
**NATIONAL SURVEY ON ODS ALTERNATIVES IN
the REPUBLIC OF MOLDOVA (2016)**

**National Ozon Unit,
Ministry of Environment of the Republic of
Moldova**

**National expert Marius TARANU
NOU Coordinator Anatol TARITA**

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- ***The scope of work*** was to collect consumption data for ODS alternatives used in the country and the key sectors/subsectors where they are used:
refrigeration and air-conditioning (RAC) servicing sector (industrial, commercial, mobile air conditioning (MAC), stationary air-conditioning sub-sectors), and aerosol (technical products and/or metered dose inhalers); foam; solvents; and fire extinguishers.

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■ **Used information:**

Various stakeholders (importers, exporters, original equipment manufacturers and after-sales service providers);

Ministry of Environment, assisted by National Ozone Unit and Climate Change Office;

Customs Service;

Agency for Energy Efficiency;

State Ecological Inspectorate;

Ministry of Agriculture and Food Industry;

National Bureau of Statistics;

RAC Association;

End-users;

Media institutions and NGOs.

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- ⑩ **Methodological Approaches Implied for Data Collection**
 - **“Top-down”** - relevant import data from Custom Service and National Bureau of Statistics, etc.
 - **“Bottom-up”** - actual consumption in the different sub sectors for existing refrigeration and air-conditioning equipment. Particularly data from the **companies that assemble, install and servicing refrigeration and AC equipment** including composition and amount of refrigeration equipment installed during 2012-2015, also data about filling leakage of ODS alternatives in refrigerating equipment.

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Stationary Air-Conditioning Sector

Equipment import data in Stationary Air-Conditioning Sector 2006-2015

Year	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015
Total, units	11,308	38,291	36,172	8,287	17,607	28,055	25,871	32,607	17,177	12,129

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■ AC - the most commonly used refrigerant agents in the country are R-22, HFC-410A and HFC-407C.

Equipment import data by type of refrigerant (2006 to 2015).

Year	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015
HFC-410A based	3,392	12,636	12,660	3,066	6,867	11,503	11,125	14,673	8,073	6,065
HFC-407C based	2,262	8,424	8,681	2,155	5,106	7,855	6,726	7,826	3,779	2,426
R-22 based	5,654	17,231	14,831	3,066	5,634	8,697	8,020	10,108	5,325	3,639

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- Industrial Refrigeration Sector

industrial refrigeration includes the following categories of businesses:

- **Large-scale industrial enterprises**, which use cold processing of agricultural products such as meat, milk, fish, fruit and vegetables. It also includes companies from wine making industry, the confectionery, beer and soft drinks. Most of these businesses use centralized system for cooling.
 - **Small-scale refrigerators** that are placed in locations where aggregation of agricultural products take place. These refrigerators have a lower capacity and are equipped with systems of average cooling capacity, being used for prior cooling of milk and other agricultural products.
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- around 692 cold stores (of which 368 HFCs-based) were operational in the Republic of Moldova (except municipality of Chisinau) in the year of 2015, of which around 70% were built from 2011 onwards.
 - Cold storage facilities work based on HCFC-22, HFCs (HFC-404A, HFC-507) and ammonia (R-717).
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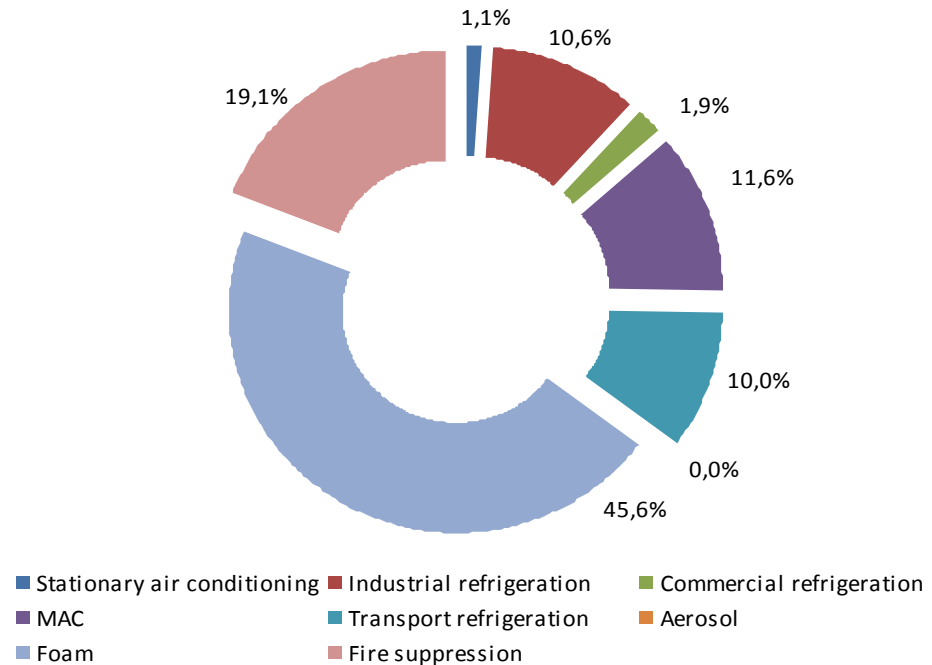
Summary of ODS Consumption

sectoral ODS consumption data from year 2011 to year 2015.

