (C,N,I), R-744/water, CO₂/ethanol, DME, Methyl chloride, Methyl formate Methylal, Methylene chloride, HC-290 HC-600a, HC-600, Hydrocarbons, HFO-1233zd, HFO-1234ze, HFO-1336mzz-Z, R-744

Fire-fighting

HFC-227ea, HFC-125, HFC-236fa, HFC-134a, HFC-23, HFC-227ea/HFC-365mfc

R-744, CO₂/ethanol, N₂, fluorinated ketone, Blend: 50 % Ar, 42% N & 8% CO₂, powder

Aerosol

HFC-134a, HFC-227ea, HFC-152a, Pentane/R-134,

HFA 134a/Ethanol, N₂, HC-290, HC-600a, hydrocarbons, HAPs, Blend: propane/butane, cyclopentane, CO₂/N₂/Air

Solvent

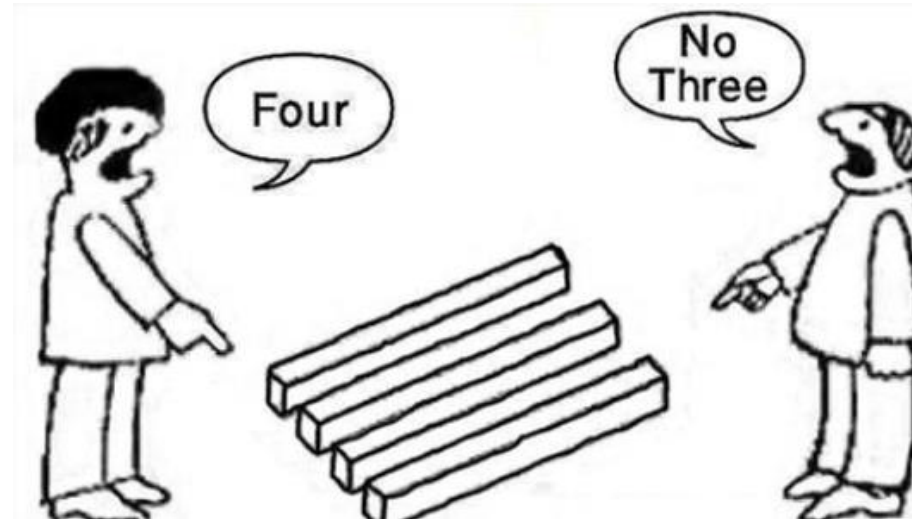
HFC-152a, HFC-134a, HFC-4310, HFC-43-10mee

Methyl chloride, trichloroethylene, tetrachloroethylene, PFC-552, PFC-662, PFC-218, ethanol, HFO-1336mzzm, methylated spirit

Challenges to overcome

Future technologies:

- Availability
- Maturity
- Cost-effectiveness
- Energy efficiency
- Direct/Indirect Emissions
- Environmental impact
- Safety



Alternatives should also minimize the environmental impacts, particularly with respect to climate

Ammonia, CO₂ / HCs, low-GWP HFC-blends...

are alternatives under continuous development

Country situation – Republic of Macedonia

TO DATE / CURRENT

Import/Export

Recovered
Recycled
Reclaimed



Labeling of equipment

ODS Management in Republic of Macedonia

- **Article 5 country**
- **National Ozone Unit (1997)**
- **Refrigeration production and manufacture of flexible and rigid foams (CFC-11 and CFC-12) phased-out in the period 1997-1999**
- **Halons eliminated in the early stage of the Country Programme implementation (1998)**
- **Methyl Bromide officially prohibited in 2010**
- **First country to have their HCFC Phase- out Management Plan (HPMP) approved by ExCom**

Photo: *Lake Ohrid, Macedonia*

Regulatory Framework

Order Limiting Import (quota) of hydrochlorofluorocarbons (HCFCs)

Baseline (Avg. 2009-2010 consumption)	2013 (Freeze at baseline level)	2014	2015 (to 15% ↓)	2016 (5% ↓)	2017 (5% ↓)	2018 (5% ↓)	2019 (5% ↓)	2020 (5% ↓)
32.784 (MT)	31.145 (MT)	29.506 (MT)	27.866 (MT)	26.226 (MT)	24.586 (MT)	22.946 (MT)	21.31 (MT)	19.67 (MT)
1.8 (ODPt)	1.71 (ODPt)	1.62 (ODPt)	1.53 (ODPt)	1.44 (ODPt)	1.35 (ODPt)	1.26 (ODPt)	1.17 (ODPt)	1.08 (ODPt)

New phase-out schedule for HCFCs for A5 countries agreed at the XIX MOP:

■ **Baseline: Average 2009-2010 consumption**

■ **Freeze at baseline level: 2013**

■ **10 % reduction: 2015**

■ **35% reduction: 2020**

■ **67.5 % reduction: 2025**

■ **97.5 % reduction: 2030**

■ **100 % reduction: 2040**



Photo: Sky over Macedonia

Bans

- No import/export of HCFCs containing equipment and new HCFCs installations as of 01.01.2012.
- No import of non-refillable cylinders from 1st of January 2015.

Regulatory Framework

- National scheme for monitoring of import/export of refrigerants and equipment containing refrigerants (***on-line system***)
- Rulebook on format, content and manner of submission of report on types and quantities of the recovered and recycled refrigerants (***Reports***)
- System for labeling and recording of equipment (***Guidelines***)
- Training and certification system for service technicians (***in process***)



Photo: Traditional Ohrid architecture, Macedonia

Requirements, activities and involvement of stakeholders

- **Companies/service shops**

- **Reports on import/export of refrigerants**
- **Reports on recovered, reclaimed and recycled quantities of refrigerant**

- **Communication tools**
- **support-desk / E-ticket system**
- **Awareness Materials**



- **Procedure and Software for recording and labeling of equipment containing refrigerant**

- **Strengthening the capacities of the Environmental Inspectorate**
 - **Workshops**
 - **Transfer of technology**

On-line permit system for import/export

Refrigerants

Equipment

2017



Quantities

On-line permit system for import/export

ЕДНОШАЛТЕРСКИ СИСТЕМ ЗА ДОЗВОЛИ ЗА УВОЗ, ИЗВОЗ И ТРАНЗИТ НА СТОКИ И ТАРИФНИ КВОТИ - EXIM

exim.gov.mk
ВЛАДА НА РЕПУБЛИКА МАКЕДОНИЈА

логирани корисници: Емилија, МКССП

ДОМА
ОДЛАВИ СЕ
ЛИЦЕНЦА
Внеси барање
Импорти барање
Процесирања барања
ПРЕГЛЕД ЛИЦЕНЦИ
Појарај лиценца
Изаостај бр. 2
ПРОВЕРКА НА УПЛАТИ
Административна такса
Други надоместоци
ИЗВЕШТАЈ
Суварен преглед по дозволи
Преглед по барање за дозвола
Прогносно араметрање на издавање на дозволи
Суварен преглед за фонбек
Суварен преглед по тарифен број
Историјат на барање за дозвола

1025 МЖСПП - Дозвола за увоз на нова и употребувана техничка стока со разликни средства

Барање за дозвола за увоз на нова и употребувана техничка стока КОЈА СОДРЖИ РАЗЛИЧНИ СРЕДСТВА

ЕДБ на Увозник: 4080011521663 ...
Име и адреса: ПАНКСОН ДОО Скопје, ЗАГРЕБСКА 28 локал 17, МКД
ЕДБ на Примач (**): 4080011521663 ...
Име и адреса: ПАНКСОН ДОО Скопје, ЗАГРЕБСКА 28 локал 17, МКД
Земја на потекло/извоз (***): Австрија
Намена на стоката: За сопствени потреби За понатамошна продажба
Датум до кој ќе се изврши увоз(дд.ММ.yyyy): 02.04.2018
Издава за од производителот(својот/нејзинот) за видот на разликното средство што се користи во стоката (хемиска формула, номенклатура):
Пол временна, материјална и морална одговорност издавајќи ја оваа дозвола подготвено во приложената апликација се веродостојни и потврдени. Исто така потврдуваме дека со правените законски применливи договорни обврски и дека претутрашното движење е или ќе биде обезбедено со сите потребни осигурувања или финансиски гаранции.
Опис на стоката
Тарифна ознака (***):
Опис на тарифна ознака:
Трговски опис (***):
Хемиска состав на производот:
Колитина во ЕМ (kg):
Земја на потекло (***):
Исправач/Извозник:
Адреса, Град:
Земја:
Производител:
Адреса, Град:
Земја:

Додатки	Тарифна ознака (***)	Трговски опис (***)	Хемиска состав на производот (***)	Колитина во ЕМ (kg) (***)	Земја на потекло (***)	Исправач/Извозник	Адреса, Град	Земја	Производител	Адреса, Град	Земја
9415820000	8410A	9415820000 (EM); РСД-договор, вградена деловна единица	9415820000, R410A	94	Белгија	Dalkin Airconditioning Central	Самуел 21, A-2345 Brunn am Gleiberg	Австрија	Dalkin Europe N.V.	Zaandvoordestraat 200, 8400 Zwolle	Белгија

Листа на закачени документи:
102520171002805072-Dokument_021017.pdf
102520171002805072-Crtina.pdf
*Задолжително во полњата означени со (***) треба да одговараат на истите податоци во ЕЦД.*

Пополнува овластеното лице:
Внесено со алтернативна постапка:
Датум на одобрување (дд.ММ.yyyy):
Забелешка од алтернативна процедура:

Внеси забелешка

Одбери друг статус
 Повлечено
 одобрен погоре е овозможен единствено ако лиценцата не е претходно одбена или прифатена

Референтен број на Барањето/Дозволата: 102520171002805072
Барањето е поднесено на 02.10.2017 12:59:22 од страна на Јовановиќ Иванко, (ПАНКСОН ДОО Скопје)
Барањето/Дозволата е одобрена на 07.10.2017 13:58:42 од страна на Дураки Сидула, (МКССП)
Дозволата е одобрена на: 07.10.2017 од страна на Дураки Сидула, (МКССП)
Рок на валидност на дозволатата заклучно со: 05.04.2018
Претходен статус: одобрен
Последен статус: одобрен

Проектот е координиран од Царската управа на Република Македонија

© Одв на слатен чанак
v1 - 12.08.2008

Електронската апликација е изработена со поддршка на

- Importer data
- Purpose of the import

- Customs code
- Commercial description
- Chemical composition of the product/Type of refrigerant charge
- Goods quantity applied for
- Country of origin
- Sender/Exporter name and address
- Producer name and address

- Invoice/pro-invoice
- Importer statement on the type of the refrigerant contained in the equipment applied for
- In case of import of used equipment, the exporter/producer statement on the refrigerant type
- Administrative tax
- Environmental tax

Space for remarks by the reviewer and customs officer (missing documentation, clarification, etc.)

Approval of permit request

On-line permit system for import/export

- The import of ozone depleting substances under Annex C, group I of the Montreal Protocol is subject to environmental tax.
- Law on Environment defines the amount to be paid for obtaining an import permit for used refrigerators, freezers and other cooling equipment (01.01.2011).

