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Deliverable 5 - Final Report: Designing a fully-fledged integrated F-gas database system and harmonized reporting system

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Abbreviations

BDR	Business Data Repository
CFC	Chlorofluorocarbons
CO_2eq	Carbon dioxide equivalent
CREO	Central Register of Equipment Operators
CRF	Common reporting format
DBR	Database of Business Reports
DG	Directorate General
EEA	European Environmental Agency
EC	European Community
EFDB	Emission Factor Database
EU	European Union
F-gas	Fluorinated greenhouse gas
FAQs	Frequently Asked Questions
GHG	Greenhouse gas
GWP	Global Warming Potential
HCFC	Hydrochlorofluorocarbon
HFC	Hydrofluorocarbon
LGA	Legislative Gap Analysis
MAC	Mobile Air Conditioning
MMR	Monitoring Mechanism Regulation
MP	Montreal Protocol
MRV	Measuring, Reporting and Verification
MoARDE	Ministry of Agriculture, Regional Development and Environment
NOU	National Ozone Unit
NIR	National Inventory Report
ODP	Ozone Depleting Potential
ODS	Ozone Depleting Substance
QA/QC	Quality assurance and quality control
RAC&HP	Refrigeration, Air-conditioning and Heat Pumps
UNEP	United Nations Environmental Programme
UNFCCC	United Nations Framework Convention on Climate Change

1 Introduction

Moldova is a party to the Vienna Convention for the Protection of the Ozone Layer and the Montreal Protocol on Substances that Deplete the Ozone Layer with its amendments. As a consequence of the phase-out of ozone depleting substances (ODS) under the Montreal Protocol, the consumption of hydrofluorocarbons (HFCs) as ODS substitutes has significantly increased and is expected to continue growing. HFCs together with perfluorocarbons (PFCs), sulphur hexafluoride (SF6), nitrogen trifluoride (NF3) and other fluorinated substances are strong greenhouse gases (GHG) and also covered by reporting requirements under the UNFCCC.

The goal of EU4Climate Project[1] is to contribute to climate change mitigation and adaptation and the development towards a low-emissions and climate-resilient economy in line with the Paris Agreement[2] in the region covering Armenia, Azerbaijan, Belarus, Georgia, Republic of Moldova and Ukraine.

The activity to be undertaken in the context of this contract covers the following two elements of the EU4Climate Project:

1. The establishment or strengthening of the MRV system as well as the
2. Alignment with EU climate acquis as provided by bilateral agreements with EU and in the context of Energy Community Treaty on climate matters that are not covered by the EU4Energy programme.

Within the Association Agreement (AA) with the EU signed on 27 June 2014 and in force since September 2014, cooperation in the area of climate change and ozone layer protection has been agreed. The Republic of Moldova is currently working to fulfil its obligations under the Association Agreement and to adapt its legislation towards the acquis communitarian in the field of environmental protection and climate change.

The measures related to ozone depleting substances had included the elaboration and approving of the National Phase-out Programme for HCFCs for the period 2016-2040[3]. Concerning the implementation of measures related to protection of the environment, the transposition of the EU Regulation No. 842/2006 on fluorinated greenhouse gases (the so-called F-gas Regulation) is envisaged. The following provisions of the EU F-gas Regulation shall be considered:

- Adoption of national legislation and designation of competent authority/authorities,
- Establishment/adaptation of national training and certification requirements for relevant personnel and companies (Article 5),
- Establishment of reporting systems for acquiring emission data from the relevant sectors (Article 6), and
- Establishment of enforcement system (Article 13).

[1] URL: https://www.md.undp.org/content/moldova/en/home/projects/eu-4-climate.html
[2] URL to PDF: https://unfccc.int/resource/docs/2015/cop21/eng/10a01.pdf
[3] Fulfilled through the Governmental Decision No. 856 dated July 13, 2016.

Respective provisions of that Regulation were supposed be implemented within 4 years of the entry into force of the AA. That is, the implementation of the above parts of the F-Gas Regulation in the Republic of Moldova needed to take place by September 2018, but this did not happen in full extent.

It is to be mentioned also, that at EU level, the Regulation No. 842/2006 has been replaced in 2014 by Regulation No 517/2014, which applies at the EU level from 1 January 2015. The implementing Regulations adopted under the Regulation No. 842/2006 remained in force and continued to apply until repealed by the new acts.

The main measures set out in the new EU F-gas Regulation include the EU HFC phase down scheme and related distribution of quota and authorizations, placing on the market prohibitions for certain products and equipment containing HFCs and further limitations for the use of high-GWP HFCs. EU Regulation 517/2014 also implements the Kigali Amendment to the Montreal Protocol at EU level and is hence often regarded as an example for the implementation of this amendment.

New legislation in the Republic of Moldova would need to take the revised EU F-gas Regulation No 517/2014 into account, at least as regards the above-mentioned topics.

The work programme within this assignment is provided in Annex 1. A country visit was undertaken from 2nd to 4th December 2019 and its schedule is specified in Annex 2.

2 Legislation related to F-gases

2.1 International Conventions: UNFCCC, Montreal Protocol and its Kigali Amendment

Fluorinated greenhouse gases (including hydrofluorocarbons – HFCs, perfluorocarbons – PFCs and sulphur hexafluoride – SF_6), commonly called "F-gases", make part of a Kyoto Protocol basket of greenhouse gases, which emissions are monitored and reported under the **United Nations Framework Convention on Climate Change (UNFCCC)**. Those substances have high Global Warming Potentials (GWPs) that can be even few thousand times higher than GWP of CO_2 and are widely used as refrigerants, fire extinguishants, foam blowing agents, aerosol propellants and solvents. Current global consumption of F-gases (mainly HFCs) is estimated to be at a level of 600,000 tonnes and is constantly growing.

Parties to the UNFCCC are obliged to report on information relevant to the implementation of the Convention (Article 12). By communicating information on GHG emissions and actions to reduce them, as well as on adaptation and means of implementation such as finance, technology transfer and capacity-building, the transparency and reporting system allows to understand ambition and progress on climate actions and support by Parties, – and informs the COP for deliberation and guidance on these matters.

Annex 1 Parties need to provide its annual GHG inventory covering emission and removals of direct GHGs (carbon dioxide (CO_2), methane (CH_4), nitrous oxide (N_2O), perfluorocarbons (PFCs), hydrofluorocarbons (HFCs), sulphur hexafluoride (SF6) and nitrogen trifluoride (NF_3)) from five sectors. Relevant for HFCs is the sector "Industrial Processes and Product Use" (IPPU). The reporting period is from the base year (or period) to two years before the inventory is due (e.g. the inventories due 15 April 2018 cover emissions and removals for all years from the base year to 2016).

Since the Republic of Moldova operates currently as a non-Annex 1 Party under the UNFCCC, the reporting obligations are different compared to the EU. For non-Annex I parties, reporting is implemented through national communications (NCs) and biennial update reports (BURs).

The categories used for F-gases within the UNFCCC reporting are presented in the table below. Most relevant is the category "product uses as substitutes for ODS" with the usually largest application being "refrigeration and air conditioning". Several methodological approaches for estimating emissions may be applied according to the 2006 IPCC Guidelines for National Greenhouse gas Inventories. These approaches vary concerning their complexity and degree of detail. A Tier 1 approach represents the basic methodology which requires comparably small data input while a Tier 2 approach is more complex. A Tier 3 approach is based on plant-specific measurements and is thus the most specific and detailed method for emission estimates.

Table 1 below provides an overview of relevant categories for F-gas emission reporting by applications (if Tier 1 is applied) or by sub-applications (if Tier 2 is used).

Table 1: Categories relevant for F-gas reporting under the UNFCCC (Tier 1 and Tier 2)

	Application (Tier 1)	Sub-application (Tier 2)
Product uses as substitutes for ODS	Refrigeration and air conditioning	Commercial refrigeration Domestic refrigeration Industrial refrigeration Transport refrigeration Mobile air conditioning Stationary air conditioning
	Foam blowing agents	Closed cells Open cells
	Fire protection	Fire protection
	Aerosols	Metered dose inhalers Others
	Solvents	Solvents
	Other applications	
Other product manufacture and use	Electrical equipment	
	SF_6 and PFCs from other product use	Military applications Accelerators Soundproof windows Adiabatic properties: shoes and tyres Other
	Other	
Other	Pulp and paper	
	Food and beverages industry	

Taking into account that although HFCs do not deplete the ozone layer, but are major substitutes of ozone-depleting substances (ODS), the Parties to the **Montreal Protocol on substances that deplete the ozone layer (MP)** agreed in October 2016 in Kigali (Rwanda) on the so-called **"Kigali Amendment" to the MP**. This amendment set up the schedules for phasing down production and consumption[4] of HFCs worldwide supplemented with reporting and licensing requirements. Even before that happened, some countries had introduced their national restrictions on the use of F-gases, including HFCs, considering that those substances would pose a serious threat to climate in the future if not adequately controlled. The EU was among the first regions to address F-gases in its legislation (see section 2.2).

The Kigali Amendment to the Montreal Protocol relates to 18 HFCs (grouped in 2 Annexes) and sets out stepwise reductions of HFC consumption. These HFC phase-down schedules are different for developed countries (non A5 countries) and developing countries (A5 countries) and respective subgroups. Further requirements contained in the Kigali Amendment refer to

- Reporting on production, imports and exports of HFCs;
- Reporting on emissions of HFC-23 listed in Annex II;
- Establishment of a licensing system for HFC imports and exports.

The Kigali Amendment is supplemented with 2 decisions of the Parties to the Montreal Protocol, which contain details of possible exemptions for countries with hot climate ("high ambient temperature (HAT) countries") and recommendations for the Executive Committee of

[4] In the MP „consumption" is defined as production + imports – exports.

the Montreal Protocol's Multilateral Fund (MLF) on the financial assistance to A5 countries necessary for them to comply with the Kigali Amendment.

The Kigali Amendment entered into force on 1 January 2019. So far, more than 90 countries ratified this amendment to the MP.

2.2 EU legislation related to F-gases

The first legislative framework on F-gases in the EU was Regulation 842/2006 and its 10 implementing regulations. After a comprehensive review, the regulation was replaced by **Regulation 517/2014** in order to strengthen existing measures and introduce new approaches for sustainable F-gas emission reductions. The implementing Regulations adopted under the original Regulation remained in force and continued to apply until repealed by new acts. As of October 2019, five out of the ten implementing Regulations have been replaced and several new implementing decisions were adopted.

Current legislation includes the following acts:

The main act, Regulation 517/2014 of the European Parliament and of the Council of 16 April 2014 on fluorinated greenhouse gases and repealing Regulation (EC) No 842/2006 (Text with EEA relevance).

A number of implementing regulations, such as:

- **Leak checking/Stationary refrigeration, air conditioning and heat-pumps – Commission Regulation (EC) No. 1516/2007** of 19 December 2007 establishing standard leakage checking requirements for stationary refrigeration, air conditioning and heat-pump equipment containing certain fluorinated greenhouse gases.
- **Leak checking/Fire protection – Commission Regulation (EC) No. 1497/2007 of 18 December 2007** establishing standard leakage checking requirements for stationary fire protection systems containing certain fluorinated greenhouse gases.
- **Labelling – Commission Implementing Regulation (EU) 2015/2068** of 17 November 2015 establishing the format of labels for products and equipment containing fluorinated greenhouse gases (replacing Commission Regulation (EC) No. 1494/2007 of 17 December 2007).
- **Reporting – Commission Regulation (EC) No 1191/2014** of 30 October 2014 determining the format and means for submitting the report referred to in Article 19 of Regulation (EU) No 517/2014 of the European Parliament and of the Council on fluorinated greenhouse gases (replacing 1493/2007 of 17 December 2007).
- **Reporting - Commission Implementing Regulation (EU) 2017/1375** of 25 July 2017 amending Implementing Regulation (EU) No 1191/2014 determining the format and means for submitting the report referred to in Article 19 of Regulation (EU) No 517/2014 of the European Parliament and of the Council on fluorinated greenhouse gases
- **Qualification/Certification/Stationary refrigeration, air conditioning, heat-pumps and trucks & trailers – Commission Implementing Regulation (EU) 2015/2067** of 17 November 2015 establishing minimum requirements and the conditions for mutual

recognition for the certification of natural persons as regards stationary refrigeration, air conditioning and heat pump equipment, and refrigeration units of refrigerated trucks and trailers, containing fluorinated greenhouse gases and for the certification of companies as regards stationary refrigeration, air conditioning and heat pump equipment, containing fluorinated greenhouse gases (replacing Commission Regulation (EC) No 303/2008 of 2 April 2008).

- **Qualification/Certification/Fire protection systems and fire extinguishers – Commission Regulation (EC) No 304/2008** of 2 April 2008 establishing minimum requirements and the conditions for mutual recognition for the certification of companies and personnel as regards stationary fire protection systems and fire extinguishers containing certain fluorinated greenhouse gases.
- **Qualification/Certification/Electrical switchgears – Commission Implementing Regulation (EU) 2015/2066** of 17 November 2015 establishing minimum requirements and the conditions for mutual recognition for the certification of natural persons carrying out installation, servicing, maintenance, repair or decommissioning of electrical switchgear containing fluorinated greenhouse gases or recovery of fluorinated greenhouse gases from stationary electrical switchgear (replacing Commission Regulation (EC) No 305/2008 of 2 April 2008).
- **Qualification/Certification/Gas-based Solvents from equipment – Commission Regulation (EC) No 306/2008** of 2 April 2008 establishing minimum requirements and the conditions for mutual recognition for the certification of personnel recovering certain fluorinated greenhouse gas-based solvents from equipment.
- **Qualification/Training and training attestations/Mobile air conditioning – Commission Regulation (EC) No 307/2008** of 2 April 2008 establishing minimum requirements for training programmes and the conditions for mutual recognition of training attestations for personnel as regards air-conditioning systems in certain motor vehicles containing certain fluorinated greenhouse gases.
- **Format for notification of training and certification programmes – Commission Implementing Regulation (EU) 2015/2065** of 17 November 2015 establishing the format for notification of the training and certification programmes of the Member States (replacing Commission Regulation (EC) No 308/2008 of 2 April 2008).

Furthermore, the transport sector, i.e. the automotive industry, is addressed by the so-called **EU MAC Directive** (Directive 2006/40/EC of the European Parliament and of the Council of 17 May 2006 relating to emissions from air conditioning systems in motor vehicles and amending Council Directive 70/156/EEC (Text with EEA relevance) which relates to HFC emissions from mobile air conditioning systems in passenger cars. Since 2017, the use of refrigerants with a global warming potential >150 is not allowed any more in new passenger car models. This has led to the introduction of alternative refrigerants in car air conditioning systems in the EU.

As concerns emission reporting to the UNFCCC, Regulation (EU) No 525/2013 stipulates the mechanism for monitoring and reporting greenhouse gas emissions. In more detail, Regulation (EU) No 749/2014 sets the requirements for national reporting under Regulation 525/2013.

2.3 F-gases in the AA RoM-EU, National Plans in Moldova and national legislation

According to the Annex XII of the Association Agreement between Republic of Moldova and European Union, the Government of the Republic of Moldova shall implement selected basic provisions of the Regulation 842/2006, namely:

- adoption of national legislation and designation of competent authority/authorities;
- establishment/adapt national training and certification requirements for relevant personnel and companies (Article 5);
- establishment of reporting systems for acquiring emission data from the relevant sectors (Article 6);
- establishment of enforcement system (Article 13).

These provisions of the Regulation shall be implemented within 4 years of the entry into force of the AA RM-EU, which related to the year 2018.

The National Action Plan for the implementation of the AA RoM-EU for the period 2014-2016 (GD#808/2014) required an institutional and legislation assessment before transposing the Regulation 842/2006 in order to identify the most suitable way for the current circumstances. This assessment has been done under the Clima East project – Expert Facility Services CEEF2014-050-MD Implementation of the provisions from the Annex XII (Chapter 17, Climate Actions) of the Association Agreement between Republic of Moldova and European Union: **Regulation (EC) No 842/2006** of the European Parliament and of the Council of 17 May 2006 on certain fluorinated greenhouse gases and **Regulation (EC) No 1005/2009** of the European Parliament and of the Council of 16 September 2009 on substances that deplete the ozone layer.

According to the recommendation of the Clima East expert, Moldova may go beyond the articles stated in the Annex XII to the AA RoM-EU (art. 5, 6 and 13) and transpose at the national level the entire EU Regulation.

Accordingly, the National Action Plan for the implementation of the AA RoM-EU for the period 2017-2019 (GD#1472/2016) set out that the following legal acts will be developed in order to transpose the Regulation 842/2006 at national level:

1) development and approving of the Regulation on F-gases (or F-gases Law),
2) development and approving of the Program on requirements for training and certification of the companies and specialists involved in the installation, maintenance and service of equipment containing fluorinated gases or recovery of fluorinated gases,
3) development of the reporting system on emission of the f-gases from relevant sectors.

The envisaged timing for development and approving of these documents was September 2018. Thus, the deadline expired a year ago.

According the operational conclusions of the 4th meeting of the EU-RM Sub-Committee on Energy, Transport, Environment, Climate Action and Civil Protection (cluster no.3), when approximating legislation to the EU climate acquis set out in the Association Agreement,

Moldova should take into account the latest version of the EU legal acts. Respectively, the work on F-gases that has been done so far relates to the revised F-gas Regulation 517/2014.

Table 2 shows the relevant articles of Regulation 842/2006 and the corresponding articles of Regulation 517/2014.

Table 2: Articles of EU Regulation 842/2006, which are referred to in the AA, and related Articles in the revised EU Regulation 517/2014

Regulation 842/2006	**Regulation 517/2014**
Article 5 Training and Certification	Article 10 Training and Certification
Article 6 Reporting	Article 19 Reporting on production, import, export, feedstock use and destruction of the substances listed in Annexes I or II
Article 13 Penalties	Article 25 Penalties

National legislation on F-gases in Moldova currently consists of the following acts:

1) Regulation on measures to **reduce emissions from air conditioning systems of motor vehicles (GD 1242/2016)** which transposes partially at the national level the EU MAC Directive and Annex 1 of the Regulation No 517/2014. This national regulation prohibits installation of air conditioning systems designed to contain F-gases with GWP > 150 in passenger cars from 1st January, 2021. From 1st January 2025 it will be prohibited to charge the air conditioning systems on any motor vehicle with fluorinated greenhouse gases with GWP > 150, except for the recharging of air conditioning systems containing such gases, but which were installed on vehicles before 1 January 2021. GD 1242/2016 sets out the **list of F-gases** and the **method of calculating of the global warming potential** for a substance at the national level.