Sector		2011	2012	2013	2014	2015
Stationary air conditioning	In new equipment	22.44	20.70	26.09	13.74	9.70
	Servicing	6.50	7.49	8.70	9.16	9.42
Industrial refrigeration	In all equipment	414.06	412.96	202.49	237.86	154.25
	Servicing	64.51	61.94	30.37	35.68	23.14
Commercial refrigeration	In new equipment	11.81	10.37	10.12	10.37	10.39
	Servicing	18.70	19.85	20.64	21.30	21.79
MAC	In new equipment	61.41	76.16	91.99	128.50	170.25
	Servicing	9.21	11.42	13.80	19.28	25.54
Transport refrigeration	In new equipment	59.00	72.88	95.96	120.31	146.92
	Servicing	8.85	10.93	14.39	18.05	22.04
Aerosol	In new equipment	0.05	0.05	0.07	0.06	0.22
Foam	In new equipment	623.35	585.17	581.28	628.71	766.84
Fire suppression	In new equipment	130.86	189.18	227.84	231.40	189.84
	Servicing	183.69	206.84	688.13	193.11	130.86
Total		1,614.42	1,685.94	2,011.87	1,667.52	1,681.19

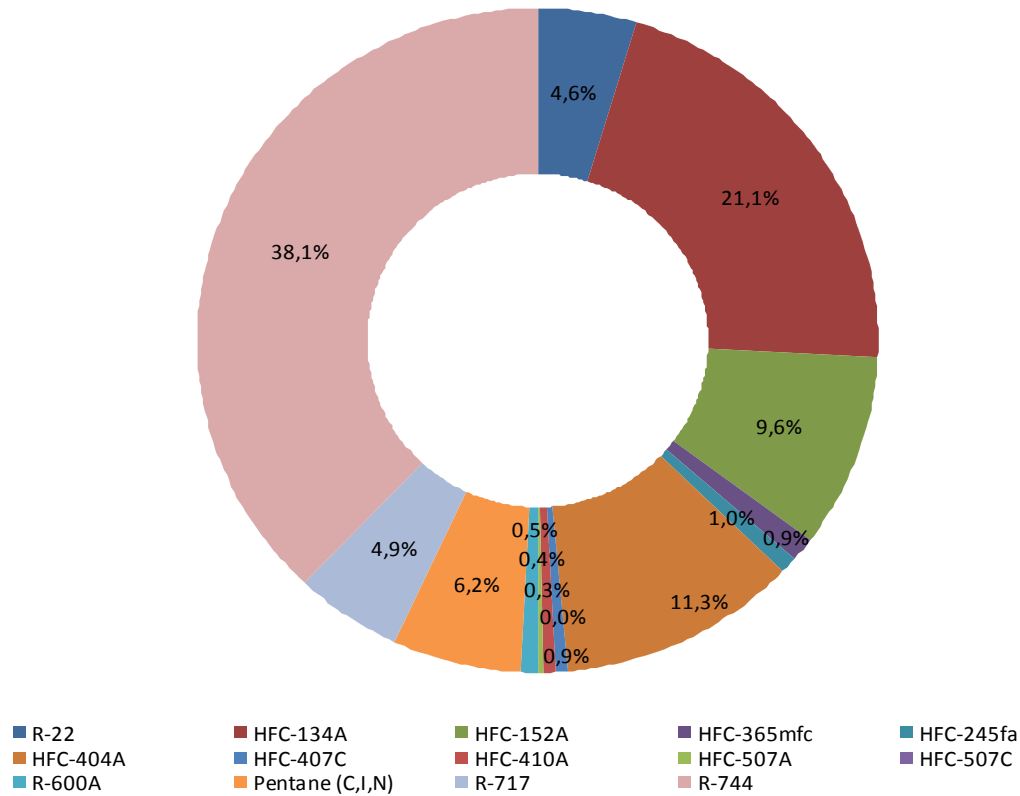
Summary of ODS Consumption

The foam sector accounts for largest share of consumption (45.6%) in year 2015. The second highest demand is observed in the fire suppression sector (19.1%), MAC sector accounts for 11.6%, industrial refrigeration sector for 10.6%, transport refrigeration for 10.0% commercial refrigeration sector for 1.9%, stationary air conditioning for 1.1% and aerosols for 0.01% of the total ODS consumption.



