Trends in total GHG emissions and associated variables in the Republic of Moldova within 1990-2013 periods

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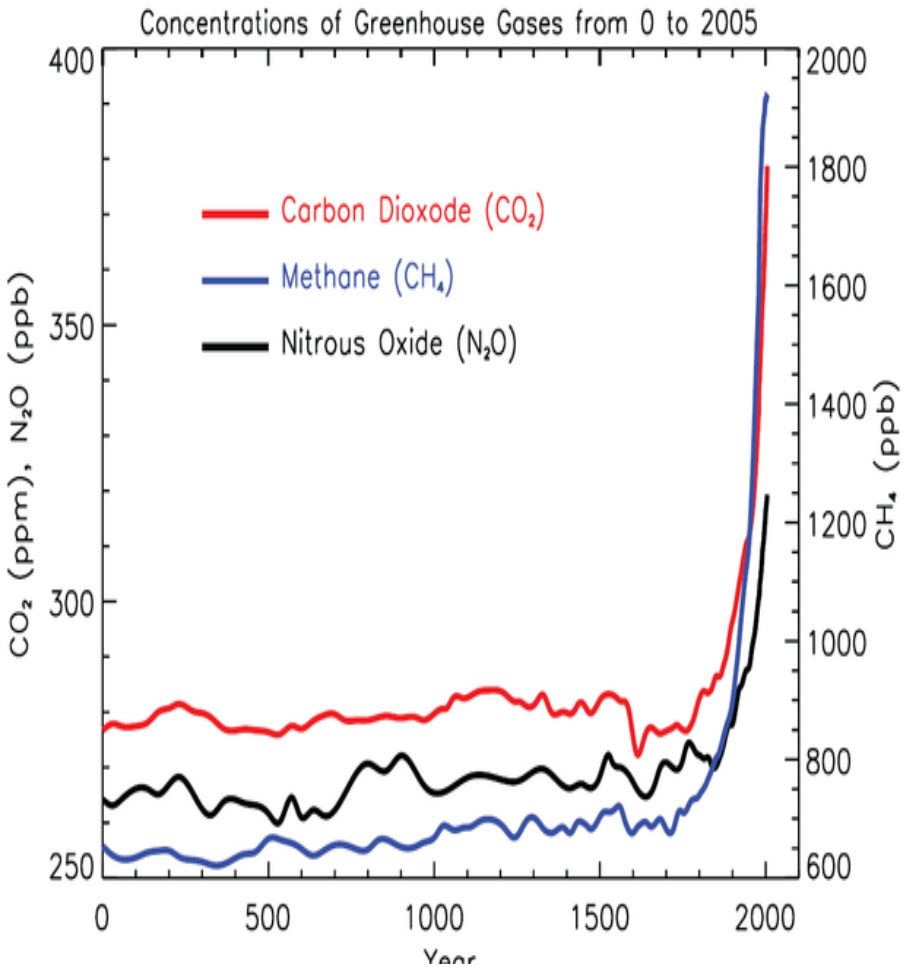
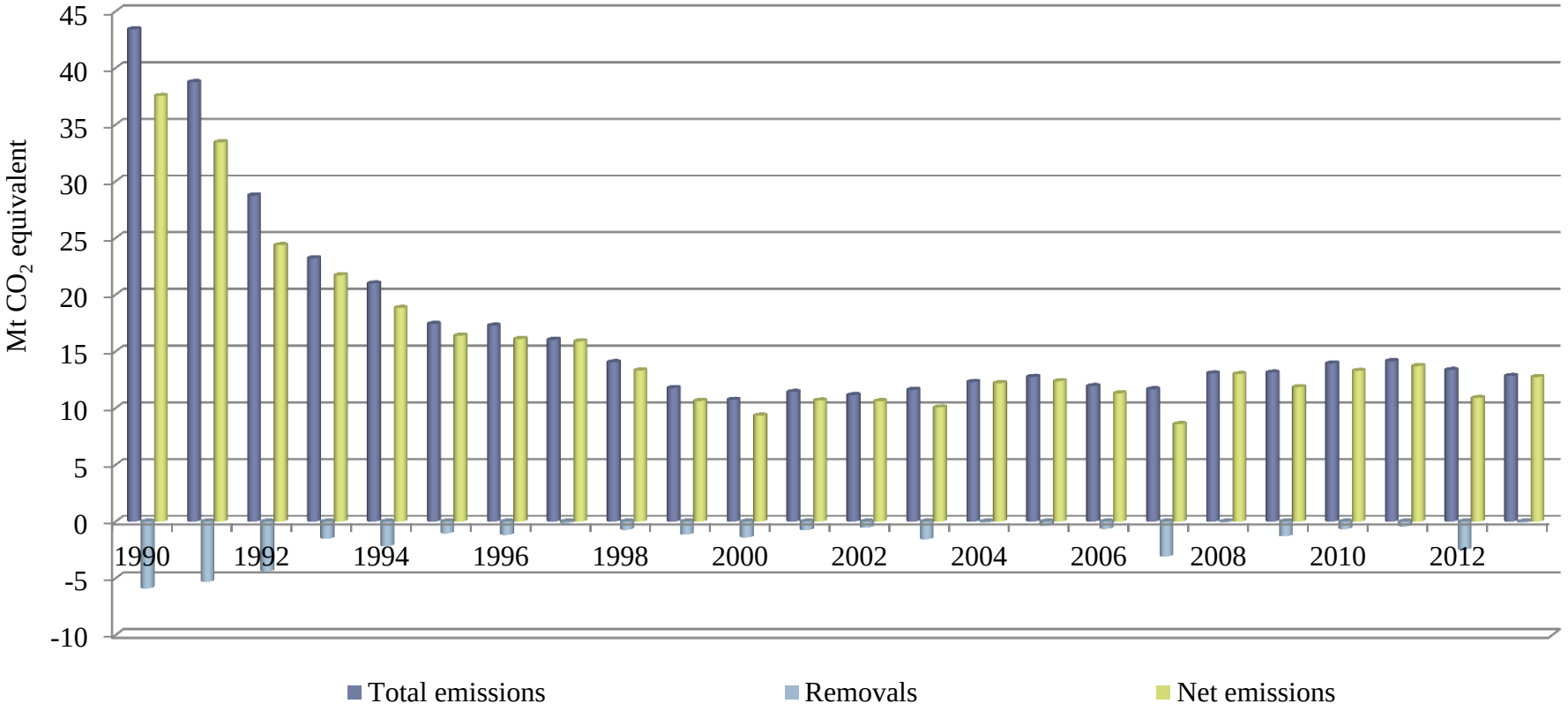
GHGs concentration in the atmosphere