2) Regulation regarding the **training and certification of technicians for refrigeration, air conditioning and heat pump installations** containing hydrochlorofluorocarbons and fluorinated greenhouse gases **(GD 483/2019).** This regulation goes relates to equipment containing ODS (i.e. HCFCs) and F-gases and it is based on Art. 11 of the Regulation regarding the commercial regime and use of halogenated hydrocarbons that destroy the ozone layer (Law 852/2002). This article states that the activities in the field of cold technology can only be carried out by qualified specialists, who are trained and certified every three years, according to the programs elaborated by the authorized institutions. The national regulation refers to the following European legal acts:

- EU F-gas Regulation 517/2014: Art. 2 Definition/p. 5, p. 7, p. 11, p. 14, p. 20-21; Art. 4 Leak checks/(1), Art. 8 Recovery/(1), a); Art. 10 Training and certification; Art. 25 (1) Penalties.
- Commission Implementing Regulation (EU) 2015/2067 of 17 November 2015 establishing, pursuant to Regulation (EU) No 517/2014 of the European Parliament and of the Council, minimum requirements and the conditions for mutual recognition for the certification of natural persons as regards stationary refrigeration, air conditioning and heat pump equipment, and refrigeration units of refrigerated trucks and trailers, containing fluorinated greenhouse gases and for the certification of companies as regards stationary refrigeration, air conditioning and heat pump equipment, containing fluorinated greenhouse gases: Articles 1-4, 7, 8 and 10.
- Commission Regulation (EC) No 307/2008 of 2 April 2008 establishing minimum requirements for training programmes and the conditions for mutual recognition of training attestations for personnel as regards air-conditioning systems in certain motor vehicles containing certain fluorinated greenhouse gases: Annex.

While not explicitly addressing F-gases, the following legislative acts addressing ODS are important to note:

- Key ODS legislation in Moldova is the Law No. 852 from 2002, which was amended in 2007, 2010 and 2013. This law does not refer to HFCs or other fluorinated greenhouse gases. The 2013 amendment introduces monitoring of ODS consumption: Mandatory logbooks for users of equipment containing more than 3 kg of ODS charge (6 kg if hermetically sealed) were introduced in 2013. These logbooks are to be presented annually to the State Ecological Inspectorate on the previous calendar year (Law No. 228 of 10 October 2013). – However, only few logbooks are being received.
- Implementation of the Montreal Protocol through national HCFC Phase-out Management Plans (HPMP): In 2010 the HPMP Stage I was approved (period 2011-2015) and successfully implemented (Phase I: 10% reduction from the baseline). In 2016, HPMP Stage II was approved (period 2016-2020) and is being implemented. The currently required reduction is 35% in 2016-2020; full phase-out is foreseen in 2040.
- GD No. 589 of 21 June 2018 sets out the licensing system for imports and the annual allocation of import quota to registered importers in order to achieve the HCFC reduction as scheduled. Each import shipment (HCFCs or equipment and products with HCFCs required an import license.

A Law for the ratification of the Kigali Amendment has been drafted and was consulted with public authorities. However, it was requested that a draft Programme on HFC phase-down should be prepared before ratification of the Kigali Amendment.

3 Legislative gaps and implications

In the following, the requirements of the following legal documents are investigated in order to identify legal gaps.

- the Law No. 852 as of 14.02.2002 on approving the Regulation on trade regime & regulating the use of halogenated hydrocarbons that are depleting the ozone layer;
- the Association Agreement (AA) with the European Union (EU) on 27 June 2014, ratified by the Parliament through the Law No. 112 as of 02.07.2014;
- the GD No. 1472 as of 30.12.2016 on approval of the National Action Plan on implementation of the AA RM-EU within the period 2017-2019;
- the GD No. 856 on approving the National Phase-out Programme for HCFCs for the period 2016-2040;
- the GD No. 1277 as of 26.12.2018 on the Establishment and Functioning of the National System for Monitoring and Reporting Greenhouse Gas emissions and other Information Relevant to Climate Change;
- Law No. 277 as of 29.11.2018 on chemical substances;
- Kigali Amendment to the Montreal Protocol;
- Paris Agreement to the UNFCCC

3.1 Main requirements of EU Regulation 517/2014 and comparison with EU Regulation 842/2006

The following section describes the main provisions of the revised EU F-gas Regulation and analyses differences to the EU Regulation 842/2006. An overview of the requirements set out in the Kigali Amendment as well as the current legal situation in Moldova are assessed subsequently.

3.1.1 Main provisions of EU Regulation 517/2014

The objective of Regulation 517/2014 is "*to protect the environment by reducing emissions of fluorinated greenhouse gases*". The provisions are subdivided into 6 Chapters:

Chapter I: General provisions

Articles on the subject of the Regulation (Art. 1) and definitions (Art. 2)

Chapter II: Containment

Articles on the prevention of emissions of F-gases (Art. 3), leak checks (Art. 4), leakage detection systems (Art. 5), record keeping (Art. 6), emissions of F-gases in relation to production (Art. 7), recovery (Art. 8), producer responsibility schemes (Art. 9) and training and certification (Art. 10)

Chapter III: Placing on the market and control of use

Articles on restrictions on the placing on the market (Art. 11), labeling and product and equipment information (Art. 12), control of use (Art. 13), pre-charging of equipment with HFCs (Art. 14)

Chapter IV: Reduction of the quantity of HFCs placed on the market

Articles on the reduction of the quantity of HFCs placed on the market (Art. 15), allocation of quotas for placing HFCs on the market (Art. 16), registry (Art. 17) and transfer of quotas and authorization to use quotas for the placing on the market of HFCs in imported equipment (Art. 18)

Chapter V: Reporting

Articles on the reporting on production, import, export, feedstock use and destruction of substances listed in Annexes I and II (Art. 19) and collection of emission data (Art. 20)

Chapter VI: Final provisions

Articles on the review of the Regulation (Art. 21), exercise of the Commission delegation (Art. 22), consultation forum (Art. 23), committee procedure (Art. 24), penalties (Art. 25), repeal (Art. 26) and entry into force and date of application (Art. 27)

Regulation 517/2014 contains also a **preamble** where the rationale for the provisions contained in the main text is explained and the following 5 important Annexes:

Annex I: List of F-gases referred to in point 1 of Art. 2

Annex II: List of other F-gases – subject to reporting in accordance with Art. 19

Annex III: List of placing on the market prohibitions referred to in Art. 11 (1)

Annex IV: Method of calculating a total GWP of a mixture

Annex V: Calculation of the maximum quantity, reference values and quotas for placing HFCs on the market (HFC phase-down schedule is contained in this Annex)

Annex VI: Allocation mechanism referred to in Art. 16

Annex VII: Data to be reported pursuant to Art. 19

Annex VIII: Correlation table (with Regulation 842/2006)

Moreover, Regulation 517/2014 is supplemented with several new or revised Commission implementing Regulations and 5 Commission regulations, which are still valid though issued based on Regulation 842/2006.

3.1.2 Comparison of EU Regulation 517/2014 and EU Regulation 842/2006

The most important new provisions of Regulation 517/2014 as compared to Regulation 842/2006 are as follows:

- Several new or revised definitions, e.g. revised definition of F-gases which now covers not only HFCs, PFCs and SF_6, but also all mixtures containing any of these substances – Art. 2 (1).
- A number of "other" gases (including e.g. unsaturated HFCs) – now subject to reporting in addition to HFCs, PFCs and SF_6 – Art. 19 and Annex II.
- HFC phase-down schedule – quantities allowed to be placed on the EU market each year are expressed not in kilograms, but in tonnes of CO_2 equivalents (CO_2 eq) calculated by multiplying metric tonnes by GWP of the substance or mixture – Art. 15 and Annex V.
- Quota allocation system – HFC quotas (calculated in tonnes of CO_2 eq) are allocated each year to "old" HFC producers and importers in the EU (called "incumbents") and 11% are left from a reserve left for new producers and importers[5] (called "new entrants"). HFC quantities imported in pre-charged RAC&HP equipment must be also within quota and there is a system of authorization of quota to allow their use for imports of HFCs in equipment – Art. 14, 16 and 18 and Annex V.
- Registry where various groups of undertakings dealing with F-gases are obliged to register – Art. 17.
- New placing on the market bans, *inter alia* – to cover RAC&HP equipment containing high GWP F-gases – Art. 15(1) and Annex III.
- New F-gas use ban which covers servicing or maintenance of certain type of RAC&HP equipment with virgin F-gases with GWP of 2500 or more starting from 2020 and with recycled or reclaimed F-gases with GWP of 2500 or more starting from 2030 – Art. 13(3).
- New certification requirements– *inter alia* certificate is now needed for technicians who install, service or maintain, repair, decommission or check leakage of refrigeration equipment installed on big trucks (> 3.5 tonnes weight) and trailers – Art. 10 (1) and Regulation 2015/2067.
- New limit of F-gas contained in equipment over which the leakage checking and record keeping is mandatory – 5 tonnes of CO_2 eq and new leakage checking schedule (equipment holding 5, 50 and 500 tonnes of CO_2 eq to be checked every 12, 6 and 3 months, respectively) – Art. 4 and 6.
- Several other new obligations for undertakings – examples:
  - obligation for the seller of RAC&HP equipment that is not hermetically sealed to request proof from the buyer that such equipment will be installed by certified undertakings – Art. 11(5)
  - obligation for HFC-containing equipment importers to hold a declaration of conformity, which proves that HFC contained in that equipment is within the EU quota – Art. 14(2) and Regulation 2016/879
  - obligation for F-gas importers to present proof that HFC-23 formed as by product in the production process of that F-gas (including production of substrates) – Art. 7(2)
- Several new obligations for Member States – examples:
  - to ensure that training is available for natural persons which will include information on technologies alternative to F-gases – Art. 10(5)

[5] Since 2018, this reserve is open to new entrants *and* incumbents.

- to encourage a development of producer responsibility schemes for the recovery of F-gases and their recovery, recycling and reclamation – Art. 9

Most importantly, new elements of the EU F-gas Regulation which need to be considered in national legislation include:

- The metrics of "tonnes of CO_2 equivalents" as key measure to determine the environmental impact of F-gases and measures related to equipment containing F-gases (instead of the mass-based metrics in the former F-gas Regulation). This change especially leads to implications for containment measures.
- Containment & recovery: Some additional requirements apply for emission prevention, leak checks, end-of-life treatment and qualification of personnel.
- The EU HFC phase down (Art 15): The Regulation introduces a quota mechanism which will reduce the supply of HFCs to the EU market. The quantities of HFCs (expressed in CO_2 equivalents) placed on the market will have to decrease by 79% in the period from 2015 to 2030. The Kigali Amendment to the Montreal Protocol also relies on a phase down mechanism which underlines the importance of such measure.
- Bans: A number of new bans addressing mainly refrigeration and air conditioning applications have been added and are supposed to support the implementation of the HFC phase down.
- Training and certification: Training programmes related to alternatives to F-gases are to be established.

3.1.3 Comparison of types of measures in Kigali Amendment, EU Regulations and national legislation

The following Table 3 compares the major types of measures established by the Kigali Amendment, the EU Regulation 842/2006, the revised EU Regulation 517/2014 and the national legislation of Moldova in place so far. It is evident that EU Regulation 517/2014 represents the most complete piece of legislation regarding the measures on F-gases since it covers all types while the other acts show certain gaps in this respect.

Table 3: Types of measures introduced by international, EU and national policies on F-gases

Measure	Kigali Amendment	Regulation 842/2006	Regulation 517/2014	National legislation in Moldova on F-gases
Production controls	*x*	-	*x*	-
Import/export controls	*x*	-	*x*	-
Placing on the market/use controls	-	*x*	*x*	*Only mobile AC systems in passenger cars*
Labeling	-	*x*	*x*	-
Emission controls	*(x)*	*x*	*x*	*Only mobile AC systems in passenger cars*
Registration and records keeping	-	*x*	*x*	-

Measure	Kigali Amendment	Regulation 842/2006	Regulation 517/2014	National legislation in Moldova on F-gases
Reporting	*x*	*x*	*x*	-
Training and certification	-	*x*	*x*	*Only for technicians in the refrigeration and air conditioning sector*

3.2 Implications for the set-up of F-gas legislation in Moldova

3.2.1 Training and certification

Training, qualification and certification of personnel and companies involved in the handling of fluorinated gases is a central aspect of the EU F-gas Regulation to reduce emissions of F-gases by prevention of leakages (i.e. leakage checking by certified personnel) and by putting in place appropriate arrangements for the proper recovery of F-gases (recovery to be done by certified personnel or respectively by "appropriately qualified personnel"). Training and certification of personnel thus play a particularly important role for effective application of the provisions of the F-gas Regulation.

Training requirements, programmes and bodies are not specified by the EU F-gas Regulation. But they are critical for the application of the provisions of articles on certification and need to be in place in the Member States. Usually the organizations designated as certification bodies are not the same institutions which provide the necessary trainings. Neither the EU F-gas Regulation nor the implementing acts contain provisions on how to gain minimum skills and knowledge. It is thus possible to pass the examinations without previous participation in trainings.

In the EU, certification bodies shall issue a certificate to personnel in each sector who have passed a theoretical and practical examination organized by an evaluation body covering the minimum skills and knowledge set out by the relevant regulation. Evaluation bodies need to be recognized or certified at national level.

As stipulated by the EU F-gas Regulation, training and evaluation processes as well as certification programmes must be set-up by the Member States for the personnel carrying out the tasks listed in Table 4:

Table 4: Training and evaluation requirements for personnel as set-out in the EU F-gas Regulation by equipment types and activities

Equipment type	Installation, Servicing, Maintenance, Repair or Decommissioning	Leak Checks	Recovery
Stationary RAC	x	x	x
Stationary heat pumps	x	x	x
Stationary Fire protection equipment	x	x	x
Refrigeration units of refrigerated trucks and trailers	x	x	x
Electric switchgear	x		x
Stationary equipment that contains solvents			x

In addition, company certification requirements apply for the stationary refrigeration, air conditioning and heat pump sector.

A different approach was chosen for air-conditioning equipment in motor vehicles (MAC) as only a relevant training has to be completed by the persons recovering F gases (ie. training attestation is issued instead of a certification; and an attestation body needs to be appointed instead of evaluation and certification bodies).

In Moldova, the national legislation on training and certification differs from the EU requirements in the following aspects:

- **Mandatory training**

While the EU F-gas Regulation does not include the obligation for training as a precondition for certification, the national legislation in Moldova explicitly requires participation in a mandatory training every three years before a certificate can be renewed after passing the mandatory exam.

In this aspect, the national regulation goes beyond the requirements set out in the EU Regulation, which however is within the possibilities of setting up a national scheme.

- **Equipment types covered**

The national regulation applies to stationary RAC, stationary heat pumps, refrigeration units of refrigerated trucks and trailers and MAC.

Stationary fire protection equipment, electric switchgear and stationary equipment that contains solvents are not addressed.

It is hence necessary that national F-gas legislation covers not only the refrigeration, air conditioning and heat pump sector but also refers to stationary fire protection equipment, electric switchgear and stationary equipment that contains solvents.

Since some of these sectors might be inexistent or rather small in Moldova, the options for covering related certification requirements should be investigated closely in order to avoid administrative burden and unproportionally high cost. There would be the possibility to cover certification requirements for these sectors through recognition of certificates from EU Member States (also see section below). In this way, technicians from Moldova could participate in trainings in EU Member States and their certificates would afterwards be recognized in Moldova. Furthermore, also certified technicians from EU Member States would be able to perform work in Moldova.

- **Target group**

The national Regulation applies to natural persons who carry out the following activities:

(1) installation,
(2) repair, maintenance and servicing,
(3) recovery of HCFCs and fluorinated greenhouse gases,
(4) checks to detect leaks for equipment containing HCFCs and fluorinated greenhouse gases in quantities of 5 tonnes of CO2 equivalent or more and which are not contained in foams, unless such equipment is hermetically sealed, labeled as such and contain HCFCs and fluorinated greenhouse gases in quantities of less than 10 tonnes of CO2 equivalent and
(5) decommissioning of the equipment.

Unlike in the EU, no certification of companies is foreseen in the national regulation.

- **Types of certificates**

Moldova's national regulation establishes 4 types of certificates which are valid for three years:

Category I – is the most comprehensive certificate which allows the holder to provide all services covered by the national regulation;

Category II – allows the holder to perform leak checking at equipment containing HCFCs and F-gases in quantities of 5 t CO_2 eq or more and which are not contained in foams, unless such equipment is hermetically sealed, labeled as such and contains HCFCs or F-gases in quantities of less than 10 t CO_2 eq under the condition that the holder does not access the refrigeration circuits containing HCFCs and F-gases and all other services regulated by the national Regulation and provided for the refrigeration installations containing less than 3 kg of HCFCs and F-gases and hermetically sealed systems, which are labeled as such, and contain less than 6 kg of HCFCs and F-gases;

Category III – allows the holder to perform recovery of HCFCs and F-gases from the refrigeration installations containing less than 3 kg of HCFCs and f-gases and hermetically sealed systems, which are labeled as such, and contain less than 6 kg of HCFCs and F-gases;

Category IV – allows the holder to perform leak checking at equipment containing HCFCs and F-gases in quantities of 5 t CO_2 eq or more and which are not contained in foams, unless such equipment is hermetically sealed, labeled as such and contain HCFCs and fluorinated greenhouse gases in quantities of less than 10 t CO_2 eq under the condition that is it does not imply access to refrigeration circuits containing HCFCs and f-gases. This corresponds to Commission Implementing Regulation (EU) 2015/2067, Art. 3 (2).

A person who has a certificate (does not matter which category) may carry out activities for the recovery of f-gases from the air conditioning equipment in motor vehicles (MAC), in accordance with the provisions of the Regulation regarding the measures to reduce the emissions from the air conditioning systems of the vehicles (GD#1242/2016).

- **Recognition of certificates from other countries (EU Member States)**

In the EU, according to Regulation 2015/2067, Art. 10, certificates are mutually recognized on the basis of common minimum requirements in all Member States. Thus, this paragraph is not

applicable for Moldova, but can be useful when it comes to comparisons of the legal situation. Hence it seems useful that Annex 1 to the national regulation is based on Annex I to EU Regulation 2015/2067 on minimum skills and knowledge for training, evaluation and certification. It also transposes the Annex to the Commission Regulation (EC) No 307/2008 of 2 April 2008.

However, the EU Regulation 517/2014, Art. 10, para. 14 also states that where the provision of certification and training would impose disproportionate burdens on a State because of the small size of its population and the consequent lack of demand for such training and certification, compliance may be achieved through the recognition of certificates issued in other Member States of the EU. In this sense, the recognition of certificates issued in EU Member States in Moldova will allow certified and appropriately qualified persons to perform relevant business activities.