System for recovery and recycling of refrigerants



System for recovery and recycling of refrigerants

The *mood* of service shops/technicians



**1 week before
submission of
report**



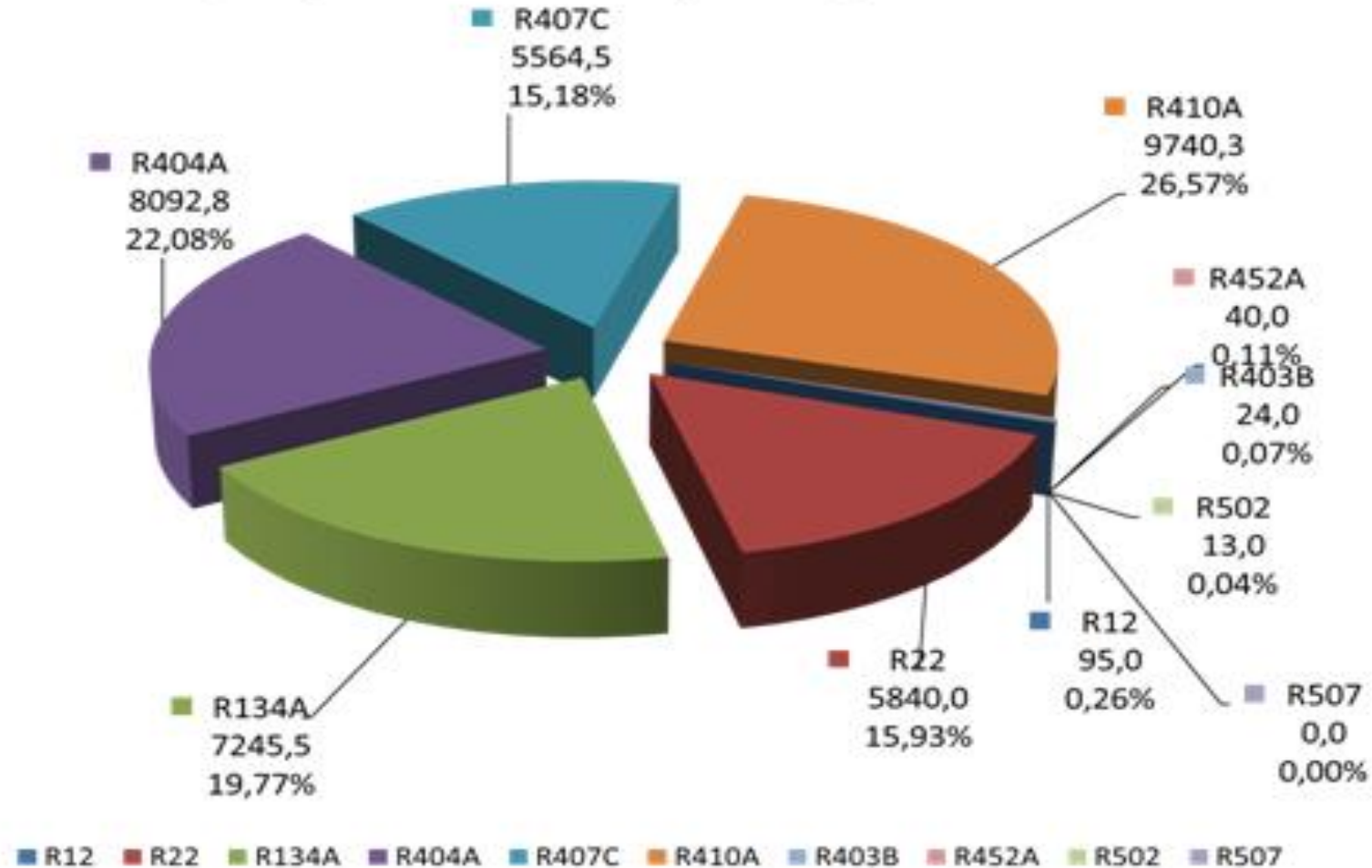
**1 day before
submission of
report**



**After
submission
of the report**

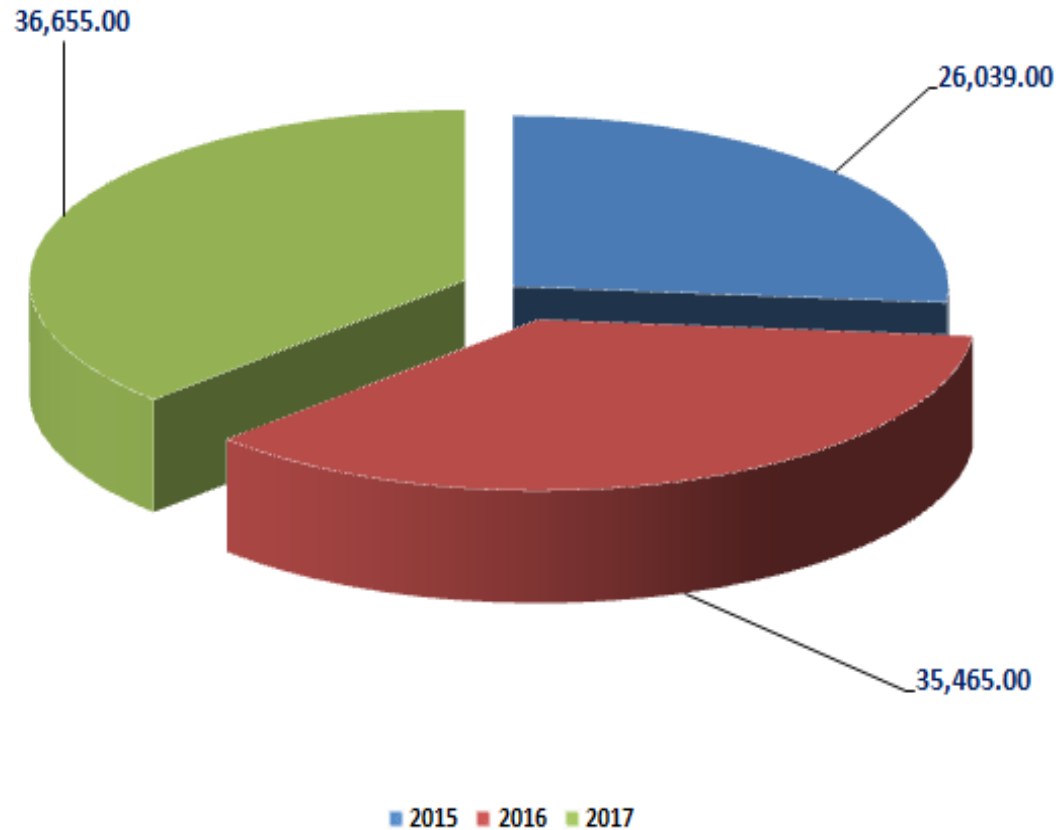
System for recovery and recycling of refrigerants

Quantity of recovered and recycled refrigerants in 2017

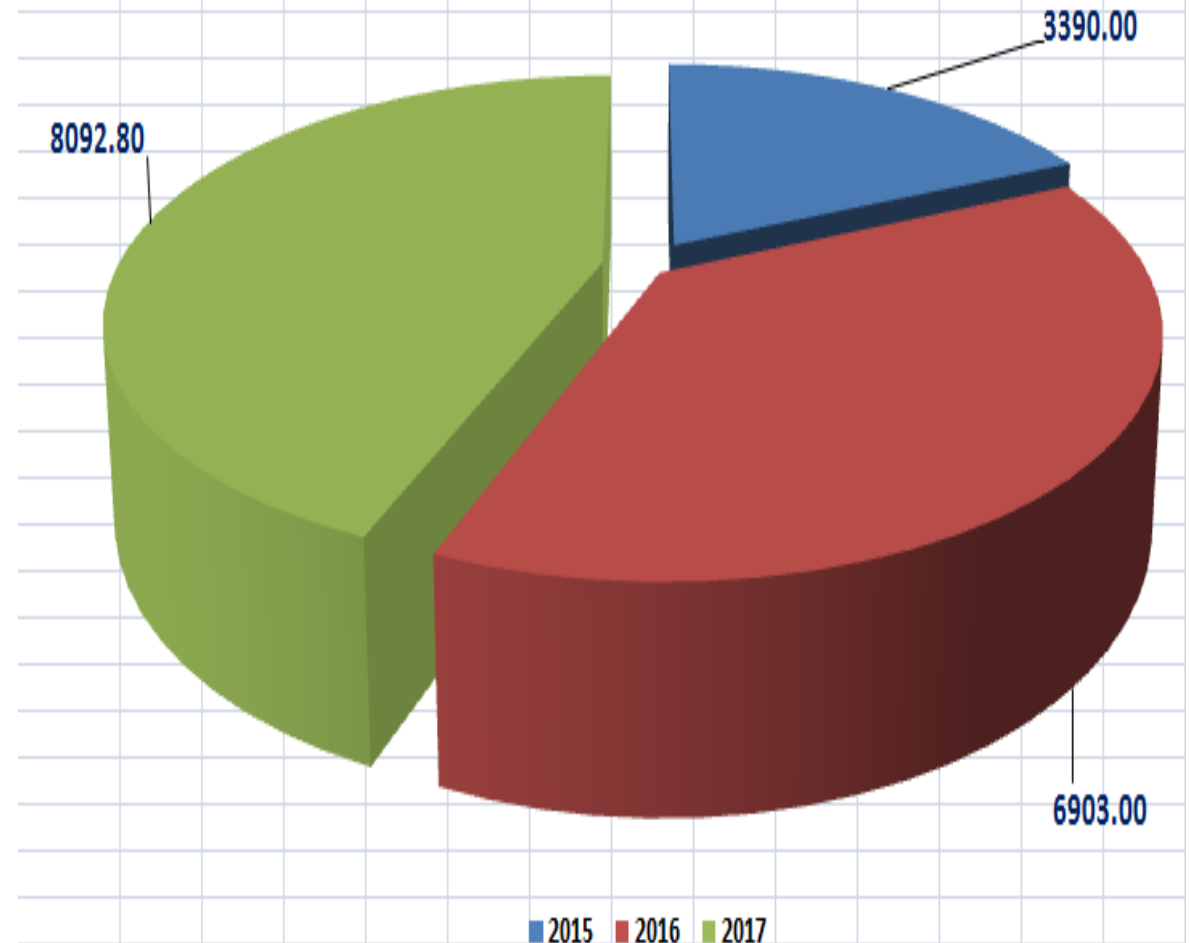


System for recovery and recycling of refrigerants

Overview of recovered and recycled quantities of refrigerants in kilograms for the years 2015, 2016 and 2017



Overview of recovered and recycled quantities of refrigerant R404A for the years 2015, 2016 and 2017