- Since 1750 to 2013 the tropospheric concentration of **CO_2** increased by 41% (from **280.0** to **395.4** ppmv), that of **CH_4** by 162% (from **722** to **1893** ppbv), and that of **N_2O** by 21% (from **270** to **326** ppbv).
- The Global Warming Potential (GWP) for a period of 100 years available in the SAR (IPCC, 1996) were used to convert the direct GHG emissions in CO2 equivalent. (i.e., GWP_{CO2}= 1; GWP_{CH4}= 21; GWP_{N2O}= 310).

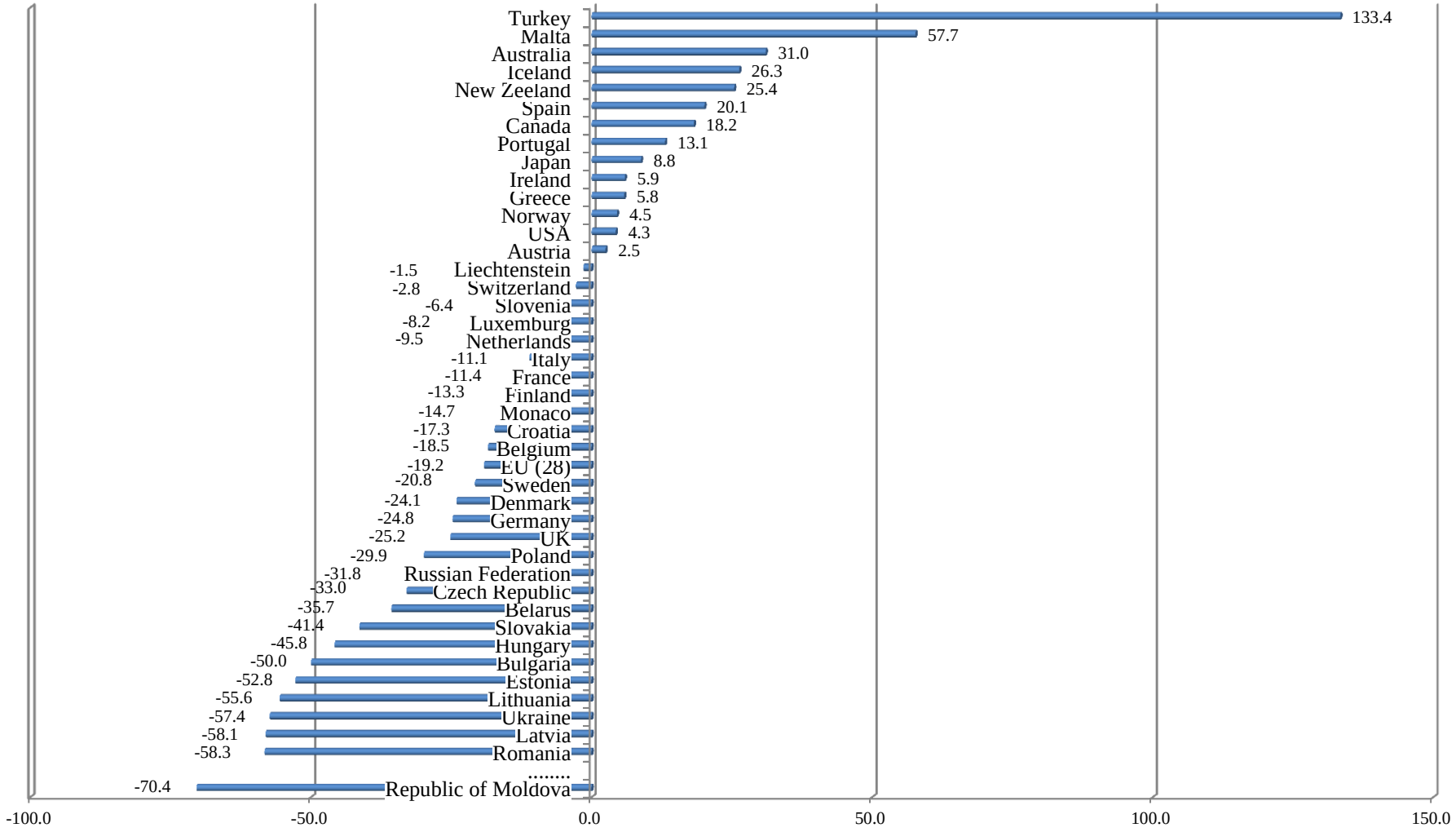


Direct GHG emissions trends

Between 1990 and 2013, the total direct GHG emissions dynamic, revealed a decreasing trend in the RM, reducing by 70.4 per cent: from 43.4 to 12.8 Mt CO2 equivalent.