3.2.2 Reporting and registration, record keeping

Article 19 of Regulation (EU) No 517/2014 stipulates that production, import (including gases in equipment), export of bulk gases, feedstock use and destruction of the substances listed in Annex I ("fluorinated greenhouse gases" – hereinafter "F-gases") and II ("other fluorinated greenhouse gases" – hereinafter "other F-gases") of the Regulation are to be reported annually before 31 March, for the preceding calendar year. In the EU, companies were obliged to submit reports in 2015 for the first time.

In addition, activity thresholds have been defined for the reporting requirements, bearing in mind that these thresholds refer to the sum of F-gases or mixtures and not to each gas individually. Below the threshold of 1 metric tonne or 100 t CO_2 eq per year for bulk F-gases and 500 t CO_2 eq per year for F-gases contained in products and equipment reporting is not required.

Based on Regulation 517/2014 quota authorizations need to be reported without any threshold, however, the Commission agreed that equipment importers having the use of HFC quota authorized by producers or importers of HFCs in bulk should report only if the quantity of HFCs contained in imported equipment equals to 100 tonnes of CO_2 eq or more.

Reporting requirements pursuant to Article 19 (1) - (5) refer to the following activities:

a. each producer, importer and exporter that produced, imported or exported 1 metric tonne or 100 t CO_2 eq or more of F-gases or other F-gases (covers bulk gases only);
b. each company that destroyed 1 metric tonne or 1 000 t CO_2 equivalent or more of F-gases or other F-gases;
c. each company that used 1 000 t CO_2 eq or more of F-gases as feedstock;
d. each company that placed 500 t CO_2 eq or more of F-gases or other F-gases contained in imported products or equipment on the market;[6]

[6] It needs to be noted that placing on the market may take place in a year subsequent to the import year.

e. each company that received authorizations to use quotas for the placing on the markets of HFCs in imported equipment[7].

Furthermore, each company that reports on placing on the market 10 000 t CO_2 eq or more of HFCs must ensure that its report is verified by an independent auditor by June each year (Article 19 (6)). The verification report must be kept for at least five years and made available upon request to the national competent authority and the EU Commission.

There is also requirement contained in Article 14(2) that importers of equipment pre-charged with HFCs are obliged to fill out declaration of conformity structured as defined in Commission Regulation 2016/879 and have their report and all relating documentation verified by independent auditor by 31 March each year.

In addition to the reporting requirements, Article 20 of Regulation (EU) No 517/2014 stipulates the collection of emissions data, requiring Member States to establish data collection procedures for the relevant sectors with the objective of acquiring, to the extent possible, emissions data. Hence, national reporting schemes need to create a link between both the consumption and emissions of F-gases.

In Moldova, currently no requirements relate to the reporting of F-gases at all but companies sometimes provide their import data on a voluntary basis.

As the AA requires explicitly the transposition of the reporting requirements (Art. 6 of the former Regulation 842/2006, updated in Regulation 517/2014), it is necessary to address this matter with high priority, also as regards the upcoming ratification of the Kigali Amendment and related baseline setting (see further info below).

The reporting provisions are further to be elaborated by referring to the format in Commission Implementing Regulation (EU) No 1191/2014 of 30 October 2014 determining the format and means for submitting the report referred to in Article 19 of the EU F-gas Regulation.

The EU legislation makes references to an electronic reporting tool which is provided through the web-based F-gas Portal managed by the European Commission and operated by the European Environment Agency. Given that the web form is open for EU entities, Moldova cannot make use of it at present and thus should establish an own national electronic reporting tool.

Currently MoE is elaborating the technical concept of the Automated Information Systems - Register of chemicals placed on the market of the Republic of Moldova. A concept for including the F-gas reporting will be elaborated within this assignment (deliverable 4).

With the adoption of the Kigali Amendment, Moldova will have to establish HFC import and export licensing system by 1 January 2019, freeze the HFC consumption calculated in CO_2

[7] However, the Commission agreed that equipment importers having the use of HFC quota authorized by producers or importers of HFCs in bulk should report only if the quantity of HFCs contained in imported equipment equals to 100 t CO_2 eq or more.

equivalents starting from 2024 and then follow the HFC phase down schedule as set up in Kigali Amendment to reach HFCs consumption reduction by 80% in 2045.

The following issues should be addressed when designing a national reporting tool in order to fulfil reporting obligations to the Montreal Protocol:

- Origin and destination of imports and exports need to be recorded.
- Distinguish between bulk HFCs and those contained in products and equipment. Note that reporting required by the Kigali Amendment concerns only bulk HFCs.
- Distinguish between virgin and used (recovered, recycled and reclaimed) HFCs. Note that reporting required by Kigali Amendment concerns both virgin and used HFCs, but they must be reported separately since only virgin HFCs will be used in consumption calculations.
- Assure to record all bulk HFCs. Note that there is no threshold below which no reporting is required, as applying in EU regulations.

It is also suggested to further extend the existing ODS licensing system to cover HFCs in order to enable effective control of HFC imports and exports by customs authorities.

3.2.3 Enforcement

The transposition of Art. 13 of the EU Regulation 842/2006 on penalties and its update contained in Art. 25 of EU Regulation 517/2014 is required by the AA. The provisions require Member States to lay down the rules on penalties applicable to infringements of the Regulation and to ensure that those rules are implemented.

In national legislation, the Contravention Code #218/2008, Art. 148 states penalties for violation of the regime and the use of ODS. The provision does not relate to F-gases.

Such provisions can be introduced after adopting national legislation on F-gases.

3.2.4 Further provisions

The AA does not require Moldova to introduce further provisions related to F-gases. However, in the light in the ratification of the Kigali Amendment and in view of the close vicinity to the EU market, additional provisions in line with the EU acquis on F-gases should be considered.

These should in particular relate to Chapter 3 of regulation 517/2014 on placing on the market and control of use:

Article 11 Restrictions on the placing on the market

Article 12 Labelling and product and equipment information

Article 13 Control of use

Article 14 Pre-charging of equipment with hydrofluorocarbons

Article 11 introduces bans for placing on the market of new products containing on relying on F-gases such as certain categories of refrigeration equipment, air conditioning systems as well as foam products and aerosols containing F-gases when technically feasible, safe, reliable and more climate-friendly alternatives are available. The full list of restrictions is provided in Annex III of the EU F-gas Regulation 517/2014. It should be noted that some of the provisions were already contained in the earlier F-gas Regulation 842/2006. As the transposition of this article is not explicitly required by the AA, it is an option for Moldova to include some of the restrictions in the national F-gas legislation or not. It is recommended to assess the possibilities for introducing bans on certain product categories already in order to avoid future market distortions. Local industry should be consulted in this respect.

One example, where the use of HFCs is not common in Moldova at the moment is the fire protection sector. In order to prevent introduction of HFCs for fire extinguishing applications, a prohibition could already be established without harming related business activities.

Article 12 specifies labelling requirements for products and equipment containing or relying on F-gases. Most importantly, all equipment as well as reclaimed and recycled F gases, F gases placed on the market for destruction, placed on the market for direct export or placed on the market for military use have to be appropriately labelled. As labelling facilitates monitoring of the activities involving F-gases (thus both reporting and enforcement, required by AA), it is recommended to transpose this provision.

Article 13 sets out prohibitions of certain uses of certain F-gases, namely, the use of SF6 for magnesium die-casting and recycling of magnesium die-casting alloys, the use of SF6 to fill vehicle tyres and servicing of refrigeration and air conditioning equipment with high-GWP F-gases. The application of such provisions would approximate Moldova’s legislation to the EU legislation. However, the possibilities and implications of such prohibitions on the local industry should be assessed in detail.

Article 14 makes reference to the HFC phase down established in the EU Regulation. While the ratification of the Kigali Amendment will require Moldova to follow the phase-down schedule for Article 5 countries, it should be emphasized that the EU HFC phase down schedule is much stricter. The possibilities and implications for local industry should be investigated carefully, also as regards the interlinkages with the ODS phase-out currently being implemented. The HCFC reduction schedule established in the HPMP could lead to increasing use of HFCs as substitutes, in particular in refrigeration and air conditioning applications. Such development however would interfere with upcoming HFC phase down targets and would not prepare the market for alternatives to F-gases. Hence early signals to the local market will raise awareness for climate-friendly products and help to leapfrog HFCs.

4 Institutional issues for Moldova

A prioritized list for institutional action in the field of F-gases is provided in the following.

4.1 Identification and set-up of the Competent Authority for F-gases

The AA requires that a Competent Authority for F-gases is set up. The AA makes the same requirement for a range of environmental and climate laws (e.g. ODS, Emissions Trading System, Industrial Emissions Directive, etc.). In this sense, new agencies are being founded and will act as competent entities for a number of topics. It was decided that F-gases and ODS would be within the responsibility of the Chemicals Agency. It is understood that the National Ozone Office would also act as Competent Authority for F-gases.

4.2 Adapt the institutional framework for training and certification

As outlined above, the existing national legislation on training and certification would need to be expanded and adapted concerning several aspects:

- Set-up training and certification schemes for fire protection sector, switchgear sector and solvents sector or establish the requirement for relevant technicians to get certified elsewhere
- Include information related to alternatives to F-gases
- Decide on recognition of certificates

4.3 Provide guidance for the F-gas reporting and establish reporting routines

A national reporting scheme for F-gases is of crucial importance in order to collect data on F-gas consumption (relevant for the baseline setting under the Kigali Amendment) and F-gas emissions (relevant for the UNFCCC reporting). Such scheme will also provide the basis for a licensing system.

Since the Law on Chemicals will provide for a reporting obligation on ODS and F-gases from 2020 onwards, the concerned stakeholders would need to become informed about the reporting process. Relevant guidance documents and support for the reporting (e.g. in form of a helpdesk) need to be established in parallel to the introduction of the reporting scheme.

4.4 Establish national legislation on F-gases

While the AA does not require Moldova to transpose the entire EU legislative framework on F-gases, Moldova can decide to establish further provisions than Articles 10, 19 and 25 of the EU Regulation 517/2014 (Art. 5,6 and 13 of EU Regulation 842/2006 respectively). In the light of the ratification of the Kigali Amendment it is recommended to set-up comprehensive national legislation.

As discussed with several stakeholders during the country visit, it seems most appropriate to design a new piece of legislation as a separate act and to not merge new provisions with the existing Law on ODS.

5 Design of a fully-fledged integrated F-gas database and harmonized reporting system

5.1 EU experience: Reporting requirements under Regulation (EU) No 517/2014

In the EU, reporting on activities in the F-gas business follows several requirements set out in Article 19 (1) to (5) of the F-gas Regulation. The F-gas regulation demands system tightness and the overall prevention of release of F-gases to the atmosphere. Additionally, a quota system affecting the availability of HFCs on the European Market leads to a step-wise reduction of their placing on the market. In order to ensure the effective implementation of the EU's quota system and to monitor its progress, data reporting on F-gases is essential.

Article 19 of Regulation (EU) No 517/2014 stipulates that production, import (including gases in equipment), export of bulk gases, feedstock use and destruction of the substances listed in Annex I ("fluorinated greenhouse gases" – hereinafter "F-gases") and II ("other fluorinated greenhouse gases" – hereinafter "other F-gases")[8] of the Regulation **are to be reported annually** before 31 March, for the preceding calendar year. In the EU, companies were obliged to submit reports in 2015 for the first time.

In addition, **activity thresholds** have been defined **for the reporting requirements**, bearing in mind that these thresholds refer to the sum of F-gases or mixtures and not to each gas individually. Below the threshold of 1 metric tonne or 100 tonnes of CO_2 eq per year for bulk F-gases and 500 tonnes of CO_2 eq per year for F-gases contained in products and equipment reporting is not required. Based on Regulation 517/2014 quota authorizations need to be reported without any threshold, however, the Commission agreed that equipment importers having the use of HFC quota authorized by producers or importers of HFCs in bulk should report only if the quantity of HFCs contained in imported equipment equals to 100 tonnes of CO_2 eq or more.

[8] Other F-gases pursuant to Annex II of Regulation (EU) No 517/2014 include certain HFOs, HCFOs, fluorinated ethers and alcohols and other fluorinated substances.

Reporting requirements pursuant to Article 19 (1) to (5) affect the following activities:

a. Each producer, importer and exporter that produced, imported or exported one metric tonne or 100 tonnes of CO_2 equivalent or more of F-gases or other F-gases (covers bulk gases only);
b. Each company that destroyed one metric tonne or 1 000 tonnes of CO_2 equivalent or more of F-gases or other F-gases;
c. Each company that used 1 000 tonnes of CO_2 equivalent or more of F-gases as feedstock;
d. Each company that placed 500 tonnes of CO_2 equivalent or more of F-gases or other F-gases contained in imported products or equipment on the market;[9]
e. Each company that received authorizations to use quotas for the placing on the markets of HFCs in imported equipment[10].

Furthermore, each company that reports on placing on the market 10 000 tonnes of CO_2 equivalent or more of HFCs must ensure that its report is verified by an independent auditor by June each year (Article 19 (6)). The verification report must be kept for at least five years and made available upon request to the national competent authority and the EU Commission. There is also requirement contained in Article 14(2) that importers of equipment pre-charged with HFCs are obliged to fill out declaration of conformity structured as defined in Commission Regulation 2016/879 and have their report and all relating documentation verified by independent auditor by 31 March each year.

5.2 EU Arrangements for reporting, data collection and licensing

In order to provide an overview about the technical arrangement put in place for the reporting on F-gases, this chapter provides an overview about the technical implementation of F-gas reporting in the EU.

To organize the data collection in the EU, a central F-gas portal was created, being the "one-stop-shop" access point for the HFC registry (for quota allocation & authorization) and the Business Data Repository (BDR) for reporting.[11] The F-gas Portal is an electronic system that allows registering in the HFC Registry, applying for HFC quotas and having quotas allocated to the reporter, managing quotas, and reporting on fluorinated greenhouse gases according to the F-gas Regulation. Figure 1 provides an overview about the relevant institutional arrangements of the F-gas Portal and highlights the interlinkage of the BDR reporting tool and the HFC Registry.

[9] It needs to be noted that placing on the market may take place in a year subsequent to the import year.

[10] However, the Commission agreed that equipment importers having the use of HFC quota authorized by producers or importers of HFCs in bulk should report only if the quantity of HFCs contained in imported equipment equals to 100 tonnes of CO_2 eq or more.

[11] Although united in one portal, the registration and the reporting process are two separate procedures.

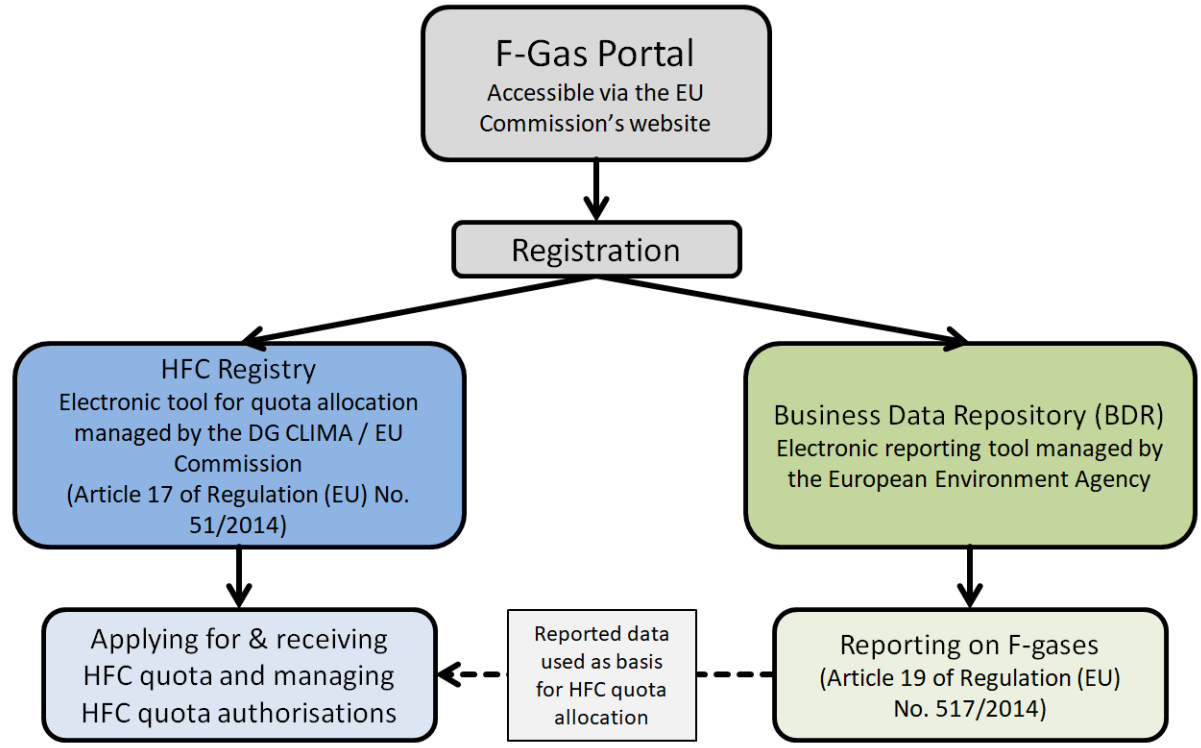


Figure 1: Overview about the institutional arrangements in the EU

5.2.1 Electronic Reporting

Reporting process

From their account in the F-gas portal, companies have a **direct link to the Business Data Repository (BDR)** (https://bdr.eionet.europa.eu), which is an electronic online reporting system managed by the EEA and which can be accessed from the website of the EU Commission[12]. In order to ensure uniformity and coherency in the collection of reported data, companies are asked to **use the electronic reporting tool** containing the relevant forms for their individual activities. The F-gas reporting tool uses AngularJS as the front-end web application, which is a JavaScript-based open-source framework that provides various possibilities to compare and assess checks of entered data and guide the reporter during the submission process.

[12] A similar tool exists for the reporting on consumption and destruction of ozone depleting substances as required according to Regulation (EC) No 1005/2009 (Article 27).

This online platform is a password-protected environment that hosts online questionnaires for the different reporting obligations managed by the tool.[13]

All reports must be **submitted electronically** and need not be signed as companies automatically receive confirmation after reports have been successfully submitted. The following figure shows the report submission process.