System for recording & labeling of equipment containing refrigerant



System for recording & labeling of equipment containing refrigerant

Refrigerant and equipment management system - NOU Macedonia
Version 1.0.3



OZONE UNIT MACEDONIA
PROTECT THE OZONE LAYER



Records for Request



Records for Service shops
and Service technicians



Records for Equipment
owners



Records for recorded
and
Labeled equipment



Records for RRR



Reports

System for recording & labeling of equipment containing refrigerant

REGISTRATION OF SERVICE SHOPS SERVICE TEHNICIANS

Service Shops

Service Technicians

Add service technician

First and Last name* Горан Даовски

Service Shop Name Фригоклима

E-mail

Phone / Mobile *

Date of Training 07.02.2013

Certificate Category Категорија А

Certificate Number 27/2013

Date of Examination

Licence Category

Licence Number

Notes / Comments

 Add  Save  Update  Exit

Search records

First and Last name

Service Shop Name

 Search

List of technicians


ID	Technician name	Service shop	email	Phone	Training date	Certificate	Certificate number	Date of exam	Licence
330	Абдула Хусеини	СЕЕУ Тетово(униве...		070/256-489	26.06.2014	Категорија А	210/2014 ...		
193	Адис Имери	Фригобокс Дооел		071/492-545	21.02.2013	Категорија А	65/2013		
337	Александар Вангеловски	Климасервис Про		0	26.06.2014	Категорија А	217/2014 ...		
273	Александар Георгиевски	Гоц ЕЛ Трејд		076/740-121	20.03.2013	Категорија А	139/2013		
20	Александар Деспотовски	Стартер Фон		070/224-811	13.10.2011	Категорија А	16/2011		
39	Александар Димитриев	Ј.Т.Д. Димка		070/253-986	09.11.2011	Категорија А	35/2011		
207	Александар Димитриевс...	Сервис Термо Кинг		075/206-196	28.02.2013	Категорија А	87/2013		
238	Александар Илиќ	Емс Темос		071/221-558	07.03.2013	Категорија А	112/2013		
461	Александар Јовановски	LTN DOO		070/324-525	25.03.2015	Категорија А	246/2015		
224	Александар Кузмановски	Поко-М		076/224-903	28.02.2013	Категорија А	94/2013		
88	Александар Матевски	Контрекс		070/219-111	31.01.2013	Категорија А	05/2013		
353	Александар Митревски	Комфор Клима		071/248-280	06.11.2014	Категорија А	233/2014 ...		
249	Александар Павичевиќ	Месер Вардар Тех...	aleksandar.pav...	070/204-873	14.03.2013	Категорија А	123/2013		
369	Александар Пецев			0	18.12.2013	Категорија Ц	80/2013		
312	Александар Попович	Аиркон	design@aircon...	077/693-855	11.06.2013	Категорија А	186/2013		
480	Александар Симовски	Климастар-Тетово		070/265-826	19.06.2015	Категорија А	264/2015		
81	Александар Стефков	Инфосет	aleksandar81...	071/377-067	15.12.2011	Категорија А	78/2011		
424	Александар Чучурски			0	28.11.2013	Категорија Ц	46/2013		
470	Алексовски Зоран	Елем Битола	zokibitola@ho...	075/201-342	19.06.2015	Категорија А	245/2015		
465	Ангел Митевски	Техно Ауто Скопје		070/366-940	25.03.2015	Категорија А	250/2015		
452	Антони Бојаџиев			0	14.11.2013	Категорија Ц	22/2013		
341	Антонио Трајковски	Климасервис Про		077/624-707	26.06.2014	Категорија А	221/2014 ...		
487	Асан Веби	Инфосет		075/733-223	19.06.2015	Категорија А	271/2015		
390	Атанас Иванов			0	04.12.2013	Категорија Ц	57/2013		

System for recording & labeling of equipment containing refrigerant

REQUESTS FOR RECORDS

Add records

Archive number * Number of labels * Image



Requested by *

Date of request *

Picture source

Picture name

Delivering information

Evidence N1	Evidence N2	Evidence N3	Evidence N4	Evidence N5
<input type="text" value="0183"/>	<input type="text" value="0184"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>
Evidence N6	Evidence N7	Evidence N8	Evidence N9	Evidence N10
<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>
Evidence N11	Evidence N12	Evidence N13	Evidence N14	Evidence N15
<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>
Evidence N16	Evidence N17	Evidence N18	Evidence N19	Evidence N20
<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>

Raising documentation date

Documentation picked by

Progress of request

Notes / Comments

Search records

Archive number Requested by Evidence number 1 Progress of request

List of records

ID	Archive number	Labels number	Requested by	Requested date	Evidence no.1	Evidence no.2	Evidence no.3	Evidence no.4	Evidence no.5	Evidence no.6	Evidence no.7	Evidence no.8	Evidence no.9	Evidence no.10	Evidence no.11	Evidence no.12	Evidence no.13
1	0	2	Реплек и Ху...	30.09.2015	0183	0184											

System for recording & labeling of equipment containing refrigerant

RECORDS FOR RECORDED AND LABELED EQUIPMENT

Evidence number *
0281

Registration date
05.04.2016

Service shop name
Фригоклима

Technician name *
Горан Даовски

Equipment owner *
ИМП Солета

City where equipment is placed
Скопје

Region

Log-book number
0281

Equipment name *
Ладилен агрегат за клима номс

Equipment model

Equipment serial number
98101581D

Equipment manufacturer *
Frigotehna

Manufacturing year *
1997

Purpose of equipment *
Климатизација

Type of equipment *
Стационарна

Sector *
Индустрија и производство

Sub Sector
Месо и преработка од месо

Refrigerant *
R22

Type of refrigerant
HCFC

Cooling capacity *
23,00 [KW]

Type of compressor *
Нехерметички

Installed power capacity *
11,00 [KW]

No. Refrigerant Circuits
1

Total refrigerant charge
20,00 [KGR]

GWP
1700

CO2
34,00

Equipment status
Labeled

status
Active

Notes / Comments



Picture source
D:\OZONE UNIT MACEDONIA\OzonU

Picture name
0281.jpg

+ Add Save Update

Record sheets list Exit

SHORT LIST OF RECORDS

ID	Evidence number	Service Shop	Technician name	Owner	Evidence log No.
241	0301	Фригоклима	Горан Даовски	ИМП Солета	0301
240	0287	Фригоклима	Горан Даовски	ИМП Солета	0287
239	0286	Фригоклима	Горан Даовски	ИМП Солета	0286
238	0285	Фригоклима	Горан Даовски	ИМП Солета	0285
237	0284	Фригоклима	Горан Даовски	ИМП Солета	0284
236	0283	Фригоклима	Горан Даовски	ИМП Солета	0283
235	0282	Фригоклима	Горан Даовски	ИМП Солета	0282
▶ 234	0281	Фригоклима	Горан Даовски	ИМП Солета	0281
233	0280	Фригоклима	Горан Даовски	ИМП Солета	0280
232	0279	Фригоклима	Горан Даовски	ИМП Солета	0279
231	0278	Фригоклима	Горан Даовски	ИМП Солета	0278
230	0277	Фригоклима	Горан Даовски	ИМП Солета	0277
229	0276	Фригоклима	Горан Даовски	ИМП Солета	0276
228	0275	Фригоклима	Горан Даовски	ИМП Солета	0275
227	0274	Фригоклима	Горан Даовски	ИМП Солета	0274
226	0273	Фригоклима	Горан Даовски	ИМП Солета	0273
225	0272	Фригоклима	Горан Даовски	ИМП Солета	0272
224	0271	Фригоклима	Горан Даовски	ИМП Солета	0271

Total number of records: 1120 Search

Search records

Equipment owner Technician name Evidence number Equipment Status

System for recording & labeling of equipment containing refrigerant

REPORT ON THE TYPE OF QUANTITIES OF RECOVERED, RECLAIMED AND RECYCLED REFRIGERANTS

Report form

Reporting year :

Service shop / Natural person : Service shop address : Person in charge :

Name of recovered refrigerants	Quantity of recovered refrigerants (kg.)	Quantity of reclaimed refrigerants (kg.)	Quantity of recycled refrigerants (kg.)	Quantity of generated waste (kg.)
R12	0	0	0	0
R134A	300	0	280	20
R22	150	0	140	10
R404A	450	0	430	20
R407C	45	0	40	5
R410A	20	0	20	0
R417A	0	0	0	0
R507A	0	0	0	0
R403B	0	0	0	0
R452A	0	0	0	0
R502	0	0	0	0
	0	0	0	0

Date : Place : Person in charge :

Verification number: Verified by :

Searching record

Reporting year: Verification number:

Service shop:

List of records

Year	Service Shop	Verification number
2017	Зона Експрес ...	

Total number of records: 1

System for recording & labeling of equipment containing refrigerant

Evidence No.	Evidence Number	City where equipment is located	Purpose of Equipment	Equipment status (active/disabled) (recorded/labeled)	Cooling Capacity (KW)	Installed power capacity (KW)	Total Refrigerant Charge (kg)	CO2 equivalent (ton)
--------------	-----------------	---------------------------------	----------------------	---	-----------------------	-------------------------------	-------------------------------	----------------------

613	1543/2016	Куманово						
614	1545/2016	Куманово						
615	1547/2016	Скопје						
616	1548/2016	Скопје						
617	1549/2016	Скопје						

No.	Evidence Number	City where equipment is located	Purpose of Equipment	Equipment status (active/disabled) (recorded/labeled)	Cooling Capacity (KW)	Installed power capacity (KW)	Total Refrigerant Charge (kg)	CO2 equivalent (ton)
-----	-----------------	---------------------------------	----------------------	---	-----------------------	-------------------------------	-------------------------------	----------------------

887	1473/2016	Ск						
888	1474/2016	Ск						
889	1475/2016	Ск						
890	1476/2016	Ск						
891	1477/2016	Ск						
892	1478/2016	Ск						
893	1479/2016	Ск						
894	1480/2016	Ск						
895	1481/2016	Ск						
896	1504/2016	Не						
897	1506/2016	Не						
898	1522/2016	Го						
899	1526/2016	Ск						
900	1527/2016	Ск						
901	1546/2016	Ск						