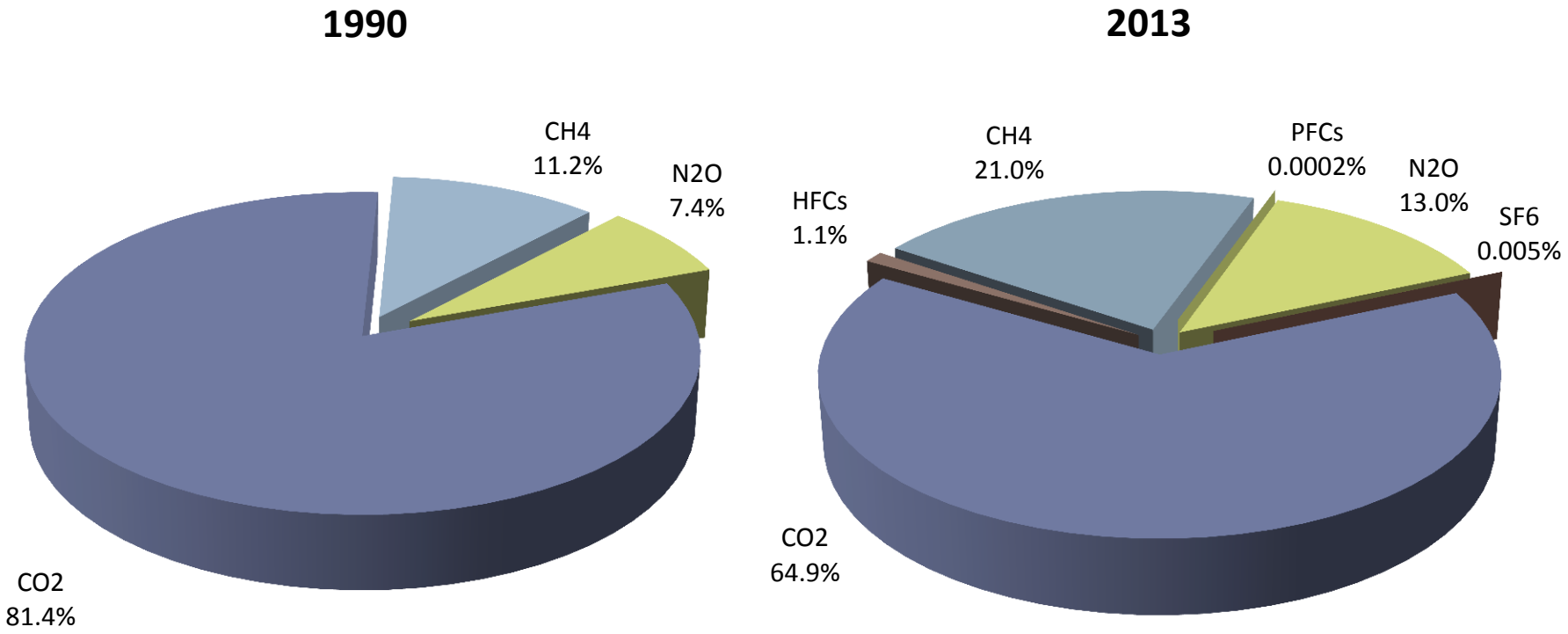


GHG Emissions from the RM and Annex I Parties to the Convention within 1990-2012/2013 (% compared to 1990)