Summary of ODS Consumption

ODS agent by type in all sectors consumption for year 2015



Summary of ODS Consumption

- The **foam sector** consumption is driven mostly by the R-744 (41.7% from sectoral total), HFC-152A (21.0%), HFC-134A (19.4%) and Pentane (C,I,N) (13.5%).
- **The fire suppression** sector consumption is driven exclusively by the R-744, while the MAC and transport refrigeration sectors exclusively by HFC-134A, respectively by HFC-404A.
- The highest demand from **the industrial refrigeration sector** is associated with the consumption of R-717 (46.9% from the sectoral total), R-22 (39.3%), HFC-404A (6.9%), R-134A (3.7%), HFC-507A (2.7%), and HFC-407C (0.6%);
- **commercial refrigeration sector** is driven mostly by R-600A (44.7% from the sectoral total), HFC-404A (29.5%), HFC-134A (11.3%), HFC-407C (6.5%), R-22 (4.7%), HFC-507A (2.0%) and HFC-507C (1.2%).
- **AC sector** is associated with the consumption of HFC-410A (44.7% from sectoral total), R-22 (33.3%) and HFC-407C (22.0%).

Summary of ODS Consumption

		R-22	HFC-134A	HFC-152A	HFC-365mfc	HFC-245fa	HFC-404A	HFC-407C	HFC-410A
Stationary Air conditioning	In new equipment	2.91						1.94	4.85
	Servicing	3.46						2.27	3.69
Industrial refrigeration	In all equipment	60.60	5.71				10.57	0.94	
	Servicing	9.09	0.86				1.59	0.14	
Commercial refrigeration	In new equipment	0.00	0.22				3.65	0.88	
	Servicing	1.52	3.42				5.85	1.21	
MAC	In new equipment		170.25						
	Servicing		25.54						
Transport Refrigeration	In new equipment						146.92		
	Servicing						22.04		
Aerosol	In new equipment		0.22						
Foam	In new equipment		148.71	161.37	15.83	17.59			
Fire suppression	In new equipment								
	Servicing								
Subtotal	In new equipment	63.51	325.11	161.37	15.83	17.59	161.14	3.76	4.85
	Servicing	14.07	29.82	0.00	0.00	0.00	29.48	3.61	3.69
Total	Tonnes	77.59	354.93	161.37	15.83	17.59	190.62	7.38	8.54
	Per cent from the total	4.6	21.1	9.6	0.9	1.0	11.3	0.4	0.5

Summary of ODS Consumption

		HFC-507A	HFC-507C	R-600A	Pentane (C,I,N)	R-717	R-744	Total	%
Stationary Air conditioning	In new equipment							9.70	0.6
	Servicing							9.42	0.6
Industrial refrigeration	In new equipment	4.16				72.27		154.25	9.2
	Servicing	0.62				10.84		23.14	1.4
Commercial refrigeration	In new equipment	0.00	0.07	5.57				10.39	0.6
	Servicing	0.65	0.32	8.80				21.79	1.3
MAC	In new equipment							170.25	10.1
	Servicing							25.54	1.5
Transport Refrigeration	In new equipment							146.92	8.7
	Servicing							22.04	1.3
Aerosol	In new equipment							0.22	0.0
Foam	In new equipment				103.52		319.82	766.84	45.6
Fire suppression	In new equipment						189.84	189.84	11.3
	Servicing						130.86	130.86	7.8
Subtotal	In new equipment	4.16	0.07	5.57	103.52	72.27	509.66	1448.42	86.2
	Servicing	1.28	0.32	8.80	0.00	10.84	130.86	232.77	13.8
Total	Tonnes	5.43	0.39	14.37	103.52	83.11	640.52	1681.19	100.0
	Per cent from the total	0.3	0.0	0.9	6.2	4.9	38.1	100.0	

Import in bulk of ODS alternatives in the Republic of Moldova
within 2011-2015 periods, metric tons

Refrigerants	2011	2012	2013	2014	2015
R134A	12.0	13.1	16.4	22.3	36.3
R404A	15.6	5.8	12.6	20.7	29.6
R406A	7.8	7.3	12.0	13.5	8.9
R407C	2.0	2.3	1.5	1.7	2.3
R408A	0.2	0.2	0.2	0.4	0.2
R410A	1.1	1.1	5.7	3.4	3.8
R507C	4.0	4.3	7.7	5.1	20.9
R-600	1.4	1.2	2.7	2.8	1.6
R-717	57.0	55.0	33.0	31.0	10.1
R-22	23.8	34.2	18.8	13.8	14.9
Total	127.8	129.1	114.0	121.4	128.7



Thank you very much
for Your attention!