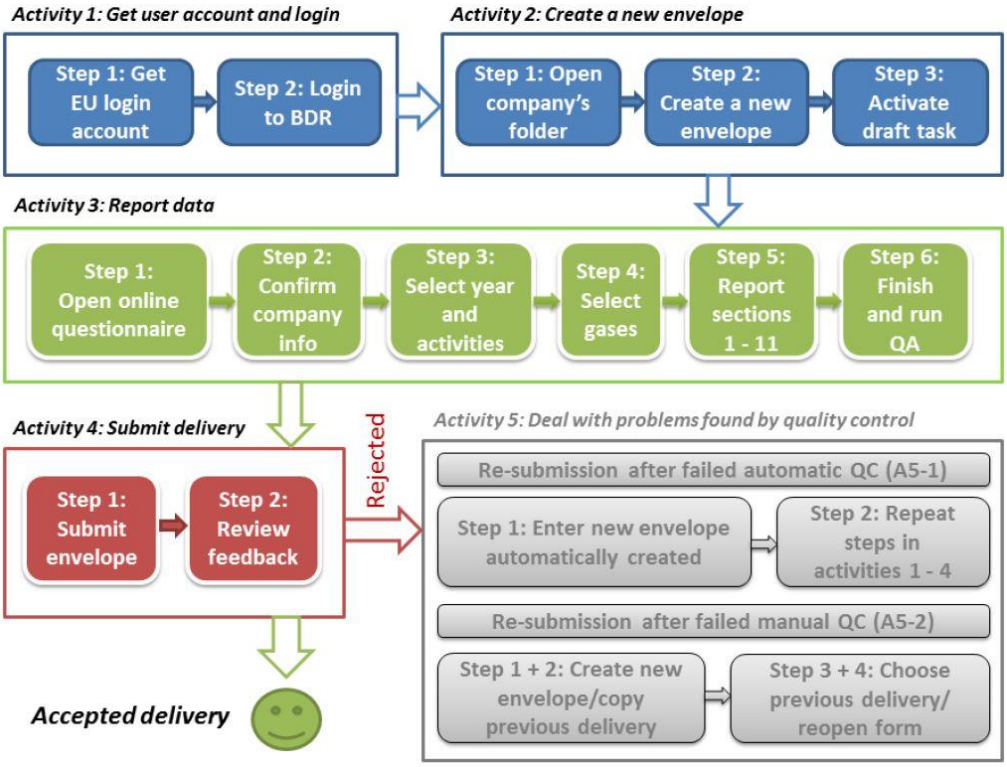


Figure 2: Submission process of reports in the EU F-gas reporting system

By 31 March of each year, companies must submit their reports for the preceding calendar year (i.e. from 1 January to 31 December). Companies receive an invitation by email in mid-February to submit their reports, several reminders in March and a warning in early April if the deadline of 31 March has not been met. The data collection process is typically completed at the end of May. The reports submitted in BDR have to cover all substances and activities that are relevant with regard to the reporting obligation. Therefore, it is not allowed to submit separate reports for different substances or activities. Reports that had already been submitted cannot be deleted. For each reporting year and reporter, only the latest report version ('final' version) is considered in later data aggregation.

Companies registered in the portal have to select certain business activities and submit some kind of report. The type of report either is a full report or, if the company is not obliged to report in that year, a so-called NIL report explaining why the company is not obliged to report.

[13] In BDR, guidance materials are available (https://bdr.eionet.europa.eu/help/fgases) in order to support companies reporting on F-gases

Companies may not have to submit a full F-gas report if the business profile of the portal account indicates that the company is registered only as recipient of quota-exempted HFCs[14] or as manager of HFC quota authorizations. If a company generally ceases activities that are subject to reporting, the entity can be disabled in the system so that no further reports have to be submitted.

Formally, a missing report or submission after the legal reporting deadline is considered as a case of non-compliance with the F-gas Regulation. The follow up and evaluation of non-compliance cases is, in most cases, followed up by both the EU Commission and the respective member state. In the final instance, it lies in the area of responsibility of the member state to take decisions on administrative fines.

Data output and reports obtained from reporting

The data on F-gases and other F-gases gathered via the reporting on EU level is used to compile several types of **data outputs, reports and products**. These include the future EU's submission under Article 7 of the Montreal Protocol to the United Nations Environmental Programme (UNEP) Ozone Secretariat following UNEP's reporting format. Furthermore, internal reports and data extracts are regularly prepared for the member state authorities in order to provide privileged access to reported data. Two different publications are publicly made available: a summary report[15] including non-confidential data and an environmental indicator on the emissions and supply of F-gases[16].

Developed specifically to handle confidential information of companies, this reporting system ensures **traceability and transparency** by enabling quality checks during reporting and submission of reports, listing previously submitted reports from each company, and being assessable by all relevant stakeholders (EU Commission, EEA, and national competent authorities). It also helps to increase the **plausibility of reported data** und is an effective tool to identify non-compliance cases. The data obtained through the reporting allows national competent authorities to verify at the time of import, export or other relevant activity whether the company would be subject to compliance verification based on its report under Article 19 of Regulation (EU) No 517/2014.

[14] Companies in receipt of exempted HFCs may be subject to reporting based on their activities, in particular as a destruction company, feedstock user or as an exporter.

[15] Fluorinated greenhouse gases https://www.eea.europa.eu/publications/fluorinated-greenhouse-gases-2018

[16] Emissions and supply of fluorinated greenhouse gases: https://www.eea.europa.eu/data-and-maps/indicators/emissions-and-consumption-of-fluorinated-2/assessment-2

5.2.2 Quota allocation and authorization in the HFC Registry

Registration

To receive access to the central F-gas portal, each organization must first register in the F-gas portal, as stated in Commission Implementing Regulation (EU) 2017/1375. Organizations that can register are companies and EU custom authorities. Registration for reporting is centralized in the F-gas portal (https://webgate.ec.europa.eu/ods2/) on the website of the EU Commission.

According to Article 17 of Regulation (EU) No 517/2014 the following stakeholders must be registered in the HFC Registry:

a. Producers and importers to which the HFC quota have been allocated;

b. Companies to which HFC quota has been transferred;

c. Producers and importers intending to submit declaration (that they would wish to receive HFC quota);

d. Producers and importers supplying or undertakings in receipt of HFCs for purposes exempted from quota;

e. Importers of RAC&HP equipment pre-charged with HFCs that have not been placed on the EU market in bulk before.

f. All entities obliged to report pursuant to Article 19[17]

Allocation of the HFC quota

The European Commission operates the HFC Registry for registration, ex-ante declarations, quota allocation, transfers and authorizations. Starting from 2015, importers of bulk HFCs and EU producers need to have quota to carry out these activities. The assessment of the quota allocation method is required pursuant to Article 21(5) of F-gas Regulation. The quota allocation method legislated by the F-gas Regulation prescribes a free allocation of quotas based on (i) companies' past activities ("**incumbents**"), and/or (ii) ex-ante declarations on additional need of quota for the next year ("**new entrants**"). Incumbent quotas are transferrable to others, while new entrant quotas are not. The latter restriction was primarily set in order to prevent that companies who are not active in the F-gas business request quota with the sole purpose of selling these rights.

The HFC Registry is linked to the reporting system for annual ex-post reports, operated by the EEA. The Commission establishes **quota compliance** for HFC producers and bulk importers and eventually applies quota penalties to non-compliant companies in form of deductions from future quota allocations. Starting 2017, compliance also needs to be established for equipment importers.

[17] This requirement was added based on Commission Regulation 2017/1375 that amended Commission Regulation 1191/2014.

Importers of **RAC&HP HFC pre-charged equipment** need an “authorization” to use quota of quota holders. By providing an authorization, the respective quota amount for the original quota holder is cancelled. In contrast to quotas, received authorizations can be “stored” for use in later years. This mechanism covers all imports of HFC-pre-charged RAC&HP equipment and placing on the market of such equipment.

5.3 EU company support and data quality control

Company support

The support to companies includes assistance with the **reporting procedures** through the Business Data Repository (BDR)[18] reporting manual, as well as technical support regarding the F-gas **reporting obligation** and **registration** through the ‘Frequently Asked Questions’ (FAQ) document for companies reporting for Regulation (EU) No 517/2014 on fluorinated greenhouse gases[19]. For cases where the provided guidance material is not sufficient, reporters can contact the EEA’s ODS reporting support team through the BDR helpdesk (bdr.helpdesk@eea.europa.eu). The communication via the helpdesk email address is conducted using an **email ticketing and management system** in order to store the documentation of all correspondence in one digitally secured place. This enables the support team to efficiently control large amounts of incoming and outgoing messages, to set timers for follow-up and provides a long-term storage and documentation of relevant correspondence. A large portion of the correspondence with companies is based on internal and automated quality checks performed on the reported data, which will be further explained in the following.

Quality control

The electronic reporting tool BDR allows implementing different types of **automated checks** in order to assess the **type, nature and quality** of reported data. These checks facilitate a more targeted way to indicate erroneous F-gas reports and non-compliance cases. The reporting system has two different types of error messages:

- Potential errors internally identify quality assurance and quality control (QA/QC) issues and are flagged for later follow-up by the reporting support team
- Blocking errors ask the reporter to revise the report in order to address the identified QA/QC issue, and include an explanatory comment in the report

The internal checks carried out **upon entry of reported data** check for the format of reported data, the **business logic**, profile and transactions that are regularly carried out by the company. General checks on the overall **plausibility** of the reported data shall be outlined in the following.

[18] See link for BDR user manual: https://bdr.eionet.europa.eu/help/bdr_user_manual.pdf

[19] See link for FAQ document: https://bdr.eionet.europa.eu/help/faq/F-gases_FAQ_EN.pdf

Checks on format of reported data

Companies are required to report F-gases or other F-gases in metric tonnes with accuracy to the third decimal place, separately for each gas listed in Annex I and II of Regulation (EU) No 517/2014. Those quantities reported in tonnes of CO_2 eq (section 9 in the F-gas reporting webform) have to be accurate to one tonne CO_2 eq. Mixtures should generally be reported as mixtures, by also indicating the amounts of constituents used in these mixtures from other sources than own production.

The reporting webform automatically checks if the entered data applies to the expected content. For instance, text fields should contain letters and numeric fields should contain numbers. Reporting of negative values is not permitted. For reported values that need additional information, the reporter has the possibility to add explanatory comments (Figure 3).

Transactions/(metric tonnes)	HFC-41 (fluoromethane, methyl fluoride)	Mixture (My trade name)	R-407C	HFC-134 (1,1,2,2-tetrafluoroethane)
	unit: t	unit: t	unit: t	unit: t
4A : Total 1st January stocks	333		22	
4B : Thereof: 1st January stocks that were imported or produced by the reporting undertaking itself		2	2	
4C : Thereof: 1st January stocks from own import or production that have not been released for free circulation on the EU market				
4D : Thereof: 1st January stocks from own import or production that have been released for free circulation on the EU market *[4D = 4B - 4C]*	0.000	2.000	2.000	0.000
4E : - thereof: Other 1st January stocks *[4E = 4A - 4B]*	333.000	-2.000	20.000	0.000
4F : Total 31st December stocks				

Figure 3: Screenshot of the EU F-gas reporting webform section 4 (to be filled in by producers and importers)

Completeness

All the data that is necessary to describe a company's profile must be entered in the webform. For example, companies who have specified to be producers must fill out all fields that are relevant to production of F-gases.

Checks on business logic

In detail, the assessment of the companies' business logic includes checks that for example:

- Compare previously reported data with the current draft submission. This for instance includes a check on discrepancies between stocks for the beginning of the reporting year and stocks reported for the end of the previous reporting year;

- Assure that only companies of a certain size (in terms of quantity of gases that are handled) should be allowed to report big amounts of e.g. imports or production. If a company that is considered to be rather small aims at reporting bigger amounts, a message appears and asks the reporter to re-check the entered data;

- Assess the plausibility of type of substances that are reported. For example, some reporters aim to report R134 (GWP_{100} = 1100) instead of reporting R134a (GWP_{100} = 1430). Hence, a message appears and indicates that, most likely, the commonly used substance R134a should be reported;

- Assess the plausibility of the use type being reported for a certain activity. In this check, unlikely combinations use types and substances or blends are highlighted. For example, the use of R404A as feedstock is not likely and indicated by the reporting system for revision by the reporter.

Overall report plausibility

The overall plausibility of the report is checked by calculating the difference (referred to as 'accounting framework') between the total of incoming quantities (especially production, purchases on the EU market, imports, and quantities taken from stock) and outgoing quantities (quantities put into stock, sales on the EU market, exports, destruction and emissions). If the accounting framework is zero, the report is considered to be likely plausible and balanced. In order to prevent re-labelling of F-gas quantities with respect to the intended use, it is specifically important that the single use types reported are coherent and balanced as well. For example, quantities that are used for feedstock should originate from corresponding production, imports or purchases for feedstock.

The plausibility of reported data is also compared between companies and checked for significant discrepancies. Company data for trade partners that are specified by reporting companies are validated in an automatic step. A fuzzy algorithm compares the provided location and company names to the data associated with the VAT number in the F-Gas portal. Cases of identified inconsistencies are followed up with the reporters and facilitate to increase the overall consistency of reported data and to identify missing reporters.

Upon **completion of the online questionnaire**, the data reported by companies is verified by an automatic data quality check before being imported into the EEA F-gas reporting database. In case the F-gas reporting support team identifies inconsistencies or raises additional questions as a result of the data quality control, it contacts the individual companies for further clarifications. If reported information has to be altered, companies are requested to submit a revised report via the BDR. This process is repeated until submissions passed all quality checks (see Step 5 in Figure 2).

Compliance checks

The quantity of bulk HFCs placed on the market and calculated in accordance with Annex V of the F-gas regulation shall not exceed the company's quota allocated pursuant to Article 16(5) or transferred pursuant to Article 18. As a result of exceedance of the allocated quota,

the European Commission may apply quota penalties to respective companies in form of deductions from future quota allocations.

Resubmission of reports

If a quality check is violated, reporters are either prompted (immediately or at submission) to correct or amend their values or to provide comments in order to explain inconsistencies and unusual choices. Violation of critical rules prevents the submission of the report completely, while transgression against other rules results in a warning only. In the latter cases, submission of the report is possible, and problematic values are flagged for a manual follow-up by the F-Gas team.

Reporters also have the possibility to (re-)submit reports for previous years. If the report passes all quality checks, the submission will be imported into the EEA F-gas reporting database. The EEA reporting system is open to re-submissions for the whole calendar year (except December where IT maintenance work takes place). However, reports submitted after the 12th of June may not be considered for the quota allocation and for later data aggregation.[20] However, in next year's data aggregation and reports, data submitted after the 12th of June will be included.

5.4 National reporting system: The example of Poland

The example of Poland presents a fully-fledged electronic system at national level that stores F-gas data relevant for reporting under the Montreal Protocol which may also be used for reporting under the UNFCCC, though there is also a separate electronic system in place for reporting GHG emissions.

Poland established a comprehensive electronic system, consisting of two separate databases:

- Database of Business Reports (DBR)
- Central Register of Equipment Operators (CREO)

The DBR is dedicated to the annual reporting of quantities of ODS (including controlled ODS and new ODS), F-gases and other F-gases imported, exported (in bulk and contained in products and equipment), used, recovered, recycled, reclaimed or destroyed. This reporting is obligatory once a year and is carried out parallel to the reporting obligation pursuant to the EU F-gas Regulation. While the reporting required by the EU F-gas Regulation covers only F-gases imported/exported from/to the EU territory, the reporting to DBR is extended to include also quantities, which enter the Polish territory from another EU Member State or leave the Polish territory with the destination to other EU Member State.

[20] Of course, first reports submitted after the legal reporting deadline are potentially breaching the EU F-gas legislation and subject to administrative decisions taken by the European Commission

CREO is directed to equipment operators who need to register their ODS or F-gas containing equipment. Any activity performed on the equipment needs to be reported in the register. In combination of both electronic databases DBR and CREO, Poland established the most advanced system of F-gas data collection and reporting in the EU.

Since set-up of the databases in Poland in January 2016 they have so far been successfully used for:

(1) Collecting data and monitoring and control the activities conducted on ca. 300,000 units of RAC&HP, fire protection, electrical switchgear and solvent equipment containing controlled ODS and F-gases[21] installed in the country at the premises of more than 35,000 Operators (CREO) and

(2) Collecting annual reports submitted by importers/exporters of ODS/F-gases/other fluorinated substances[22] and products and equipment containing them as well as the entities which use or recover/recycle/reclaim/destroy ODS/F-gases – 12,000 entities have been registered so far (DBR). Since there are no F-gas producers in Poland this group of stakeholders was not foreseen in these databases.

The two proposed systems CREO and DBR mostly differ with respect to the scope of collected data and the purpose of each system. CREO refers to a collection of equipment logbooks with the main purpose in tracking of activities performed on equipment, particularly monitoring the leakage, whereas DBR relates to a collection of annual reports that aims at monitoring the use of and international trade with F-gases. Due to their different characteristics in terms of nature data and type of data submission, from a technical point of view, it is strongly recommended to implement both functions described above in two separate databases.

5.4.1 Database of Business Reports (DBR)

General outline

DBR is an electronic database available by logging in on-line to a dedicated website (www.bds.ichp.pl) where the following entities need to report:

- Importers and exporters of F-gases[23] (and ODS - if exempted[24]) to/from PL
- Importers and exporters of products and equipment containing F-gases (or ODS – if exempted) to/from Poland

[21] Currently, the logbooks of equipment containing 3 kg or more of controlled substances and 5 tons of CO_2 eq of F-gases are included in Polish CREO.

[22] Other fluorinated substances are the substances included in Annex II to Regulation 517/2014

[23] For the purpose of DBR the term “F-gases” is broader than definition of F-gases contained in Regulation 517/2014 since it covers substances listed in both Annexes I and II to Regulation 517/2014 and mixtures containing them

[24] Only exempted uses of ODS are still permitted. All other ODS use has been phased-out.

- Manufacturers of products and equipment containing F-gases (and ODS – if exempted) in Poland
- Users of F-gases (and ODS – if exempted) in Poland
- Those who recover, recycle, reclaim or destroy F-gases (or ODS – if exempted) in Poland

The DBR is administered by the Ozone and Climate Protection Unit (OLCPU) located in the Industrial Chemistry Research Institute in Warsaw. Any entity as listed above nominates a person called "account manager" who will make registration of the entity in DBR (i.e. will create the entity's account in DBR) and, after the registration is approved by OLCPU, will then be obliged to fill on-line once a year (until 28 February for data of the preceding year) the report of its activities regarding ODS/F-gases for the preceding year which contains:

- contact data of the entity submitting the report and of the person who filled the reporting form on-line
- year for which the report is submitted
- name of ODS/F-gas (selected from the list which will include all ODS/F-gas substances and the known F-gas mixtures), and for each of ODS/F-gases:
- number of pieces of equipment imported/exported manufactured or mass of products imported/exported/manufactured (type of product or equipment will be selected from the list, e.g. AC mobile equipment installed in buses, electrical switchgear, fire extinguisher, etc.)[25] and the quantity of F-gas contained in each
- quantity of ODS/F-gas used and the name of use (selected from the list, e.g. servicing stationary refrigeration equipment "small", i.e. holding less than 5 tons of CO2 eq, manufacturing of XPS foams, manufacturing of OCF foams, laboratory or analytical use, etc.) [26]
- quantity of ODS/F-gas recovered/recycled/reclaimed/destroyed
- quantity of ODS/F-gas sold or purchased
- quantity of ODS/F-gas lost and reason for the loss, e.g. leakage, theft, etc.