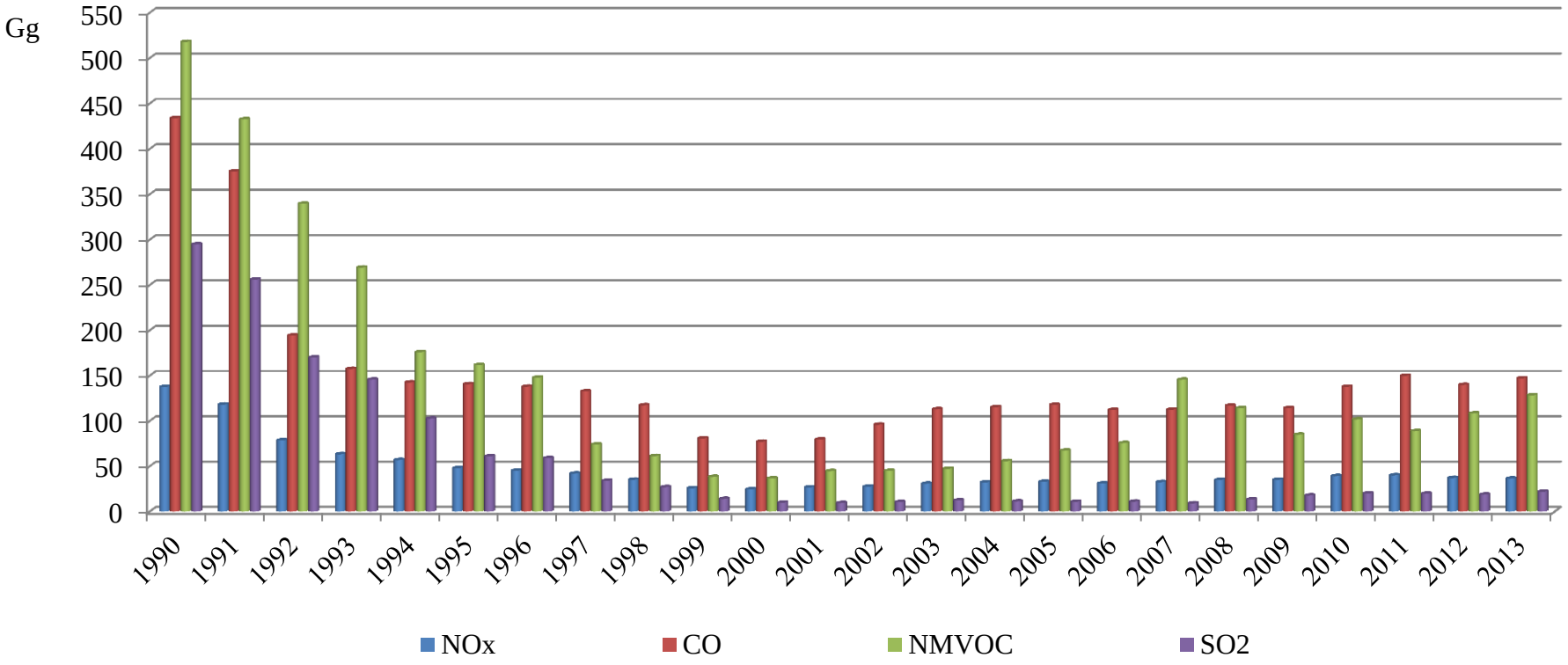
Direct GHGs share in the structure of total GHG emissions in the RM in 1990 and 2013 years