Total number of recorded and labeled

No.	Evidence Number	City where equipment is located	Purpose of Equipment	Equipment status (active/disabled) (recorded/labeled)	Cooling Capacity (KW)	Installed power capacity (KW)	Total Refrigerant Charge (kg)	CO2 equivalent (ton)
-----	-----------------	---------------------------------	----------------------	---	-----------------------	-------------------------------	-------------------------------	----------------------

305	1613/2016	Скопје						
306	1614/2016	Скопје						
307	1615/2016	Скопје						
308	1616/2016	Скопје						
309	1617/2016	Скопје						
310	1618/2016	Скопје						
311	1619/2016	Скопје						
312	1620/2016	Скопје						
313	1621/2016	Скопје						

No.	Evidence Number	City where equipment is located	Purpose of Equipment	Equipment status (active/disabled) (recorded/labeled)	Cooling Capacity (KW)	Installed power capacity (KW)	Total Refrigerant Charge (kg)	CO2 equivalent (ton)
-----	-----------------	---------------------------------	----------------------	---	-----------------------	-------------------------------	-------------------------------	----------------------

REFRIGERANT : R717

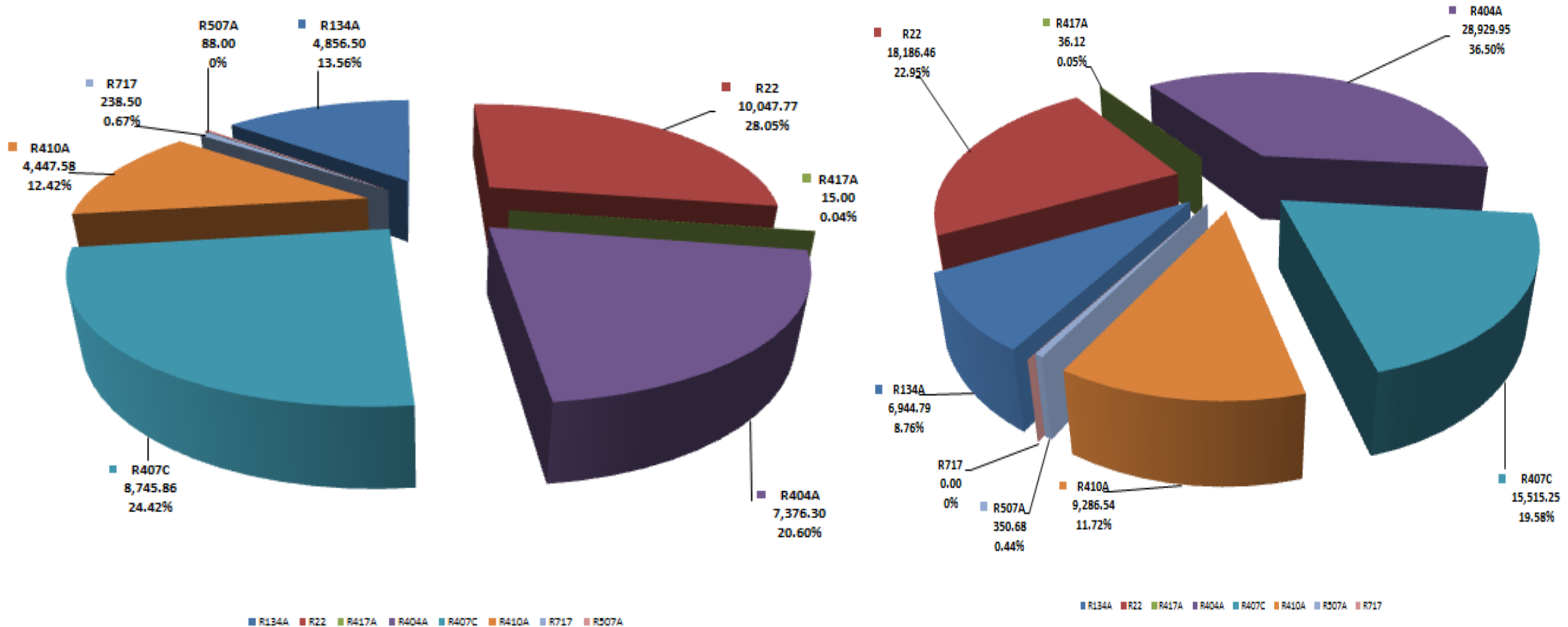
1116	0455	Кадино	Климатизација	Active	Labeled	1,052.20	266.10	62.50	0.00
1117	0456	Кадино	Ладене	Active	Labeled	341.00	92.90	42.00	0.00
1118	0457	Кадино	Ладене	Active	Labeled	341.00	92.90	42.00	0.00
1119	0458	Кадино	Ладене	Active	Labeled	341.00	92.90	42.00	0.00
1120	0459	Кадино	Ладене	Active	Labeled	406.20	83.40	50.00	0.00

Total number of recorded and la

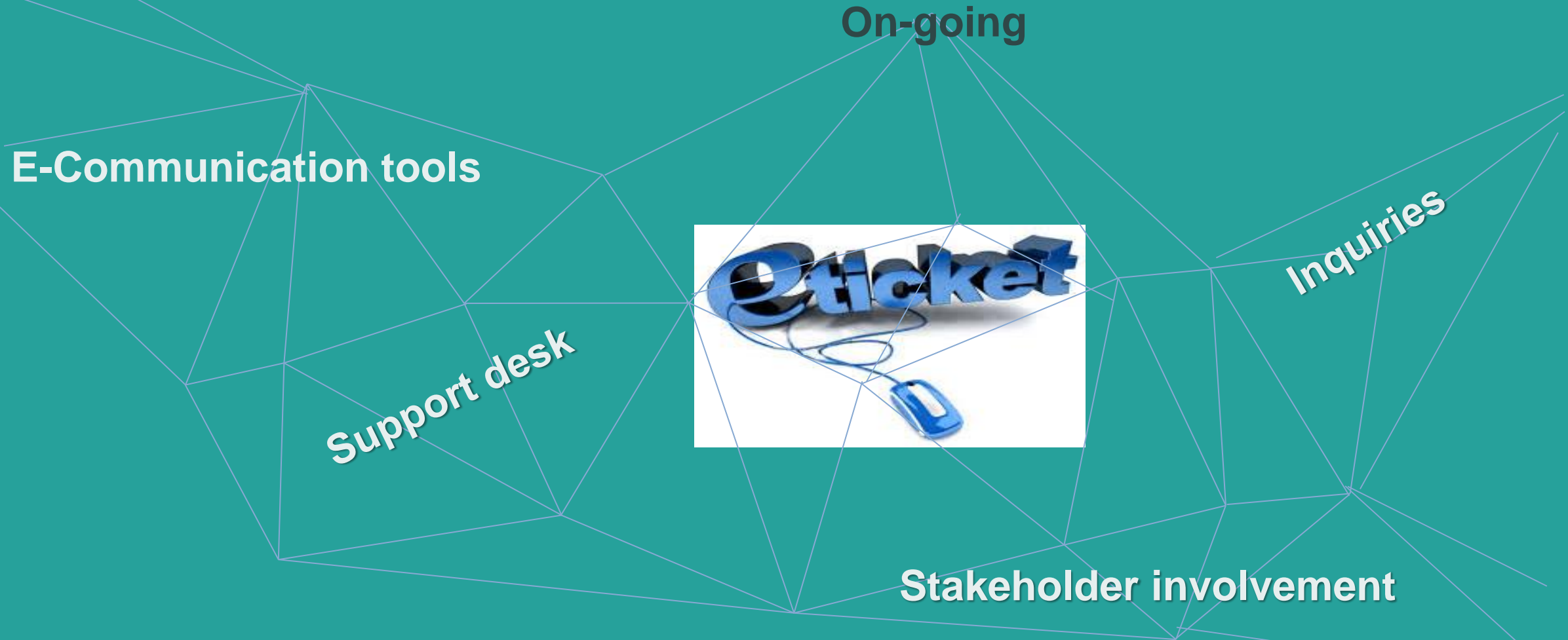
Total number of recorded and labeled equipment for R717 : 5 Pcs

Total cooling capacity (KW)	Total instal. power capacity (KW)	Total refrigerant charge (kg)	Total CO2 Equivalent (ton)
2,481.40	628.20	238.50	0.00

Labelled equipment containing refrigerant



Communication tools and awareness raising



Communication tools and awareness raising

HELP DESK CENTER

Customer Support Ticket System

Гостин | Најава



Центар за поддршка почеток



Отвори нов тикет



Проверка на статус на тикет

Добродојдовте во центарот за поддршка

Со цел исправно да ги насочиме Вашите барања за поддршка и подобро да ве опслужиме, Канцеларијата за заштита на озонската обвивка отвори систем со тикет поддршка. За секој поднесен Ваш тикет/барање за поддршка се доделува единствен број на тикет кој може да се користи за следење на напредокот на нашите одговори кон Вас преку онлајн платформата. За Ваша информација ние обезбедуваме комплетна архива и историја на сите Ваши барања за поддршка. Од Ваша страна потребно е да користите валидна e-mail адреса при поднесување на Вашиот тикет.