The general scheme of data flow in DBR database is presented in the Figure below.

[25] There is a list of ca. 30 items, in order to have detailed information on the scope of trade with and production of products and equipment containing F-gases.

[26] There is a list of ca. 30 different applications, in order to have detailed picture of sub-sectors where F-gases are used in Poland.

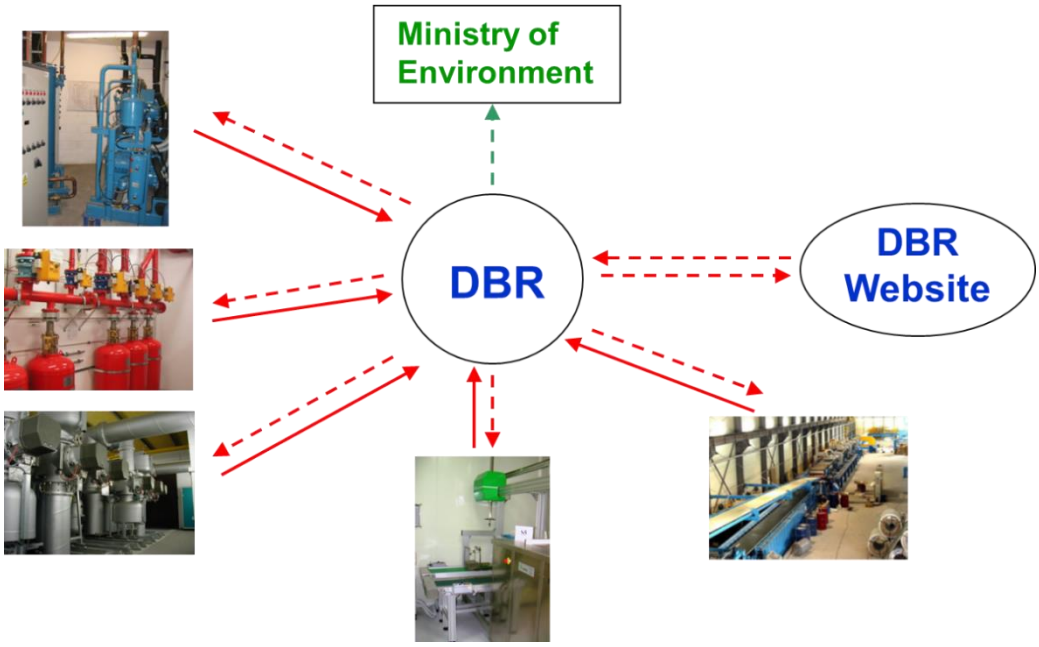


Figure 4: Data flow of DBR in Poland

Pictures represent examples of sectors from which reports will be submitted (RAC&HP, fire protection, electrical switchgear, solvents, and foams).

Support of reporters

Each report is checked and approved by OLCPU. If a correction is required, a message will be sent to the person who filled the report with a request to submit a corrected report. Over 13 000 entities have completed the registration.

Data analysis and aggregation

The system is designed to generate collective reports, which contain several sets of aggregated data from the reports submitted by the entities.

- Quantities of particular F-gases (and ODS) entering Poland and leaving Poland (including in products and equipment) and used in Poland for a particular purpose
- Quantities of particular F-gases (and ODS) recovered, recycled, reclaimed and destroyed
- Number of units of particular products and equipment containing particular F-gases (and ODS) entering Poland, leaving Poland and manufactured in Poland

That information not only fulfils the requirements for reporting under the EU F-gas regulation, but also provides background data for the estimation of F-gas emission reports to be submitted to UNFCCC. For that purpose, also data from CREO on actual emissions of F-gases from equipment (actual emission from equipment = quantity added to equipment during servicing – quantity recovered from the same equipment during servicing) are very useful.

Used data formats

The input pages of the DBR use free text boxes, check boxes and lists for data input. In Part I of the webform, the name and scope of the reporting entity are recorded. Upon entering the entity's name (1) and check boxes for selecting the scope of entity's activities are provided (2). The categories are the same for ODS (left column) and F-gases (right column) and comprise of the following:

- Entity importing ODS/F-gases
- Entity exporting ODS/F-gases
- Entity using ODS/F-gases in the manufacture of products or equipment containing ODS/F-gases
- Entity using ODS/F-gases in the installation, servicing or maintenance of equipment containing ODS/F-gases
- Entity using ODS/F-gases in other processes
- Entity recovering, recycling, reclaiming or destructing ODS/F-gases
- Entity importing on the territory of the Republic of Poland products or equipment containing ODS/F-gases
- Entity exporting on the territory of the Republic of Poland products or equipment containing ODS/F-gases

In part II, the gas is selected (1). Amounts and purpose has to be recorded for each gas individually.

Check boxes are provided to select either ODS or F-gases and whether it is a pure substance or a mixture. In case a mixture is selected, the composition of the mixture is displayed automatically.

Import (2) and Export (3) is reported in tonnes and differentiated for origin/destination inside and outside of the EU. Amounts need to be inserted for:

- Bulk substances
    - Virgin substances
    - Substances recovered and undergone recycling or reclamation
- Substances contained in a product or equipment
    - Type of product or equipment
    - Number of pieces or mass
    - Amount of substance or mixture, per piece or in 1 kg of weight

In (3) the trade of ODS and F-gases within Poland is reported. The available categories are:

- Purchase or acquisition free of charge
- Sale or transfer free of charge

- Transferred for recycling
- Transferred to reclamation
- Transferred to destruction
- Transferred for other purposes

The application is selected in (5). Separate lines are provided for each application. The first general application provides room for reporting substances contained in products or equipment, the others only “new substance” or “substances recovered and undergone recycling or reclamation”.

- Manufacture of products or equipment
- Manufacture of products, equipment, fire protection systems
- Maintenance or servicing of stationary refrigeration equipment
- Maintenance or servicing of mobile refrigeration equipment
- Maintenance or servicing of stationary air conditioning devices
- Maintenance or servicing of mobile air conditioning equipment
- Maintenance or servicing heat pumps
- Maintenance or servicing of air conditioning systems in certain motor vehicles
- Maintenance or servicing of fire protection systems
- Maintenance or servicing of mobile fire protection systems
- Maintenance or servicing of fire extinguishers
- Maintenance or servicing of stationary electrical switchboards
- Maintenance or servicing of mobile electrical switchboards
- Maintenance or servicing of equipment containing solvents
- Repair of stationary refrigeration equipment
- Repair of mobile refrigeration equipment
- Repair of stationary air conditioning equipment
- Repair of mobile air conditioning equipment
- Repair of heat pumps
- Repair of air conditioning systems in certain motor vehicles
- Repair of stationary fire protection systems
- Repair of mobile fire protection systems
- Repair of fire extinguishers
- Repair of stationary electrical switchboards
- Repair of movable electrical switchboards

- Repair of equipment containing solvents
- Decommissioning of stationary refrigeration equipment
- Decommissioning of mobile refrigeration equipment
- Decommissioning of stationary air conditioning equipment
- Decommissioning of mobile air conditioning equipment
- Decommissioning of heat pumps
- Decommissioning of air conditioning systems in certain motor vehicles
- Decommissioning of stationary fire protection systems
- Decommissioning of mobile fire protection systems
- Decommissioning of fire extinguishers
- Decommissioning of stationary electrical switchboards
- Decommissioning of movable electrical switchboards
- Decommissioning of devices containing solvents
- Use as a substrate for chemical processes
- Laboratory use
- Other, please specify what

Under (6) are amounts reported, which were recovered, recycled, reclaimed or destroyed. The list provides a line for each activity with a column to enter the quantity of substance or mixture in kilograms.

Stored substances or mixtures are reported separately for virgin substances and recovered/recycled/reclaimed substances and for the first and the last day of the year for which the report is produced.

(8) concerns substances or mixture lost due to leakage or for other reasons.

The administrator of DBR can retrieve a list of reports at any time. The list shows the reporting entities, their contact data, the date of the last report, as well as the status. The status can be

- Draft (the report is being worked on by the reporting entity
- Submitted (the report is submitted by the reporting entity, but is not checked by the administrator
- Under revision (the quality check was not passed, and the report needs revision)
- Approved (the report has undergone a quality check by the administrator and was approved)

5.4.2 CREO

To document the type of equipment, quantity and type of F-gas[27]/controlled substance[28], life cycle activities, installation, servicing, leakages, repair activities and recovery, the Central Register of Equipment Operators (CREO) as central repository for electronic 'logbooks' of equipment operators and service companies was established in Poland.

General outline

CREO is an electronic database available by logging in on-line to a dedicated website (www.cro.ichp.pl) where the operators of RAC&HP, fire protection, electrical switchgear, Organic Rankine Cycles, and solvent equipment containing 3 kg or more of controlled substances and 5 tons of CO_2 eq or more of F-gases[29], for which leakage checking and record keeping is required based on Article 3 and Article 6 of the EU F-gas Regulation, are obliged to register. Only stationary equipment is covered, except for refrigeration units on refrigerated trucks and trailers (as defined in the EU F-gas Regulation) that have also been included.

CREO is administered by the same unit that also administers the DBR: the Ozone Layer and Climate Protection Unit (OLCPU) located in Industrial Chemistry Research Institute in Warsaw. The operators are the legal or natural persons who operate (exploit) the relevant equipment. Usually, the equipment owner is its operator. The person completing the registration form registration on behalf of the operator becomes the administrator of the operator account. The administrator of the account of a given operator may be the owner of a company, a person authorized to represent a company or institution appearing in the National Court Register or a person who has been from the former and has the power of attorney to perform the function of the administrator. Each operator with equipment exceeding the above-mentioned CO_2eq threshold, should nominate a person called "account manager" who has to register the operator in CREO (i.e. will create the operator's account in CREO). After the registration is approved by OLCPU, the operator's account manager is then obliged to set up a separate logbook for each piece of equipment holding 3 kg of controlled substances or 5 tons of CO_2 eq or more of F-gases the operator has. Because it may happen that the account manager is on leave or is sick and therefore somebody else has to replace him/her in management of the logbook/logbooks in CREO, the operator's account manager may able to designate other persons (called "contact persons"). These contact persons will have access to the system and who may be responsible for a specific logbook or for several logbooks. Each logbook contains the coordinates of the operator and equipment manager/contact person and data concerning the equipment (equipment type, exploitation address, type and quantity of controlled substance or F-gas it contains). The logbook also allows the servicing technician with certification to make

[27] In DBR, the term „F-gas" covered both F-gases listed in Annex I of Regulation 517/2014 AND other F-gases listed in Annex II of that Regulation while in CREO only F-gases listed in Annex I of that Regulation are considered

[28] In DBR all ODS, i.e. controlled substances AND "new substances" defined in both Annexes I and II to Regulation 1005/2009 are considered.

[29] For electrical switchgear equipment the limit is 6 kg (based on Regulation 517/2014)

on-line notes on any activity he conducted on equipment (leakage checks, recovery/topping up of controlled substance/F-gas, repair, installation, decommissioning). Over 46 000 operators have completed the registration and about 260000 logbooks have been established. The dataflow and the scheme of CREO database administration is presented in the Figures below.

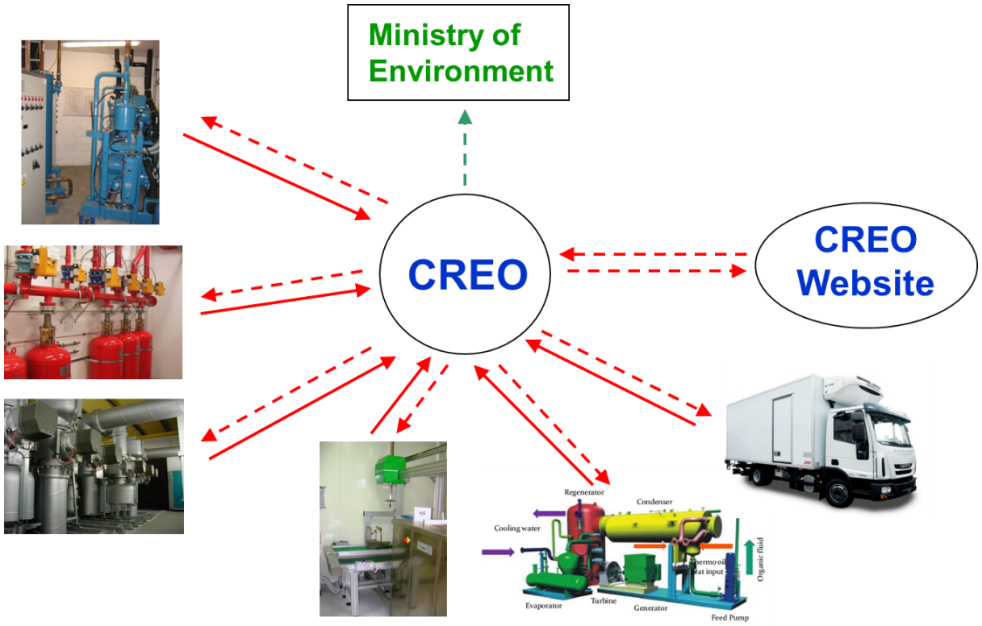


Figure 5: General scheme of data flow in CREO database

Pictures represent examples of equipment type (RACHP, fire protection, electrical switchgear, solvents, Organic Rankine Cycles, refrigerated trucks and trailers) for which the logbooks are established in CREO.

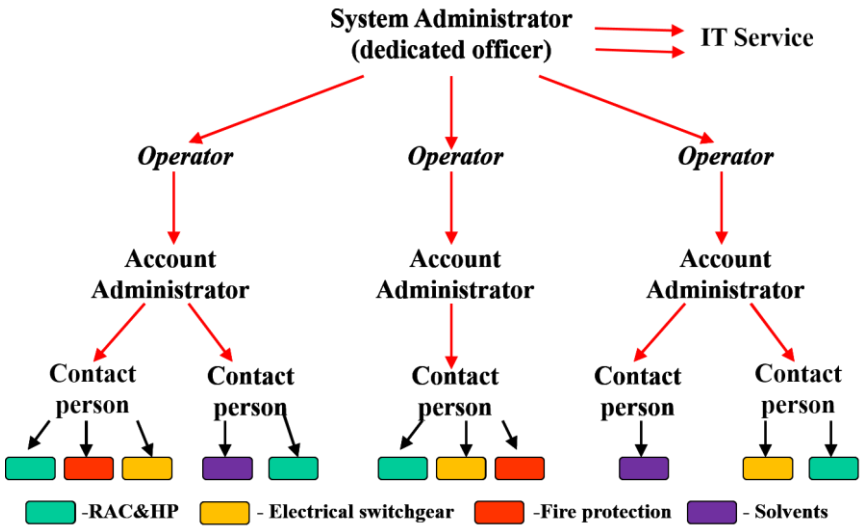


Figure 6: Scheme for CREO Database Administration

Support of Operators

Similar to the DBR, each registration is checked and approved by OLCPU. The records of activities on the equipment are not manually checked. An automated alert is sent to the operator in case leakage check intervals have been exceeded. Where service technicians enter the activities performed, they need to enter their certificate number to ensure that they have the required certification for the performed activity.

Data analysis and aggregation

The system is designed to generate reports that contain several sets of aggregated data from the logbooks. E.g.:

- quantities of particular type of F-gas (including mixtures) contained in particular type of equipment,
- number of pieces of particular type of equipment holding 5 tons of CO_2 eq or more, 50 tons of CO_2 eq or more and 500 tons of CO_2 eq or more,
- quantity of particular F-gas recovered from or added to particular type of equipment,
- total number of operators,
- numbers of operators of particular type of equipment holding particular type of F-gas, and
- the location of particular type of equipment in the country.

The system also allows the equipment operator to produce similar reports that contain only the data concerning that operator's equipment. This functionality provides an incentive for the reporter as relevant analyses on the e.g. equipment performance can easily be conducted.

For emission reporting under the UNFCCC, data from CREO on actual emissions of F-gases from equipment can be retrieved. Emissions form equipment equal the quantity added to equipment during servicing minus the quantity recovered during servicing. Equally, emission factors for a particular type of equipment can be calculated by dividing the resulting emission quantity by the total quantity contained in equipment.

Used data formats

During the registration process, the operator (or his account manager) enters contact data and technical parameters of the registered equipment as shown in Table 5 below.

Table 5: Contact details and equipment data entered in CREO during registration.

F-gas Equipment logbook		
Date of logbook creation, DD/MM/YYY		
Name of person who created the logbook		
Name of contact person nominated by the Operator		
Phone number and e-mail address of the contact person		
Equipment Operator data		
Operator name		
Operator address		
Operator ID number		
Equipment data		
ASHRAE number of F-gas or F-gas-containing blend contained in equipment		
Quantity of F-gas or F-gas-containing blend contained in equipment, kg		
Quantity of F-gas or F-gas-containing blend contained in equipment, GWP tons		
Address of equipment location		
Equipment category*		
Equipment sub-category**		
Equipment name		
Equipment model		
Equipment serial number		
Equipment date of manufacturing		
Is the leakage detection system installed?	YES ☐	NO ☐

*Equipment categories: - stationary refrigeration - stationary air-conditioning - stationary heat pump - refrigerated unit on truck or trailer - stationary fire protection - electrical switchgear - organic Rankine cycle	**Equipment sub-categories: - industrial - commercial - other, e.g. office/hospital/school/house

A continuous logbook listing all activities performed on the equipment is kept for each piece of equipment. The certification number of technicians and, if applicable, the companies performing the activities on the equipment need to be entered. The Figure below shows the outline. Those numbers can be matched with a list of certification numbers to check if the entered certification is valid.

For the automated alert system to function, leakage checks need to be entered as single activity. When the interval is exceeded, the system automatically sends a message to the account manager.

The administrator can retrieve a list of all equipment logbooks, showing the operator, the type of equipment, the date of registration, the date of the last update, the substance contained, the location and the status (open or closed).

Table 6: List of activities performed on one piece of equipment as entered in CREO

History of activities												
Date of entry	Name of person who made the entry	Date activity started	Date activity ended	Type of activity***	Quantity of F-gas, kg		Company which conducted the activity			Technician who conducted the activity		
					Recovered	Added	Name	Address	Certificate No	Name	Certificate No	

Leakage checking needs to be inserted as single activity!