In the time periods from 1990 through 2013, the total CO2 emissions decreased by 76.4 per cent (from 35.3 to 8.3 Mt), while CH4 and N2O emissions decreased by 44.7 per cent (from 4.9 to 2.7 Mt CO2 eq.), respectively by 47.9 per cent (from 3.2 to 1.7 Mt CO2 eq.).



Ozone and Aerosol Precursors Emission Trends in the RM within 1990-2013

- In the time series from 1990 through 2013, NOx emissions decreased by 71.6 per cent: from 137.5 to 36.4 kt, CO emissions decreased by 68.3 per cent: from 433.9 to 147.0 kt, NMVOC emissions decreased by 80.4 per cent: from 517.8 kt to 128.3 kt, while SO2 emissions decreased by 93.2 per cent: from 294.8 kt to 21.9 kt .

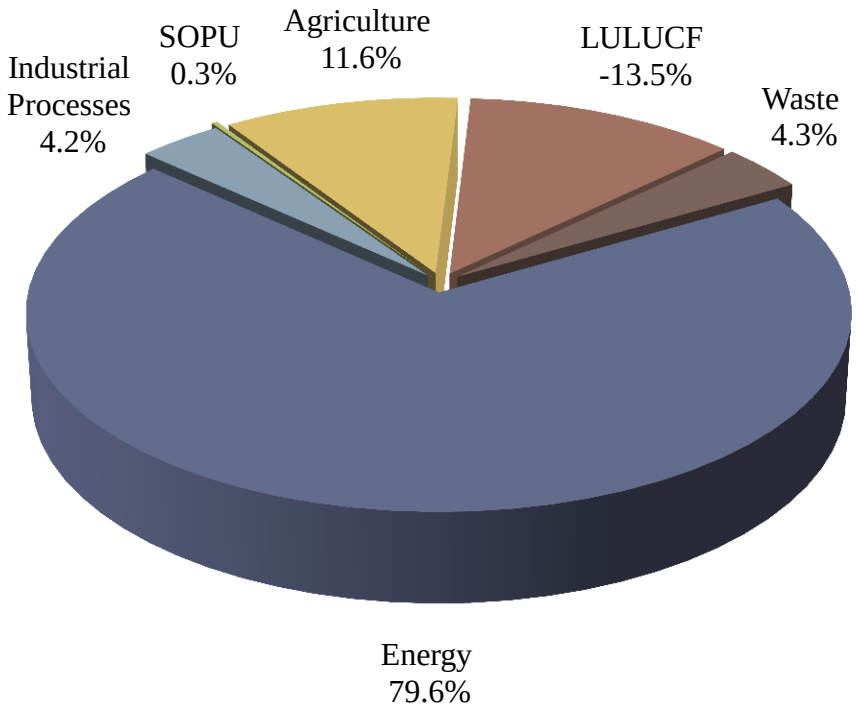


Direct Greenhouse Gas Emissions in the RM by Sector within 1990-2013, Mt CO2 equivalent