Отвори нов тикет

Ве молиме внесете колку е можно повеќе детали, така ќе можеме најдобро да ви помогнеме. За ажурира на претходно доставен тикет, Ве молиме најавете се.

Отвори нов тикет



Провери статус на тикет

Ние ви обезбедуваме архива и историја на сите ваши сегашни и минати тикети за поддршка вклучувајќи ги вашите барања и наши одговори до Вас..

Провери статус на тикет

Copyright © 2017 Канцеларија за заштита на озонската обвивка
HelpDesk систем

Communication tools and awareness raising

Stakeholder Request

HELP DESK CENTER
Customer Support Ticket System

Гостин | Најава

Центар за поддршка почеток | Отвори нов тикет | Проверка на статус на тикет

Отвори нов тикет

Ве молиме пополнете го формуларот подолу за да отворите нов тикет.

Тема за поддршка:

Контакт информации

Име и Презиме:

Email адреса:

Назив на фирма:

Телефонски број:

Евидентирање на опрема
Извештај за собрани, рециклирани
Информации за Легислатива
Информации за публикации
Увоз/извоз на опрема за ладење
Увоз/извоз на средства за ладење

Детали за тикетот

Ве молиме опишете го Вашето прашање/барање.

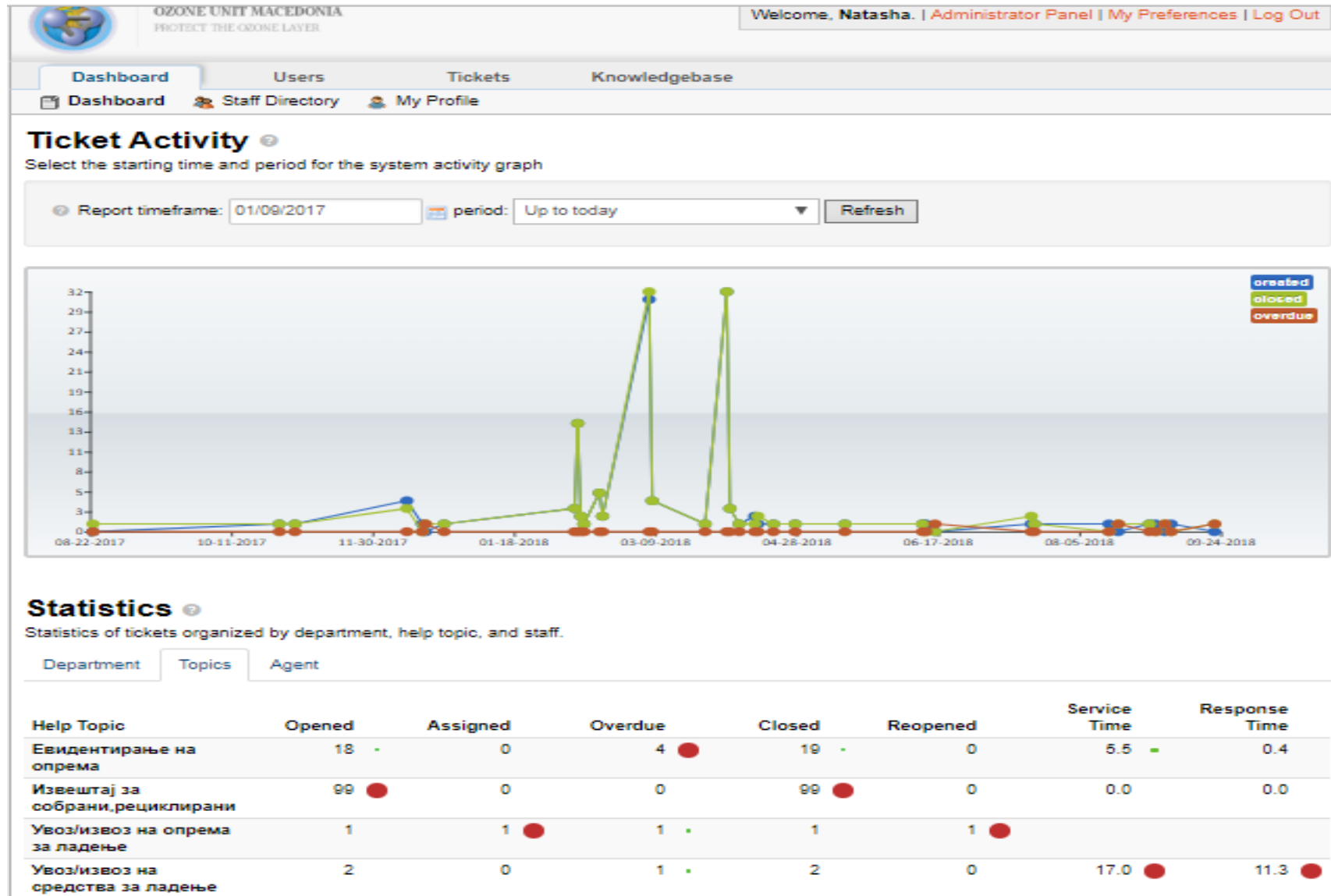
Краток опис на прашањето:

Детали за прашањето:

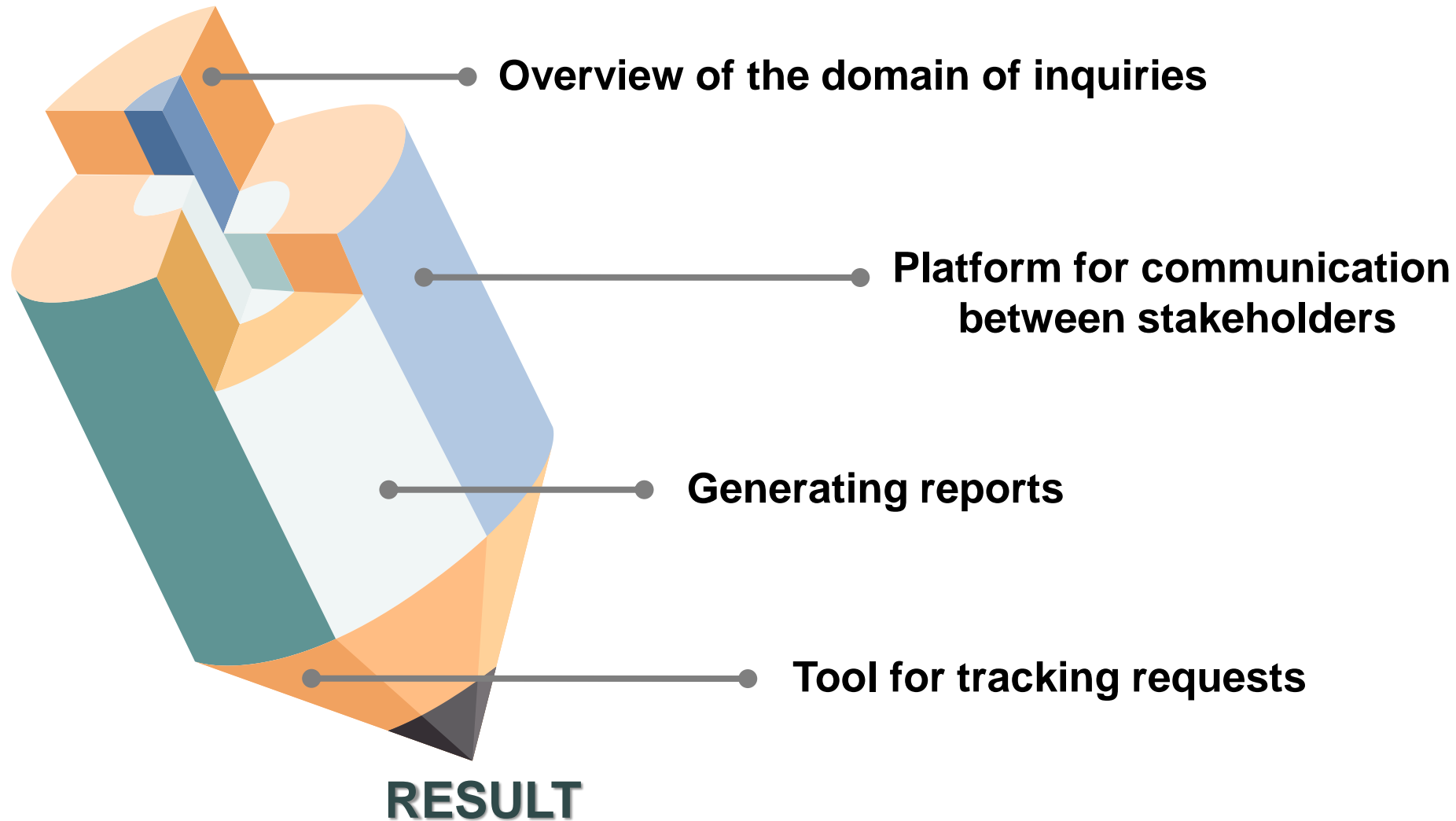
Drop files here or choose them

Креирај тикет | Ресетирај | Откажи

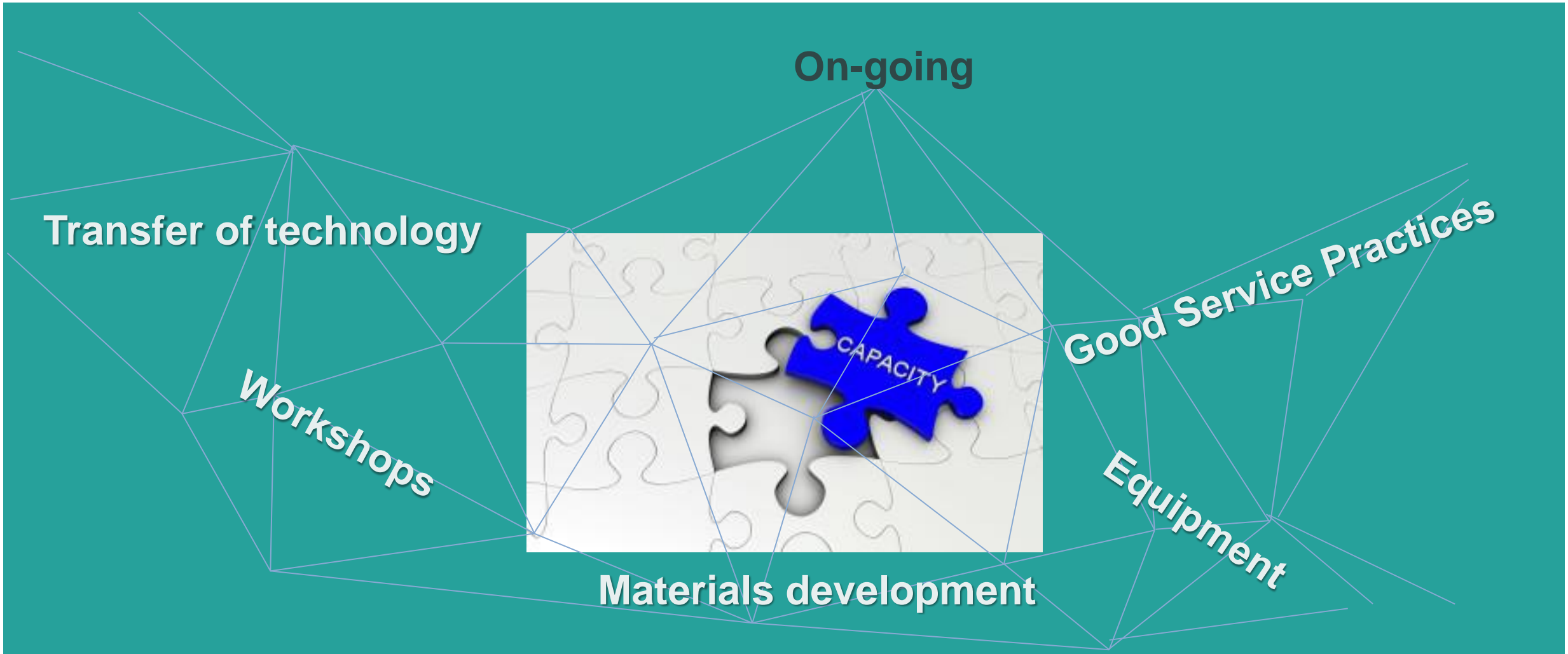
Communication tools and awareness raising




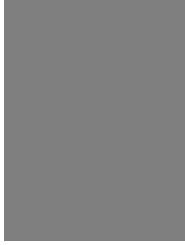
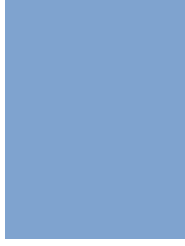
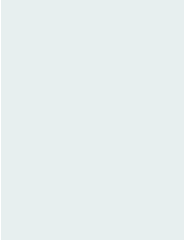
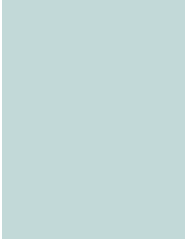

Communication tools and awareness raising



Capacity Strengthening



Capacity Strengthening – Mobilization of stakeholders

	RAC Technicians	Industry/Equipment Owners	
	Environmental Inspectors	Educators/Instructors Technical High School (Students)	
	Customs Officers	Companies dealing with electrical waste	