Type of activity***

- installation
- maintenance/servicing/repair
- leakage checking
- leakage repair
- leakage detection system installation
- recovery
- decommissioning

The administrator can retrieve a list of all equipment logbooks, showing the operator, the type of equipment, the date of registration, the date of the last update, the substance contained, the location and the status (open or closed).

5.5 Recommendations to fulfil data collection requirements in accordance with Article 19 of the EU F-gas Regulation

Following the legislative gap analysis, the F-gas legislation to be set up in Moldova should contain an F-gas reporting scheme for reporting on imports and exports. Additional information reported should include F-gas uses, recycling, reclamation and destruction as well as imports/exports/manufacturing of products and equipment containing F-gases. Such data could be submitted online to a central electronic Database of Business Reports (DBR) as in place in Poland and being established in Turkey. In consideration of the need to implement a national reporting system according the requirements under the EU F-gas Regulation and Article 7 of the Montreal Protocol, it is highly recommended to implement the national F-gas reporting according to the Polish country example in the Republic of Moldova.

Once established and operational CREO and DBR databases will allow the responsible entity to monitor compliance with obligations contained in Regulation 517/2014 and the relevant Commission Implementing Regulations and in future Moldavian F-gas Regulation regarding record keeping of equipment (logbook), emission prevention, leakage checking, leakage detection systems and recovery of F-gases from equipment as well as data reporting. The relevant obligations that can be monitored are summarized in Annex 3.

Currently the MoARDE of the Republic of Moldova is elaborating the technical concept of the Automated Information Systems „Register of chemicals placed on the market of the Republic of Moldova - SIA "REPC". This report on the harmonized database system to be implemented in the Republic of Moldova takes into account **EU best practices** and provides first guidance on **how to integrate** the data collection and reporting modules in the framework of the Automatic Information System “Register of chemical products placed on the market in the Republic of Moldova”.

The Republic of Moldova may wish to introduce thresholds for the different activities subject to reporting. For example, the EU F-gas Regulation reporting requirements exclude imports or production below the threshold of 100 tonnes of CO_2 eq per year for bulk F-gases and 500 tonnes of CO2 eq per year for F-gases contained in products and equipment. However, such reporting thresholds facilitate repeated imports of F-gases that are not covered under the quota system and thereby enables illegal trade. Hence, we strongly suggest to **not introducing thresholds for F-gas reporting**. Furthermore, the requirements for reporting to the UNEP Ozone Secretariat under the Kigali Amendment do not allow for thresholds.

The EU HFC licensing system that is currently in place is not comparable to the existing EU ODS licensing system. For ODS, the licensing system works on per-shipment licenses for each single transaction, which provides an effective control system for custom authorities, the EU

Commission and the EEA ODS reporting support team. In contrast, the current HFC licensing system issues aggregated bulk licenses. With current IT procedures to record relevant cross-border movements of F-gases, which are still under development, EU custom authorities cannot properly control and assess compliance of for example importers of F-gases.[30] For the effective monitoring and control of the HFC phased-down agreed upon under the Kigali Amendment, the implementation of an effective control system appears to be important. With the purpose of enabling effective control of imports and exports of HFCs, it is highly recommended to deploy a **pre-shipment licensing system for both ODS and HFCs**.

Furthermore, the data base system could include an **informative section on alternatives to ODS and F-gases** in different sectors as well as technology examples. In view of the implementation of the Montreal Protocol and its Kigali Amendment as well as national plans and policies awareness raising and information of relevant stakeholders are of key relevance.

[30] The EU Commission's project 'Single Window' environment for customs' is currently developed but not yet operational. URL: https://ec.europa.eu/taxation_customs/general-information-customs/electronic-customs/eu-single-window-environment-for-customs_de

6 Data collection for F-gas inventory compilation

6.1 Reporting under the international framework UNFCCC

Parties to the United Nations Framework Convention on Climate Change (UNFCCC) are obliged to report on information relevant to the implementation of the Convention (Article 12). By communicating information on greenhouse gas (GHG) emissions and actions to reduce them, as well as on adaptation and means of implementation such as finance, technology transfer and capacity-building, the transparency and reporting system allows to understand ambition and progress on climate actions and support by Parties, – and informs the COP for deliberation and guidance on these matters.

The 2006 IPCC Guidelines for National GHG Inventories ("2006 IPCC Guidelines") assist countries in compiling complete and plausible GHG inventories. They have been structured in a way that any country, regardless of its experience or resources, should be able to produce reliable estimates of its emissions and removals of national GHG. In particular, default values of the various parameters and emission factors required are supplied for all sectors, so that, at its simplest, a country needs only to supply national activity data. The approach also allows countries, which can draw on more information and resources to use more detailed country-specific methodologies, while retaining comparability between countries.

Good quality inventories need to consider five basic principles along the process from data collection to reporting:

- Transparency: transparent documentation of the process
- Completeness: covering all sources and sinks of GHGs
- Consistency: calculation methods are to be consistent between years, so that changes in results do reflect actual changes of emissions
- Comparability: reporting allows for comparison between countries by using adequate categories and classifications
- Accuracy: due care is to be exerted to avoid over- and underestimation of emissions

The IPCC also manages the IPCC Emission Factor Database (EFDB). The EFDB was launched in 2002 and is regularly updated as a resource for inventory compilers to assist them by providing a repository of emission factors and other relevant parameters that may be suitable for use in more country-specific methodologies. For the F-gas using sectors, several default values such as initial charges, product lifetimes and emission factors are available.

6.2 Implementation of F-gas emissions reporting in the EU

In addition to the reporting requirements, Article 20 of Regulation (EU) No 517/2014 stipulates the collection of emissions data, requiring Member States to establish data collection procedures for the relevant sectors with the objective of acquiring, to the extent possible, emissions data. Hence, national reporting schemes need to create a link between both the consumption and emissions of F-gases.

In the EU, Regulation (EU) No 525/2013 stipulates the mechanism for monitoring and reporting greenhouse gas emissions.[31] In more detail, Regulation (EU) No 749/2014 sets the requirements for national reporting under Regulation 525/2013.[32] F-gas data collection procedures and infrastructure deviate substantially between Member States when comparing approaches implemented on national level. The categories used for F-gases are presented in Table 7. Most relevant is the category "product uses as substitutes for ODS" with the usually largest application being "refrigeration and air conditioning". The data collected under the EU F-gas regulation can be utilized for the reporting under the UNFCCC.

Table 7: Categories relevant for F-gas reporting under the UNFCCC

	Application (Tier 1)	Sub-application (Tier 2)
Product uses as substitutes for ODS	Refrigeration and air conditioning	Commercial refrigeration Domestic refrigeration Industrial refrigeration Transport refrigeration Mobile air conditioning Stationary air conditioning
	Foam blowing agents	Closed cells Open cells
	Fire protection	Fire protection
	Aerosols	Metered dose inhalers Others
	Solvents	Solvents
	Other applications	
Other product manufacture and use	Electrical equipment	
	SF_6 and PFCs from other product use	Military applications Accelerators Soundproof windows Adiabatic properties: shoes and tyres Other
	Other	
Other	Pulp and paper	
	Food and beverages industry	

6.3 Recommendations to fulfil data collection requirements in accordance with Article 20 of the EU F-gas Regulation

By including an obligation to record use and emissions including the activities performed on the equipment such as leak checking, servicing or decommissioning, in national F-gas legislation, pivotal information and F-gas data can be collected in a central system, which

[31] Regulation (EU) No 525/2013 accessible under https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX:32013R0525

[32] Regulation (EU) No 749/2014 accessible under http://eur-lex.europa.eu/legal-content/EN/TXT/?uri=uriserv:OJ.L_.2014.203.01.0023.01.ENG

would represent an electronic equipment register and logbook. This enables the country to compile consistent F-gas emission data while decreasing the administrative burden that is required to conduct survey-based approaches.

In order to establish a streamlined data collection method for data relevant for UNFCCC reporting, it is highly recommended to **set up of a second data base, which is designed for the purpose of collection of data on F-gas containing equipment** installed in the Republic of Moldova.

On the basis of the EU requirements, such an electronic equipment register would refer to

- stationary RAC&HP equipment, fire protection equipment and Rankine Cycles as well as of refrigeration aggregates installed on refrigerated trucks of mass>3.5 t and trailers containing 5 tons of CO_2 eq of F-gas or more
- electrical switchgear equipment containing 6 kg or more of F-gas (SF_6)

In the logbooks established in CREO, inter alia, the data on equipment type and location, quantity of F-gas installed, recovered or added during servicing and any leakage checks will be recorded.

This will enable authorities to understand where F-gases are used, better understand the origin of emissions sources and monitor the compliance to a number of provisions:

- Containment of F-gases
- Leak checking
- Recovery at end of life of equipment
- Reclamation or destruction
- Obligatory certification of technicians performing activities on F-gas containing equipment.

In view of the emission reporting to the UNFCCC, it will be possible to extract from these databases the following sets of data that will be useful for drafting the F-gas emissions inventory report to UNFCCC:

From CREO:

- Actual number of installed/decommissioned units of stationary RAC&HP equipment, fire protection equipment and Rankine Cycles as well as of refrigeration aggregates installed on refrigerated trucks of mass>3.5 t and trailers containing 5 tons of CO_2 eq of F-gas or more + actual number of installed/decommissioned units of electrical switchgear equipment containing 6 kg or more of F-gas (SF_6)
- Actual annual emissions of F-gases from the equipment as listed above calculated as difference between quantity of F-gas added to equipment during the given calendar year and recovered from that equipment during the same year [33].

[33] Analysis of these data for particular equipment types will also allow for calculating the actual leakage rates and thus actual emission factors for such equipment that can be used in F-gas emissions calculation by Tier 2 approach instead of default emission factors reported by IPCC.

From DBR:

- Quantity of any F-gas imported/exported annually in bulk and in products or equipment with differentiation between specific types of products and equipment
- Quantity of any F-gas used annually in production of any type of products and equipment with differentiation between specific types of products and equipment and in any other processes
- Quantity of any F-gas recovered, recycled or destroyed
- Actual annual emissions of F-gases from containers during storage and transportation as well as during use in production of products or equipment or during use in any other processes

The data obtained from CREO and DBR can be analyzed and aggregated by the authorities. Furthermore, these data may be cross-checked with data obtained from customs and finally included in the national report to UNFCCC on GHG emissions.

The GWP values included in the databases should refer to both the 4th IPCC Assessment Report, which is used under the Montreal Protocol and Kigali Amendment as well as in the EU Regulation 517/2014, and the 5th IPCC Assessment Report, which serves as a reference in the Paris Agreement (UNFCCC). The application of both values can be facilitated by a drop-down menu in the relevant calculations.

It is expected that with such data reporting scheme the future national F-gas emissions inventory reports to UNFCCC will be much more reliable than the one that currently can be prepared based on data from customs. Therefore, Moldova will be able to analyze the data related to F-gases for UNFCCC 2F sector (industrial processes) not only according to Tier 1a methodology, but also according to Tier 1b and Tier 2 methodology, i.e. similar to the approach taken by majority of the EU Member States.

In addition, the equipment database could be expanded to also cover **data on energy efficiency and energy use**, which might be useful for national energy strategies but might also become relevant for future measures under the Kigali Amendment and the UNFCCC as regards energy related emissions. Electricity consumption of refrigeration and air conditioning equipment often represents a relevant share of a country's total electricity use. Collecting baseline data on energy efficiency and consumption is the basis for development of proper mitigation action such as minimum energy performance standards or integrative approaches for reducing the energy consumption of buildings.

To aid the operator to identify certified technicians, **a list/database of certified technicians** and companies could be set-up by the Moldovan certification body (or bodies). A publicly available online search tool could enable the operator to check whether the hired technician or company holds a valid certificate. Alternatively, such register of certified technicians could also be maintained at authorities which would be contacted by operators when searching for certified technicians.

7 Arrangements for environmental reporting in Moldova

Within the project “Improving sustainable institutional and regulatory framework for chemicals and waste management throughout their lifecycle in the Republic of Moldova” implemented by Environmental Pollution Prevention Office (EPPO) and the United Nations Environment Programme (UNEP) current national activities in the Republic of Moldova include the design and implementation of the software for SIA "REPC", which is used for the set-up of a national chemicals register. This chapter provides guidance and recommendations regarding the integration of the suggested databases DBR and CREO into the REPC (also see Annex 4).

7.1 Reporting on Chemicals

In the Republic of Moldova, the national Law on Chemicals No. 277 as of 29 November 2018 entered into force at the end of November 2019 and sets out reporting requirements for individuals and legal persons that that produce or place on the market certain substances or mixtures, including ODS and F-gases, from 2020 onwards. The list of chemicals subject to reporting under Article 29 are included in the list of chemicals approved by the Government, indicating the customs tariff codes.

In particular, Article 29 of the law requires that any legal person that initiates or carries out production or import of a chemical above the determined threshold of 100 kg per year must report to the National Agency. The reporting shall be done within one month after the date of initiation of the activity and must include data on the identity of the reporter, the chemicals, and other data on the chemicals. The submission of the data can be conducted electronically or on paper and has to follow the form as listed in Annex no. 4 of Law No. 277 (Annex 3 of this draft report). The reporter is obliged to update reported data and each year, before March 31, submit information on chemicals produced or imported in the last calendar year to the Agency.

The producer or importer of chemicals can delegate responsibility to report to an individual. The producer or importer of chemicals must inform the Agency in writing by November 1 of the reporting year, the name and contact details of the person who will perform reporting on its behalf, attaching a copy of the contract of mandate. Otherwise, the producer or the importer is required to report the chemical by himself.

Important issues for consideration

Since the Law No. 277 will provide for a reporting obligation on ODS and F-gases from 2020 onwards, special attention should be drawn to potential gaps or overlaps with any future national F-gas Regulation in the Republic of Moldova. In particular, the reporting obligation set by Law No. 277 requires reporting of chemicals only if production or import exceed the **annual threshold** of metric 100 kg. In contrast, the EU F-gas Regulation requires reporting above the threshold of 1 metric tonne or above 100 tonnes of CO_2 eq per year for bulk F-gases and 500 tonnes of CO_2 eq per year for F-gases contained in products and equipment reporting. In order to illustrate this on the example of imports of bulk F-gases: an import of 99 kg of HFC-134a would not fall under the reporting obligation of Law No. 277, whereby a national F-gas

regulation complying with the EU F-gas Regulation requires reporting in this case, since the import exceed the legal minimum quantity.[34]

With respect to the legal reporting deadline, the reporting under Law No. 277 shall be completed within one month after the date of initiation of activities that are obliged to report. In contrast, the EU F-gas Regulation does not set a specific time frame with respect to the initiation of the activity but rather demands reporting until the 31st March for activities conducted in the preceding calendar year. In this regard, it appears to be necessary to elucidate how reporting under future national F-gas Regulation may be affected by this provision in Law No. 277. In particular, in the context of drafting national F-gas Regulation reporters need to be informed how they can comply with reporting within one month after 'initiation of activities'. It may be tentatively assumed that this provision requires reporters to report after the first occurrence an activity that falls under the reporting obligation for the relevant legal entity. If so, any undertaking commencing such activities might be obliged to report twice for the first year of business activity in that area. In particular, the reporter would need to submit the first report one month after the commencement of activities and the second report on the complete reporting year, until 31st of March of the following calendar year. Based on these assumptions, it is recommended to construct the DBR reporting module in such a way that it allows re-submissions for, at least, the first reporting year of a given reporter.

In general, the concerned stakeholders would need to become informed about the reporting process. Relevant guidance documents and support for the reporting (e.g. in form of a helpdesk) need to be established in parallel to the introduction of the reporting scheme.

7.2 Recommendations for the integration of DBR and CREO into the Automated Information System "Registry of chemicals placed on the Moldovan market" (REPC)

Legal background

According to Article 30 of the Law No. 277, the Automated Information System "Registry of chemicals placed on the Moldovan market" represents the specialized information resource of the chemicals placed on the market of Moldova, which is hold by the MoARDE and owned by the National Agency.

According to Article 30 (5), any legal person, which is carrying out an activity related to import or production of a chemical, shall provide information in accordance with Law No. 277 and Regulation on maintenance of the Register of chemicals placed on the market of Moldova, approved by the Government. The establishment, operation and exploitation of REPC is performed in accordance with the law in the field of State informational systems and resources.

[34] The quantity of 99 kg of HFC-134a amounts to ca. 142 CO_2-eq tonnes. Calculation done using the IPCC AR4 GWP value for HFC-134a (GWP_{100}=1430)

Integration of CREO and DBR

In order to keep company information in one place, i.e. in one registry, and apply the "one-stop-shop" principle, also done in the European Union's Portal, which is tightly interlinked with the European registry on F-gas transactions, it is highly recommended to integrate both proposed databases, i.e. CREO and DBR, in the framework of the REPC (see **Figure 7**). A more detailed Scheme presented in Annex 4 displays the proposed structure for management of CREO and DBR accounts within REPC.

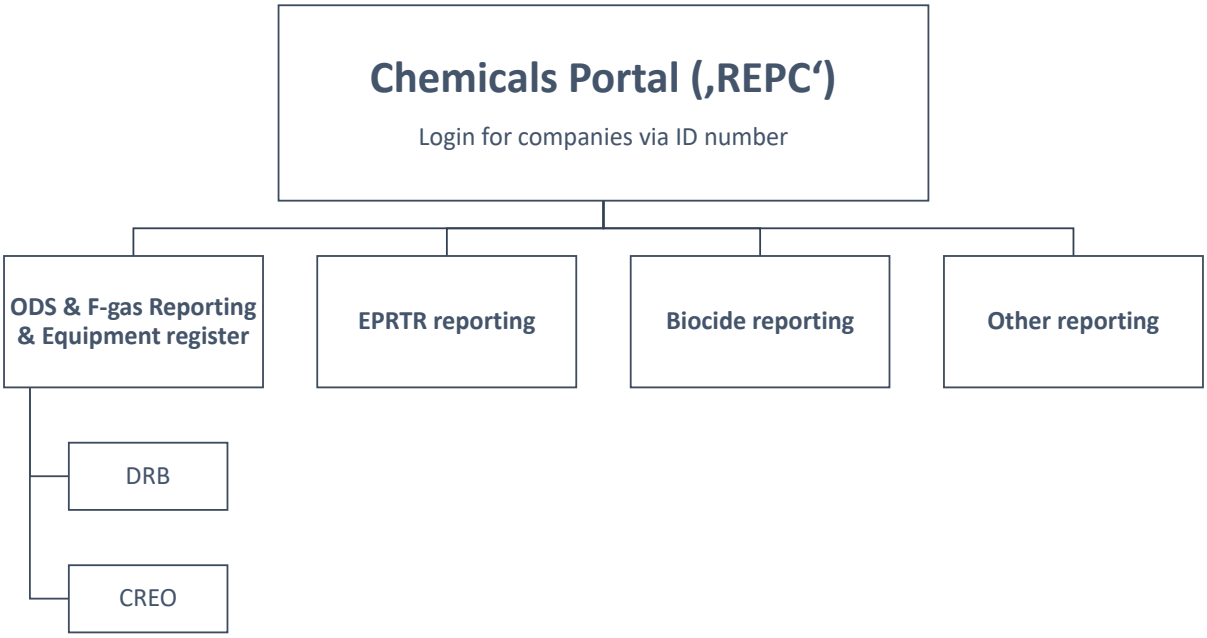


Figure 7: Integration of CREO and DBR modules within the Chemical Register

It has to be strengthened, that from technical point of view, the proposed reporting modules CREO and DBR should be kept is separate reporting modules due to their distinct structure and origin of data.