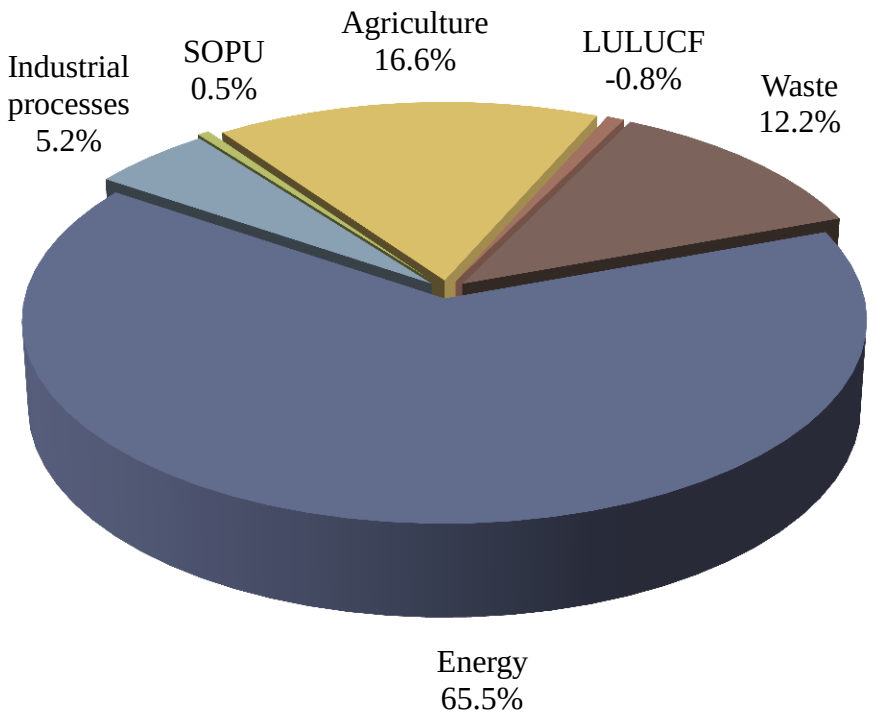
	1990	1991	1992	1993	1994	1995	1996	1997
1. Energy	34.5213	30.2217	21.3789	16.4721	15.0185	11.7222	11.9472	10.7884
2. Industrial Processes	1.8420	1.7560	1.1472	0.7394	0.6077	0.4784	0.4256	0.4778
3. SOPU	0.1261	0.1009	0.0764	0.0576	0.0438	0.0346	0.0300	0.0258
4. Agriculture	5.0639	4.6906	4.0899	3.9268	3.3627	3.2844	3.0403	2.9853
5. LULUCF	-5.8866	-5.2964	-4.3844	-1.5008	-2.1641	-1.0294	-1.1666	-0.1369
6. Waste	1.8655	1.9782	2.0621	2.0221	1.9587	1.9044	1.8209	1.7483
	1998	**1999**	**2000**	**2001**	**2002**	**2003**	**2004**	**2005**
1. Energy	9.2725	7.3732	6.6728	7.2688	6.9519	7.7253	8.1841	8.4684
2. Industrial Processes	0.3321	0.2971	0.2702	0.2620	0.3204	0.3715	0.4201	0.5605
3. SOPU	0.0195	0.0268	0.0288	0.0426	0.0363	0.0329	0.0417	0.0675
4. Agriculture	2.7514	2.5192	2.2899	2.4549	2.5085	2.1956	2.3790	2.3588
5. LULUCF	-0.7226	-1.1349	-1.3922	-0.7500	-0.5327	-1.5547	-0.1032	-0.3754
6. Waste	1.6686	1.5555	1.4690	1.3927	1.3247	1.2920	1.2795	1.2978
	2006	**2007**	**2008**	**2009**	**2010**	**2011**	**2012**	**2013**
1. Energy	7.6334	7.7455	8.3514	9.0709	9.6473	9.8255	9.4690	8.4046
2. Industrial Processes	0.6563	0.9385	1.0150	0.5137	0.5594	0.6011	0.6227	0.6726
3. SOPU	0.0772	0.0981	0.1328	0.1197	0.0612	0.0689	0.0759	0.0666
4. Agriculture	2.2656	1.5124	2.1006	1.9181	2.1007	2.0865	1.6400	2.1267
5. LULUCF	-0.6391	-3.0660	-0.0595	-1.2849	-0.6571	-0.4296	-2.4704	-0.0976
6. Waste	1.3109	1.3640	1.4589	1.5145	1.5707	1.5597	1.5567	1.5658