Conversion of technology – foam sector

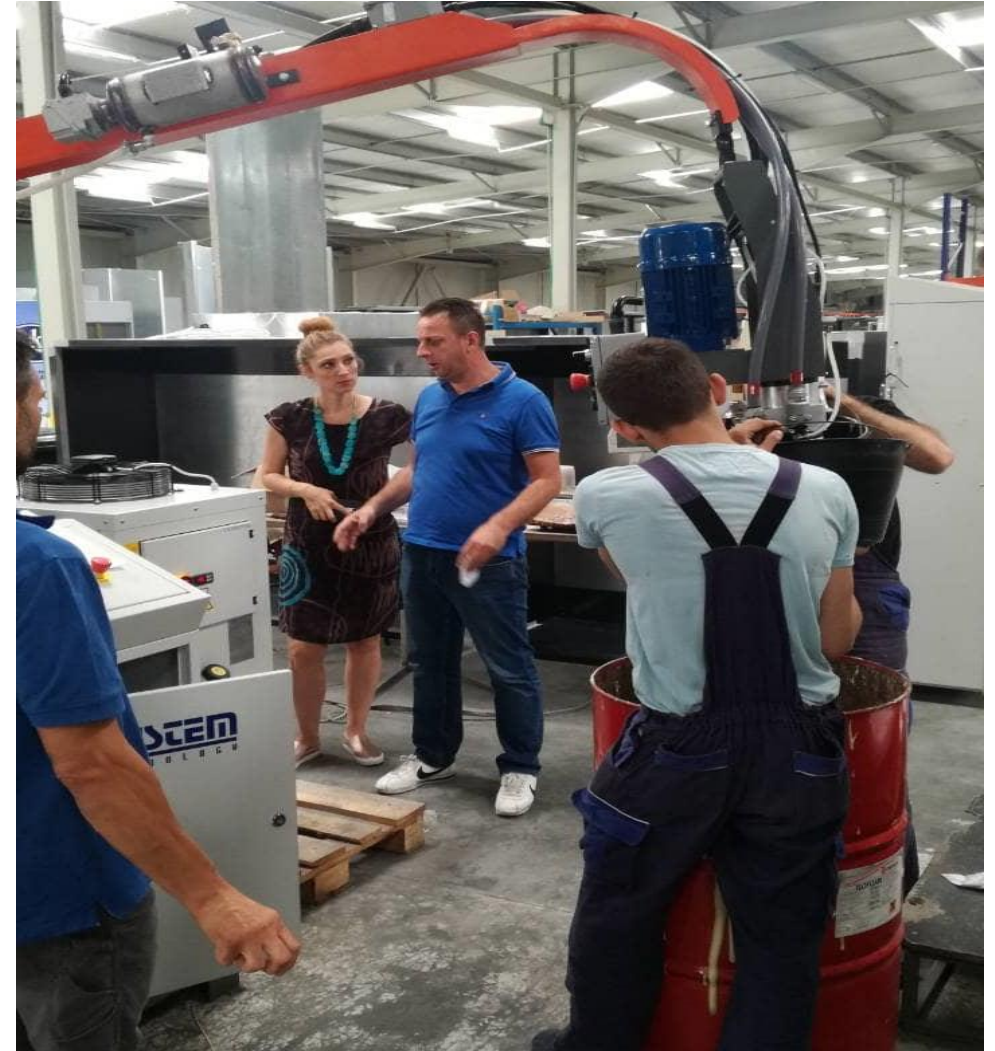


Insulated segment doors

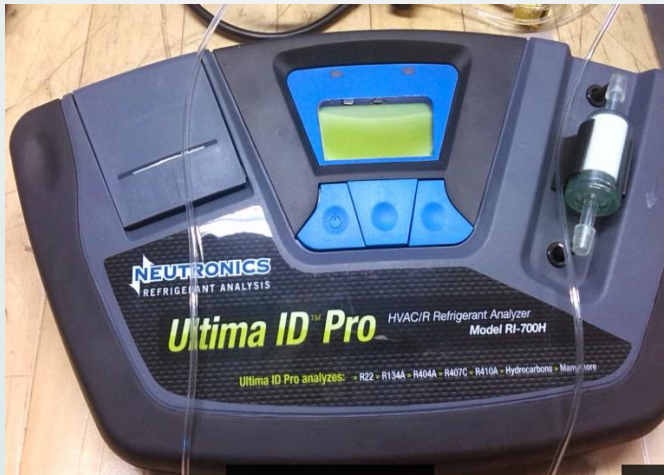
Conversion of technology – foam sector

*commercial refrigeration units
sandwich panels
insulated doors*

The conversion of the technology
(HCFC-141b → non-ODS)



Refrigerant identifiers



Electronic leak detectors



HVAC&R Service Technicians

Workshops

- *Recording and Labeling of Equipment containing refrigerants*
- *Good Service practices of RAC equipment*
- *Strengthening the capacities of the Environmental Inspectorate*
- *Waste managing companies dealing with electrical waste*



...in action



NOU Publications



Manual

for Good Service Practice in RAC



Guide

for Leak checks and Checks of equipment containing 3 kg and more of refrigerant



Booklet

on the Future of Cooling and Heating



Brochure

Useful facts of ozone layer and climate



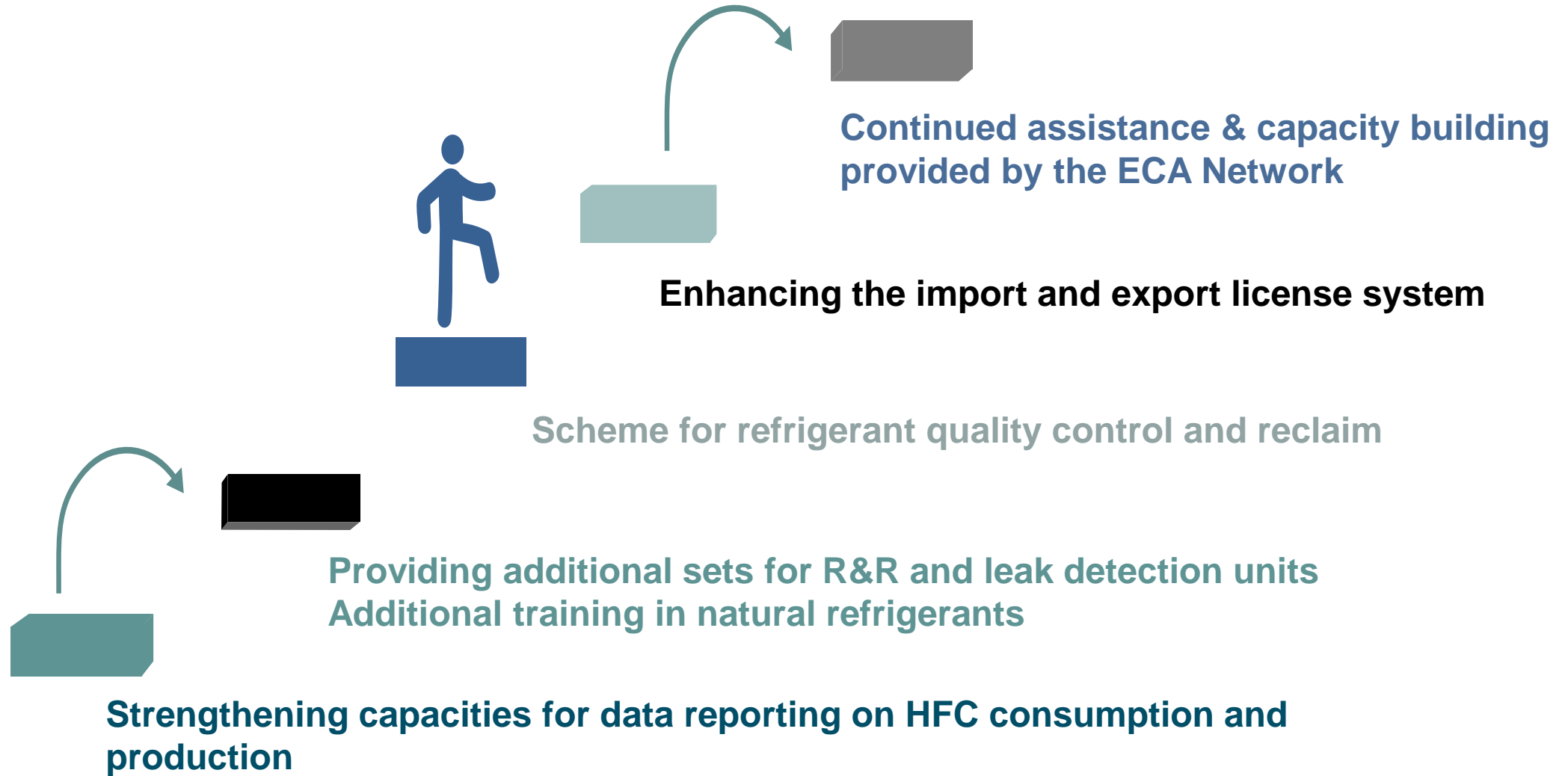
Poster

Code for RAC Servicing (Good /Bad Service Practices)

What's to come?!



Identified Needs



Identified Challenges

**Breaking barriers
towards use of
natural refrigerants
through promotion
of safety servicing
practices**

**Inclusion of HFC
alternatives in the
certification system**



**Management of R-waste
and waste RAC
equipment**

**Establishing
connections between
adopted standards and
legislation**

THANK YOU KINDLY FOR YOUR ATTENTION!

KEEP COOL AND CARRY ON

THE MONTREAL PROTOCOL



Natasha Kochova
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eurammon is always available as a sparring partner for questions on refrigeration with natural refrigerants.

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E-Mail: karin.jahn@eurammon.com

eurammon

refrigerants delivered by mother nature