- On the one hand, CREO will be a "live" database where new data can be introduced at any time.
- On the other hand, DBR will be a "periodic data submission database" where the reports will be submitted once a year by dedicated deadline to be decided by the MoARDE, e.g. by 31 March. However, as mentioned above, the system should allow for later submissions or re-submissions the reports.

Due to their different characteristics in terms of nature data and type of data submission, from a technical point of view, it is strongly recommended to implement both functions described above in two separate databases: CREO and DBR.

However, in order to delineate ODS and F-gases from other chemical groups, it appears to be beneficial to place them as one section next to, inter alia, industrial chemicals (including both chemicals used by professionals and the population), hazardous chemicals and biocidal products. In the phase of development of the databases, special attention should be drawn to the question if DBR and CREO can be separately be run and maintained if they would appear as one module within REPC.

Communication with reporters

In order to ensure communication between the reporters and administrative staff of the REPC system it should be clarified if the REPC system is intended to comprise respective functionalities. In order to reduce the administrative burden, it should be elicited if an email ticketing system is available in REPC.

Communication with reporters using an email ticketing and management system facilitates to store the documentation of all correspondence in one digitally secured place and to automatically contact reporters on pre-determined points in time, e.g. to send out reminders before the legal reporting deadline or leakage checks.

7.3 Recommendation to fulfil EU data collection requirements in the Republic of Moldova

In general, the creation of an integrated electronic system combining reporting on F-gases, according to both Article 19 and Article 20 of the EU F-gas Regulation, and ODS has the following advantages:

- An electronic database system avoids piles of paper records or single report files, which are either not reviewed at all or very time consuming to check and calculate total amounts.
- Once set up, summary data can be easily retrieved and used for:
    - F-gas reporting according to Article 19 of the EU F-gas Regulation
    - Reporting to the UNFCCC according to Article 20 of the EU F-gas Regulation
    - Reporting under Article 7 of the Montreal Protocol
    - Monitoring the HFC phase-down under the Kigali Amendment
    - Informing on further policy measures
- The review process of individual reports can be accelerated by automated pre-checks and managed in a transparent way

In the light of the future need to report production and consumption on both ODS and HFCs under Article 7 requirement, it is highly recommended to develop an integrated data collection and reporting system consisting of DBR and CREO as outlined in this report. Such an integrated system will allow authorities to efficiently and effectively gather data on F-gases, their usages and the installed F-gas containing equipment in of Moldova. In addition, the implementation of leakage checking provisions can be monitored effectively.

In particular, the Central Register of Equipment Operators (CREO) where the Operators of the relevant equipment shall be obliged to register on-line and establish electronic equipment logbooks should cover the following types of equipment:

- stationary RAC&HP equipment, fire protection equipment and Rankine Cycles as well as of refrigeration aggregates installed on refrigerated trucks of mass>3.5 t and trailers containing 5 tons of CO_2 eq of F-gas or more
- electrical switchgear equipment containing 6 kg or more of F-gas (SF_6)

In the logbooks established in CREO, *inter alia,* the data on equipment type and location, quantity of F-gas installed, recovered or added during servicing and any leakage checks shall be recorded. In addition, a national certification register for technicians handling F-gases could be linked to CREO in order to record that activities such as maintenance were conducted by certified personnel.

On the other hand, the Database of Business Reports (DBR) where the following entities shall be obliged to submit reports on-line by 31 March each year on quantities of F-gases and other F-gases imported, exported, purchased, sold, used, recovered, recycled and destroyed:

- Importers and exporters of any quantity of any F-gas (or other F-gas) either in bulk or in products or equipment
- Distributors of F-gases and other F-gases
- Users of F-gases (and other F-gases) in production of products or equipment or in the other processes
- Entities that recover, recycle, reclaim or destroy F-gases

These requirements to register and report should be included in the national F-gas Regulation. The data contained in the DBR will enable the Republic of Moldova to compile its submission to UNEP's Ozone Secretariat under Article 7 of the Montreal Protocol.

Examples of entities in Moldova which will be registered in CREO as equipment operators and will establish and manage the equipment logbooks in CREO or will register in DBR and will draft and submit the annual reports to DBR are provided in Annex 6.

Based on the data contained and managed within CREO and DBR, it will be possible to extract from these databases the following sets of data that will be very useful for drafting the F-gas emissions inventory report to UNFCCC:

- Actual number of installed/decommissioned **units** of stationary RAC&HP equipment, fire protection equipment and Rankine Cycles as well as of refrigeration aggregates installed on refrigerated trucks of mass>3.5 t and trailers containing 5 tons of CO_2 eq of F-gas or more + actual number of installed/decommissioned units of electrical switchgear equipment containing 6 kg or more of F-gas (SF_6) ➔ from CREO
- Actual annual **emissions** of F-gases from the equipment as listed above calculated as difference between quantity of F-gas added to equipment during the given

calendar year and recovered from that equipment during the same year [35]➔ from CREO

- Quantity of any F-gas **imported/exported** annually in bulk and in products or equipment with differentiation between specific types of products and equipment ➔from DBR
- Quantity of any F-gas used annually in the **manufacture** of any type of products and equipment with differentiation between specific types of products and equipment and in any other processes ➔ From DBR
- Quantity of any F-gas **recovered, recycled or destroyed** ➔ From DBR
- Actual annual emissions of F-gases from containers during **storage and transportation** as well as during use in production of products or equipment or during use in any other processes ➔ from DBR

It is anticipated that the data obtained from CREO and DBR can be analyzed and aggregated by the MoARDE and submitted to the national statistics authorities where these data may be further cross-checked with data obtained from customs and finally included in the national report to UNFCCC on GHG emissions. The proposed scope of statistics for aggregated data to be compiled by the two databases presented in Annex 7 (for CREO) and Annex 8 (for DBR). Thanks to the implementation of a reporting flow following the proposed scheme, the MoARDE will be able to analyze the data related to F-gases for UNFCCC 2F sector (industrial processes) according to Tier 1b and Tier 2 methodology, i.e. similar to the approach taken by majority of the EU Member States.

After launching the CREO and DBR databases it may be useful to establish a pilot period (e.g. 3-6 months) before registration in the databases will become mandatory for all relevant entities. During that period the selected equipment operators (facilities operating large equipment - CREO) and selected reporting entities (importers – DBR) would be using the applications. This approach may be useful to understand the practical user needs in Moldova and facilitate further administration of the system by the ministry.

[35] Analysis of these data for particular equipment type will also allow for calculating the actual leakage rates and consequently actual emission factors for such equipment that can be used in F-gas emissions calculation by Tier 2 approach instead of default emission factors reported by IPCC.

8 Annexes

Annex 1

Key deliverable	Timing
Deliverable 1: Agreed activity plan and timeframe	By 8 November 2019
Deliverable 2: In-country mission in the Republic of Moldova	2-3-4 December 2019
Deliverable 3: Produce a legislative gap analysis report in the area of ODS and F-gases in the Republic of Moldova	Draft version after the country visit By 20 December 2019
Deliverable 4: Design a fully-fledged integrated F-gas database system and harmonized reporting system that is capable of receiving, integrating and analyzing data from multiple sources and activities, to allow the Republic of Moldova to comply with the requirements set up in Article 6 "Reporting" of the Regulation (EC) No. 842/2006, correspondingly in the Article 19 "Reporting on production, import, export, feedstock use and destruction of the substances listed in Annexes I or II' and Article 20 'Collecting emissions data' of the Regulation (EU) No. 517/2014	Concept note by 20 December 2019 By 17 January 2020
Deliverable 5: A consolidated final report on the execution of the assignment, covering all the above-mentioned aspects under the deliverables 1 to 4	By 31 January 2020

Annex 2

December 1	
12:40 – 15.15	Departure from Vienna and arriving to Chisinau
December 2	
09:30 – 11:00	Meeting with **Mr. Marius Taranu**, EU4Climate National Coordinator and with the former Coordinator of the National Ozon Unit (Ozone Office), **Mr. Anatolie Tarita**, Head of Laboratory of Natural and Anthropogenic Ecosystems, Institute of Geography and Ecology
11.00 – 12.30	Meeting with **Ms. Maia Gutu**, Senior Consultant in the Air Protection and Climate Change Section, Ministry of Agriculture, Regional Development and Environment (MoARDE), with **Ms. Veronica Lopotenco**, former Head of Air Protection and Climate Change Section and with **Ms. Raisa Leon**, Head of Direction for Environmental Policies Implementation, Environment Agency
12.30 – 13.30	Lunch
14.00 – 15.30	Meeting with **Ms. Tatiana Tugui**, **Ms. Tatiana Echim**, **Ms. Natalia Efros**, Environmental Pollution Prevention Office of the Public Institution "Environmental Projects Implementation Unit", MoARDE, currently involved in designing the on-line reporting system on consumption and use of all chemical substances in the country (it is supposed the F-gases database system to be used for reporting emissions has to be linked / harmonized with the data collecting system)
16:00 – 17:00	Working on the legislative gap analysis report in the area of ODS and F-gases in the Republic of Moldova
December 3	
09:30 – 11:30	Meeting with the **Mr. Vasile Cartofeanu**, Head of the Republican Association of Refrigeration Technicians of the Republic of Moldova, and with the former Coordinator of the National Ozon Unit (Ozone Office), **Mr. Anatolie Tarita**, Head of Laboratory of Natural and Anthropogenic Ecosystems, Institute of Geography and Ecology
12.30 – 13.30	Lunch
14.00 – 17.00	Working on the legislative gap analysis report in the area of ODS and F-gases in the Republic of Moldova
December 4	
09:30 – 10:30	Meeting with **Mr. Marius Taranu**, EU4Climate National Coordinator
11.00 – 12.00	Debriefing meeting with **Ms. Inga Podoroghin** and **Ms. Silvia Pana-Carp**, Climate Change, Environment and Energy Cluster, UNDP Moldova
12.00 – 13.00	Lunch
13.00 – 14.00	Departure to the airport
16:00 – 16:45	Departure from Chisinau and arriving to Vienna

Annex 3

Obligations regarding record keeping, leakage checking and reporting contained in the EU F-gas legislation that may be monitored through CREO or through DBR

Obligations resulting from the EU F-gas legislation that may be monitored through CREO

No.	Reference to EU F-gas legislation	Obligation	How it will be monitored through CREO
1	517/2014 Art. 3(2)	Operators of equipment that contains fluorinated greenhouse gases shall take precautions to prevent the unintentional release ('leakage') of those gases. They shall take all measures which are technically and economically feasible to minimize leakage of fluorinated greenhouse gases	Based on information contained in equipment logbook it will be possible to judge whether the operator fulfilled this obligation.
2	517/2014 Art. 3(3)	Where a leakage of fluorinated greenhouse gases is detected, the operators shall ensure that the equipment is repaired without undue delay. Where the equipment is subject to leak checks under Article 4(1), and a leak in the equipment has been repaired, the operators shall ensure that the equipment is checked by a certified natural person within one month after the repair to verify that the repair has been effective.	The system will alert the Operator of the approaching deadline of mandatory leakage check as well as of approaching deadline for checking whether leakage repair has been effective. When the records of activities that need certificate conducted on equipment by service technician will be made in the logbook the system will not allow to make records if the valid certificate number of service technician is not provided.
3	517/2014 Art. 3(4)	Natural persons carrying out the tasks referred to in points (a) to (c) of Article 10(1) shall be certified in accordance with Article 10(4) and (7) and shall take precautionary measures to prevent leakage of fluorinated greenhouse gases. Undertakings carrying out the installation, servicing, maintenance, repair or decommissioning of the equipment listed in points (a) to (d) of the Article 4(2) shall be certified in accordance with Article 10(6) and (7) and shall take precautionary measures to prevent leakage of fluorinated greenhouse gases.	Format of certificate number of service technician will be validated by the system Format of certificate number of service company will be validated by the system
4	517/2014 Art. 4(1)	Operators of equipment that contains fluorinated greenhouse gases in quantities of 5 tonnes of CO_2 equivalent or more and not contained in foams shall ensure that the equipment is checked for leaks.	The system will allow to establish the logbook only for equipment containing 5 tonnes of CO_2 of F-gas or more (the quantity of F-gas in

		Electrical switchgear shall not be subject to leak checks under this Article provided […] it contains less than 6 kg of fluorinated greenhouse gases	tonnes of CO_2 eq will be automatically calculated from the entries in kilograms made by the operator). However, in the case of electrical switchgear, the system will allow to establish the logbook only for equipment containing 6 kg or more of SF_6
5	517/2014 Art. 4(3)	The leak checks pursuant to paragraph 1 shall be carried out with the following frequency: (a) for equipment that contains fluorinated greenhouse gases in quantities of 5 tonnes of CO_2 equivalent or more, but of less than 50 tonnes of CO_2 equivalent: at least every 12 months; or where a leakage detection system is installed, at least every 24 months; (b) for equipment that contains fluorinated greenhouse gases in quantities of 50 tonnes of CO_2 equivalent or more, but of less than 500 tonnes of CO_2 equivalent: at least every six months or, where a leakage detection system is installed, at least every 12 months; (c) for equipment that contains fluorinated greenhouse gases in quantities of 500 tonnes of CO_2 equivalent or more: at least every three months or, where a leakage detection system is installed, at least every six months.	The leakage checks will be recorded in the logbook. The system will alert the Operator of the deadline of mandatory leakage check.
6	517/2014 Art. 5(1)	Operators of the equipment listed in points (a) to (d) of Article 4(2) and containing fluorinated greenhouse gases in quantities of 500 tonnes of CO_2 equivalent or more, shall ensure that the equipment is provided with a leakage detection system which alerts the operator or a service company of any leakage.	The presence or absence of leakage detector will be recorded in the logbook
7	517/2014 Art. 5(3)	Operators of the equipment listed in points (a) to (d) and (g) of Article 4(2) that is subject to paragraph 1 or 2 of this Article shall ensure that leakage detection systems are checked at least once every 12 months to ensure their proper functioning. Operators of the equipment listed in point (f) of Article 4(2) that is subject to paragraph 2 of this Article shall ensure that leakage detection systems are checked at least once every 6 years to ensure their proper functioning.	If the leakage detector will be installed the system will alert the Operator of the approaching deadline of checking that detector
8	517/2014 Art. 6(1)	Operators of equipment which is required to be checked for leaks pursuant to Article 4(1), shall establish and maintain records for each piece of such equipment specifying the following information: (a) the quantity and type of fluorinated greenhouse gases installed; (b) the quantities of fluorinated greenhouse gases added during installation, maintenance or servicing or due to leakage;	All that data will be inserted in the logbook at the time it is established or will be recorded in the logbook at a time the relevant activity will be conducted on equipment.

		(c) whether the quantities of installed fluorinated greenhouse gases have been recycled or reclaimed, including the name and address of the recycling or reclamation facility and, where applicable, the certificate number; (d) the quantity of fluorinated greenhouse gases recovered; (e) the identity of the undertaking which installed, serviced, maintained and where applicable repaired or decommissioned the equipment, including, where applicable, the number of its certificate; (f) the dates and results of the checks carried out under Article 4(1) to (3); (g) if the equipment was decommissioned, the measures taken to recover and dispose of the fluorinated greenhouse gases. The records referred to in paragraph 1 shall be made available, on request, to the competent authority.	The system will allow the Operator to print out the logbook containing all records in a pdf format. During the control such pdf will be made available to the environmental inspector by the Operator on his/her request. MoARDE may request such pdf from the Operator at anytime. MoARDE may also create statistics from the system where the relevant aggregated data (or data concerning specific Operator) will be included.
9	517/2014 Art. 8(1)	Operators of stationary equipment or of refrigeration units of refrigerated trucks and trailers that contain fluorinated greenhouse gases not contained in foams shall ensure that the recovery of those gases is carried out by natural persons that hold the relevant certificates provided for by Article 10, so that those gases are recycled, reclaimed or destroyed.	Recovery will be recorded in the logbook, so it will be possible to check whether it was done.
10	517/2014 Art. 11(3)	From 1 January 2020, the use of fluorinated greenhouse gases, with a global warming potential of 2 500 or more, to service or maintain refrigeration equipment with a charge size of 40 tonnes of CO_2 equivalent or more, shall be prohibited. This paragraph shall not apply to military equipment or equipment intended for applications designed to cool products to temperatures below – 50 °C. The prohibition referred to in the first subparagraph shall not apply to the following categories of fluorinated greenhouse gases until 1 January 2030: (a) reclaimed fluorinated greenhouse gases with a global warming potential of 2 500 or more used for the maintenance or servicing of existing refrigeration equipment, provided that they have been labelled in accordance with Article 12(6);	The logbooks established for equipment to which this prohibition refers to can be easily identified by the system, so it will be easy to check whether any F-gas with GWP 2 500 or higher (either virgin or recycled/reclaimed) has been added to that equipment

		(b) recycled fluorinated greenhouse gases with a global warming potential of 2 500 or more used for the maintenance or servicing of existing refrigeration equipment provided they have been recovered from such equipment. Such recycled gases may only be used by the undertaking which carried out their recovery as part of maintenance or servicing or the undertaking for which the recovery was carried out as part of maintenance or servicing.	
11	1516/2007 Art. 2(1)	The operator shall indicate his name, postal address and telephone number in the records referred to in Article 3(6) of Regulation(EC)No842/2006, hereinafter 'equipment records'.	These data will be included in the logbook.
12	1516/2007 Art. 2(2)	The fluorinated greenhouse gas charge for the refrigeration, air conditioning or heat pump equipment shall be indicated in the equipment records.	The F-gas charge will be included in the logbook in both kilograms and tonnes of CO_2 eq (the system will automatically calculate number of tonnes of CO_2 eq based on number of kilograms).
13	1516/2007 Art. 2(3)	Where the fluorinated greenhouse gas charge for refrigeration, air conditioning or heat pump equipment is not indicated in the manufacturer's technical specifications or on the label of that system, the operator shall ensure that it is determined by certified personnel.	Based on the information received from service technician the Operator will be able to edit the logbook and change the quantity of F-gas contained in equipment that was inserted in the logbook.
14	1516/2007 Art. 2(4)	Where the cause of the leakage has been identified, it shall be indicated in the equipment records.	It will be mandatory to record the cause of leakage in the logbook.
15	1516/2007 Art. 8(1)	The operator shall ensure that the repair is carried out by personnel certified to undertake that specific activity.	When the records of activities that need certificate conducted on equipment by service technician will be made in the logbook the system will not allow to make records if the valid certificate number of service technician is not provided.
16	1516/2007 Art. 8(2)	The operator shall ensure that a leakage test with Oxygen Free Nitrogen (OFN) or another suitable pressure testing and drying gas is carried out where necessary, followed by evacuation, recharge and leakage-test.	The records in the logbook will show whether leakage test was conducted after repair has been completed.
17	1516/2007 Art. 10	Newly installed equipment shall be checked for leakage immediately after they have been put into service.	Records in the logbook will show whether this requirement has been fulfilled.