Sectoral Breakdown of the RM's total GHG Emissions within 1990-2013

1990



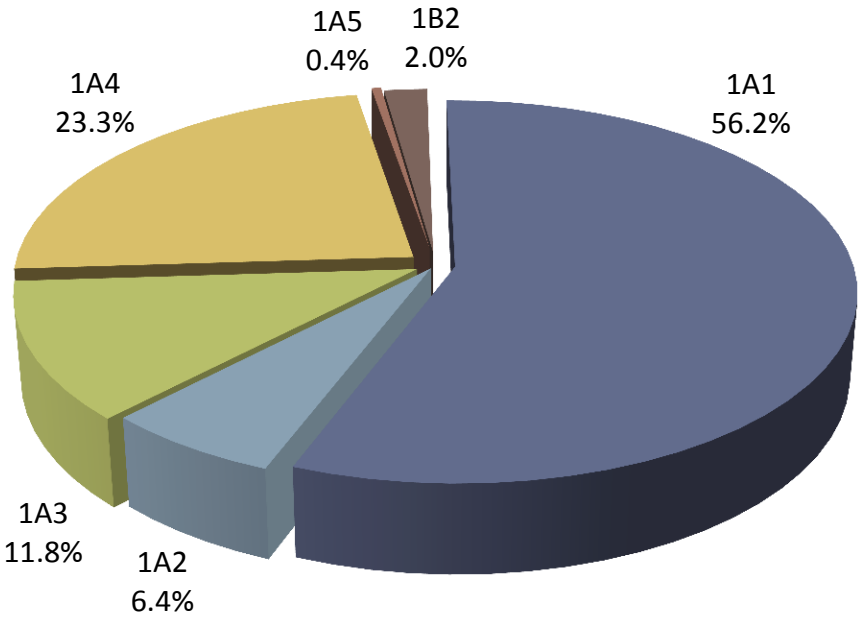
2013



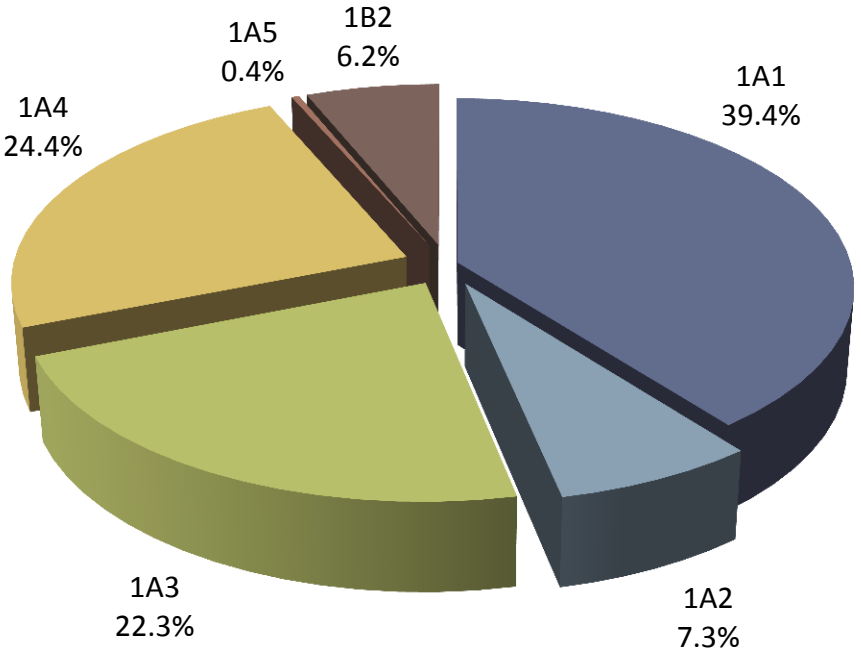
Energy Sector Greenhouse Gas Sources in the Republic of Moldova in 1990 and 2013

- Between 1990 and 2013, total GHG emissions from Energy Sector decreased by 75.7 per cent: from 34.5 to 8.9 Mt CO2 eq.
- The most significant decreasing trends have been registered within 1A1 „Energy Industries" (-82.9%), 1A4 „Other sectors" (-74.5%), 1A2 „Manufacturing Industry and Constructions" (-72.2%) and 1A3 „Transport" (-53.7%) categories.