18	1497/2007 Art. 2(1)	The operator shall indicate his name, postal address and telephone number in the records referred to in Article 3(6) of Regulation(EC)No842/2006, hereinafter 'equipment records'.	These data will be included in the logbook.
19	1497/2007 Art. 2(2)	The fluorinated greenhouse gas charge for the fire protection system shall be indicated in the system records.	The F-gas charge will be included in the logbook in both kilograms and tonnes of CO_2 eq (the system will automatically calculate number of tonnes of CO_2 eq based on number of kilograms).
20	1497/2007 Art. 2(3)	Where the fluorinated greenhouse gas charge for fire protection system is not indicated in the manufacturer's technical specifications or on the label of that system, the operator shall ensure that it is determined by certified personnel.	Based on the information received from service technician the Operator will be able to edit the logbook and change the quantity of F-gas contained in equipment that was inserted in the logbook.
21	1497/2007 Art. 5(1)	The operator shall ensure that a (leakage) repair or a replacement is carried out by personnel certified to undertake that specific activity	When the records of activities that need certificate conducted on equipment by service technician will be made in the logbook the system will not allow to make records if the valid certificate number of service technician is not provided.
22	1497/2007 Art. 5(2)	The operator shall ensure that (after leakage has been repaired) a leakage test is carried out prior to recharging.	The records in the logbook will show whether leakage test was carried out prior to recharging.
23	1497/2007 Art. 7	Newly installed systems shall be checked for leakage immediately after they have been put into service.	The records in the logbook will show whether this requirement has been fulfilled.

Obligations resulting from the EU F-gas legislation that may be monitored through DBR

No.	Reference to EU F-gas legislation	Obligation	How it will be monitored through DBR
1	517/2014 Art. 11(1) and 11(2)	The use of sulphur hexafluoride in magnesium die-casting and in the recycling of magnesium die-casting alloys shall be prohibited. The use of sulphur hexafluoride to fill vehicle tyres shall be prohibited.	Reports on any of such use will be easy to identify during report verification procedure.
2	517/2014 Art. 14(1) and 14(2)	From 1 January 2017 refrigeration, air conditioning and heat pump equipment charged with hydrofluorocarbons shall not be placed on the market unless hydrofluorocarbons charged into the equipment are accounted for within the quota system referred to in Chapter IV. When placing pre-charged equipment as referred to in paragraph 1 on the market, manufacturers and importers of equipment shall ensure that compliance with paragraph 1 is fully documented and shall draw up a declaration of conformity in this respect.	It will be easy to check during verification of the reports whether the importer of RAC&HP equipment containing HFCs did not have authorization for the use of quota or exceeded the quantity that has been authorised for use.
3	517/2014 Art. 15(2)	Producers and importers shall ensure that the quantity of hydrofluorocarbons calculated in accordance with Annex V that that each of them places on the market does not exceed their respective quota allocated pursuant to Article 16(5) or transferred pursuant to Article 18.	It will be easy to check during verification of the reports whether the importer of HFCs imported these substances without quota or exceeded the quota.
2	517/2014 Art. 19(1) – 19(5) and Annex VII	Mandatory annual reporting by: - importers/exporters of 1 ton 100 tons of CO_2 eq or more F-gases and other fluorinated substances per year[36] - importers/exporters of products and equipment containing 500 tons of CO_2 eq or more F-gases or other fluorinated substances per year - destroyers of F-gases and other fluorinated substances - entities that use F-gases as feedstock - entities that received HFC quotas of data specified in Annex VII to Regulation 517/2014	The registration of importers/exporters in DBR will be mandatory and the system will send reminders to those Reporting Entities which did not send reports 15 working days before the deadline set up in the legislation. The reports will be automatically verified by the system and later verified by dedicated MoARDE officers before final approval.
3	517/2014 Art. 19(6)	Submission of statement by independent auditor if the quantity of HFCs imported in bulk exceeds 10 000 tons of CO_2 eq.	The report will not be approved if the required auditor's report has not been submitted. (if MoARDE decides to set up the limits for which audit will be required)

[36] Other fluorinated substances are gases listed in Annex II to Regulation 517/2014, e.g. HFOs

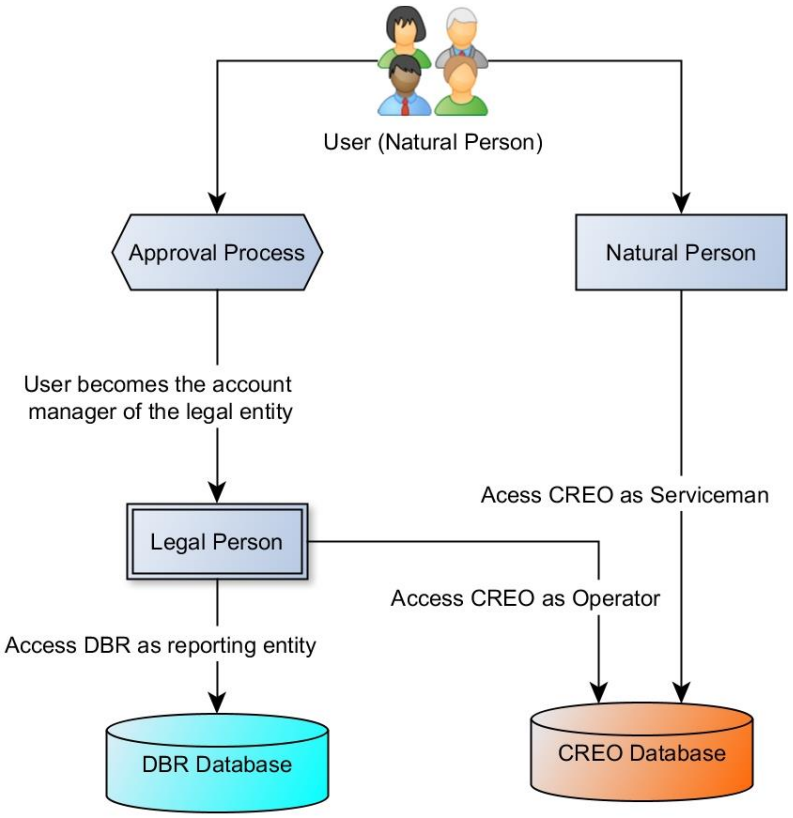
4	517/2014 Art. 20	Establishment of reporting system to acquire data on emissions from different sectors where the F-gases are used	Reports submitted by the users of F-gases in different sectors will contain data on F-gas quantities lost, specifically quantities lost due to emission.
5	517/2014 Annex III	Prohibitions of placing on the market specific products and equipment containing specific F-gases (or relying on specific F-gases)	Reports on imports of any of such product or equipment will be easy to identify during verification procedure.

Annex 4

Proposed structure of account management within the 'Register of chemicals placed on the market of the Republic of Moldova' (SIA REPC)

Natural persons register/login to the system with their credentials. If the user is the legal representative of a legal entity (company or branches of a company), he/she needs to provide the legal documents and get approval via systems- see the scheme below.

Accessing CREO and DBR via REPC



This approval process involves the registration of the legal entity if it had not been introduced to REPC before. Once he/she is approved, he/she can access applications as the legal entity representative. The legal representative can assign new account managers for the legal entity and give access rights to other natural persons registered to REPC.

However, if any additional data or document is needed for CREO and DBR an internal approval mechanism can be introduced. The additional data might be the proof whether the operator or reporting entity is subject to related regulation or serviceman certificate details. The MoARDE should decide if there should be an internal approval process and/or the additional data is needed.

Annex 5

Reporting form for Chemicals pursuant to Article 29 of Law No. 277 (Annex 4)

1. General data														
Name of the company														**Stamp of the Authority**
Address														
Telephone number			Company registration no											
Fax number			Contact person in the company											
E-mail														
2. Product name	**3. No. of variants** (for paints, varnishes, polymers)		**4. Registration no.** (for pesticides registered in RM)		**5. Origin of produce** (check one or more options)									
					Production		Import		Origin EU / EEA		Renaming			
6. Joint designation / *Kit*	**7. Quantity**		**8. Product intended for home use**		**9. No. according to customs tariff**	**10. VOC (compounds and volatile organic) (g / l)** (mark the appropriate category)								
						A						**B**		
	Tone	An	Da	Nu		**a**	**b**		**d**	**e**	**f**	**a**	**b**	**c**
						g	**h**	**i**	**j**	**k**	**l**	**Total VOC content, g/l**		
11. Product category (use) (specify your functional code)	**12. Sector of use (**specify the trade code of NACE [1])		**15. D** for distribution	**14. P** for own use	**15. For products with customs tariff which starts 28[2] or 29[3] – dstimated distribution between sectors of use in%**							**16. The total share of export%**		

17. Product Classification (Classification in accordance with Regulation on classification, labeling and packaging of substances and mixtures)		
Hazard statement		Pictogram (code)

Obligation to provide the information is applied on the basis of the Law on chemicals no. 277/2018.

_____ _____ _____

Date Signature[4] Name

This information could be used for official statistics.

_____

[1] NACE (Nomenclature of Economic Activities in the European Community) is harmonized in the national legislation by CAEM (Classification of Activities in the Moldovan Economy).
[2] The products of Chapter 28 of the Combined Goods Nomenclature of the Republic of Moldova: Inorganic Chemicals; inorganic or organic compounds of precious metals, radioactive elements, rare earth metals or isotopes.
[3] The products in Chapter 29 of the Combined Nomenclature of Goods of the Republic of Moldova: Organic Chemicals.
[4] The form must be signed by the legal representative, usually by the person authorized to sign on behalf of the company.

18. COMPOSITION OF THE PRODUCT

Chemical name	CAS no.	Concentration (percentage by weight)	Conservants (c) Active subsnatnces in biociedes/ (Ab)
Substances			
Other substances, with more than 5% of weight:			
Substances in products of Chapter 22, 28 or 29, including impurities with a concentration of 1% by weight or more::			

Date_____

Information provided by _____

(name of the company)

Notes:

1. Give the chemical name / CAS number and the concentration for:

- substances known to be hazardous to health or the environment,
- other substances included, with more than 5% by mass;
- substances in products of Chapter 225, 28 or 29 of the Combined Nomenclature of the Republic of Moldova, including impurities with a concentration of 1% or more by weight.

2. For substances included as preservatives - specify C.

For active substances in biodistructive products - Ab will be specified.

3. Concentrations in the range of 0-1% must be accurately indicated. Other concentrations may be rounded up to the nearest whole percentage..

_____

[5] The products of chapter 22 of the Combined Goods Nomenclature of the Republic of Moldova: Beverages, alcoholic liquor and vinegar.

Annex 6

Examples of entities registered in CREO or DBR

1) A Municipal Office in some city - will only be registered in CREO through REPC as Equipment Operator in order to establish and manage the logbook/logbooks for their AC equipment (and possibly also fire protection system) containing 5 tons of CO_2 eq or more of F-gases. The Contact Person (or Contact Persons) may need to be designated by the Operator's Account Manager who will most probably be the Head of the Office and who will not establish and manage the logbook/logbooks himself.

(2) A farm that produces milk - will only be registered in CREO through REPC as Equipment Operator in order to establish and manage the logbook/logbooks for their milk cooler/coolers (and possibly also AC equipment) containing 5 tons of CO_2 eq or more of F-gases. They may not need any Contact Person to be designated by the Operator's Account Manager who will be the farmer who owns the farm and who will most probably establish and manage the logbook/logbooks himself

(3) A private-owned city shop - will only be registered in CREO through REPC as Equipment Operator in order to establish and manage the logbook/logbooks for their refrigeration equipment (and possibly also AC equipment) containing 5 tons CO_2 eq or more of F-gases. They may not need any Contact Person to be designated by the Operator's Account Manager who will be the shop owner and who will most probably establish and manage the logbook/logbooks himself

(3) A small servicing company (eg. in RAC&HP sector or in fire protection sector) - will only be registered in DBR through REPC as Reporting Entity in order to submit their annual report on F-gases. They may not need any Contact Person to be designated by the Reporting Entity's Account Manager who will be the owner of the service company and will most probably draft and submit reports to DBR himself.

(4) A Power Station - will most probably only be registered in CREO through REPC as the Equipment Operator in order to establish the logbook/logbooks for their electrical switchgear equipment (and possibly also AC equipment) containing 5 tons CO_2 eq or more of F-gases. (for electrical switchgear - 6 kg or more of SF_6). They may need a Contact Person to be designated by the Operator's Account Manager who will be the Manager of the Power Station and who will most probably not establish and manage the logbooks himself.

(5) A Bank with many branches, but with a single VAT number for the whole Bank - will only be registered in CREO through REPC as Equipment Operator in order to establish the logbook/logbooks for their AC equipment (and possibly also fire protection equipment) containing 5 tons CO_2 eq or more of F-gases. They may need a separate Contact Person for each branch to be designated by the Operator's Account Manager who will be the President of the Bank and who will most probably not establish and manage the logbooks himself.

(6) A supermarket network with many shops and with separate VAT number for each shop - each of the shops with separate VAT number will be registered in CREO through REPC as Equipment Operator in order to establish and manage the logbook/logbooks for their RAC&HP equipment containing 5 tons CO_2 eq or more of F-gases. They may need a separate Contact Person for each shop to be designated by the Operator's Account Manager for each shop who will be the manager of the shop and will most probably not establish and manage the logbooks himself.

(7) A private house owner - will only be registered in CREO through REPC as Equipment Operator in order to establish and manage the logbook for his heat pump or AC equipment containing 5 tons of CO_2 or more eq of F-gases. He will be Operator's Account Manager himself and may not need to designate a Contact Person to deal with his logbook.

(8) An importer/exporter of F-gases or F-gas-containing equipment – will only be registered in DBR through REPC as reporting Entity in order to submit its annual report to DBR (unless it has in its office a big AC equipment that needs to be registered in CREO). They may need a Contact Person to be designated by the Reporting Entity's Account Manager who will be a president of that company and will not be drafting and submitting reports himself.

Annex 7

The scope of the statistics containing aggregated data created by the system in CREO for the MoARDE and for the operators

Statistics for the MoARDE:

1. Selection of the statistics type *(tick the appropriate report type below)*

- Number of Operators
- List of Operators
- Quantity of substance in equipment
- Quantity of substance recovered from equipment
- Quantity of substance added to equipment
- List of Operators who have not yet established any logbook
- List of Operators who added the particular substance to equipment

2. Selection of the criteria for creating the statistics *(tick the appropriate criteria below)*

- Range of dates *(select from the displayed calendar)*
- Select which logbooks are to be taken into account
    - Only open
    - Only closed
    - All
- Select the equipment category *(selection from the list)*
- Select the equipment sub-category (selection from the list)
- Select the substance (or mixture) *(selection from the list)*
- Operators
- Province
- Reason for closing the logbook

3. Selection of the way the results will be displayed *(tick the appropriate way of display of the results below)*

- Substances/mixtures
- Equipment type
- Ranges of the substance/mixture contained in the equipment (3 to less than 30 kg, 30 to less than 300 kg, 300 and more kg)
- Ranges of the substance/mixture contained in the equipment (5 tons of CO_2 eq to less than 50 tons of CO_2 eq, 50 tons of CO_2 eq to less than 500 CO_2 eq, 500 CO_2 eq or more)
- Provinces
- Reasons for closing the logbook

Statistics for the Operator:

1. **Selection of the statistics type** *(tick the appropriate report type below)*

    - Quantity of substance in equipment
    - Quantity of substance recovered from equipment

- Quantity of substance added to equipment

2. **Selection of the criteria for creating the statistics** *(tick the appropriate criteria below)*

   - Range of dates (select from the displayed calendar)
   - Select which logbooks are to be taken into account
     - Only open
     - Only closed
     - All
   - Select the equipment category (selection from the list)
   - Select the equipment sub-category (selection from the list)
   - Select the substance (or mixture) (selection from the list)

3. **Selection of the way the results will be displayed** *(tick the appropriate way of display of the results below)*

   - Substances/mixtures
   - Equipment type
   - Ranges of the substance/mixture contained in the equipment (3 to less than 30 kg, 30 to less than 300 kg, 300 and more kg)
   - Ranges of the substance/mixture contained in the equipment (5 tons of CO_2 eq to less than 50 tons of CO_2 eq, 50 tons of CO_2 eq to less than 500 CO_2 eq, 500 CO_2 eq or more)

Annex 8

The scope of statistics containing aggregated data created by the system in DBR for the MoARDE

Provide the year for which the statistics are to be created:

Provide the data to be aggregated:

- Amount of substances or mixtures/number of Reporting Entities List of Reporting Entities which submitted reports
- List of Reporting Entities which did not submit reports
- „List of Reporting Entities which have only compiled a draft report"
- List of Reporting Entities which did not submit corrected reports which were marked as „Not acceptable"
- Type of substance or mixture
    - Only bulk
        - Imported
        - Exported
        - Purchased/sold in Turkey
        - Used
        - Recovered/recycled/reclaimed/destroyed
        - Stored
        - Lost
    - Only contained in products or equipment
        - Imported
        - Exported
    - All
        - Imported
        - Exported

Criteria for the statistics

- Submission date *(selection from the displayed calendar)*
- Province *(selection from the list)*
- Reporting Entity
- Substance/mixture *(selection from the list)*
- Product/equipment *(selection from the list)*
- Use *(selection from the list)*

Grouping of the results

- Substances/mixtures (Amounts of specific substances/mixtures)
- Reporting Entities (Total amount of substance/mixture for each entity)
- Provinces (Total amount of substances/mixtures for each province)
- Products/equipment (Total amount of substances/mixtures for specific types of products/equipment)
- Use (Total amount of substances/mixtures applied for specific use)