1990

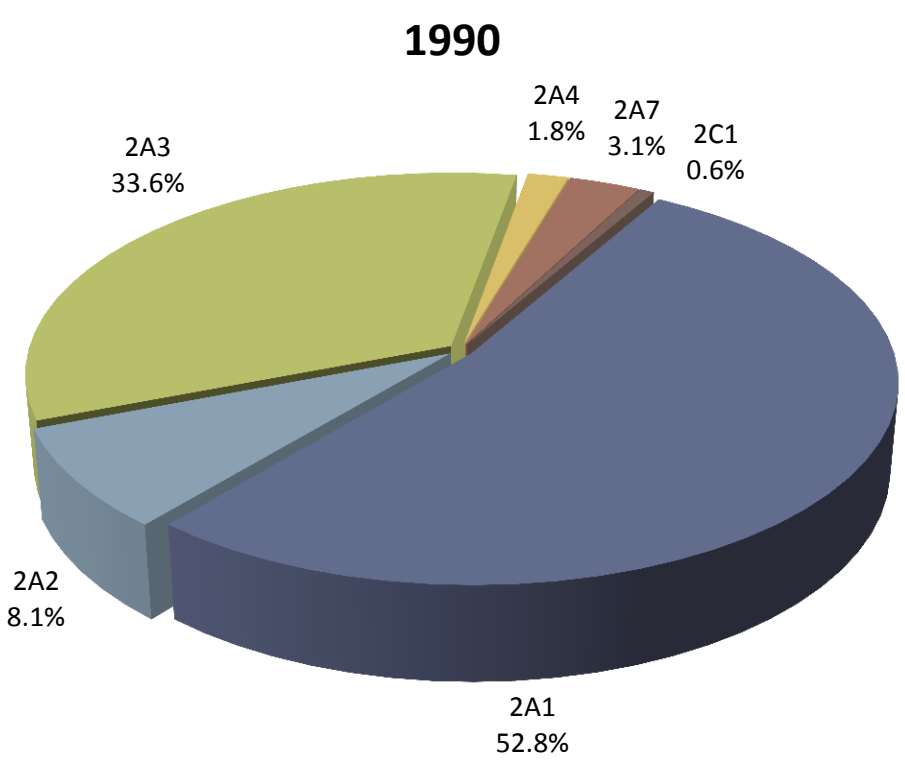


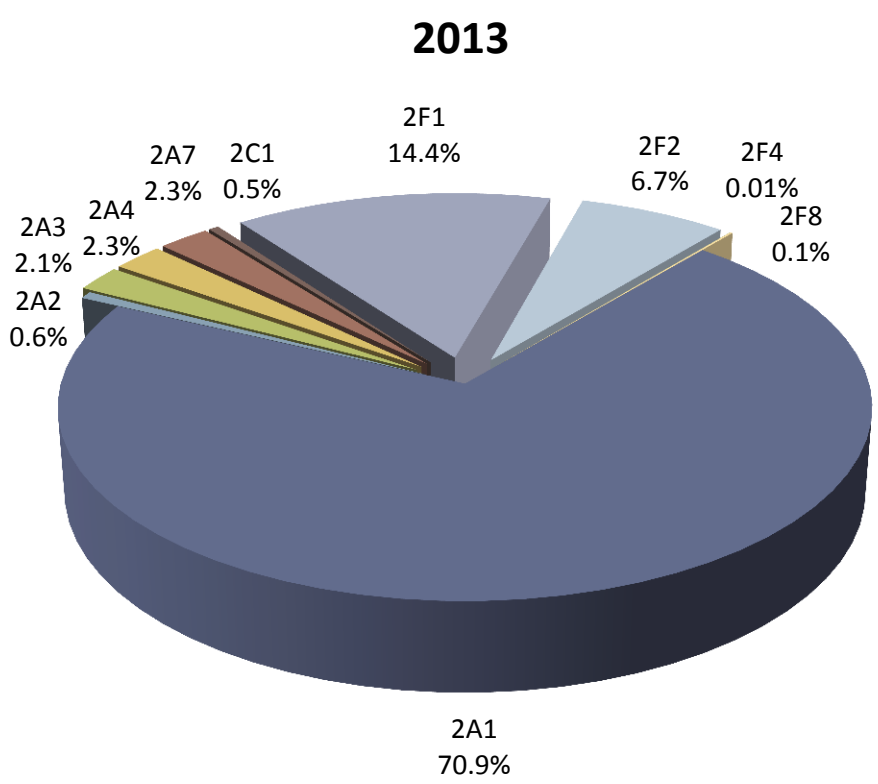
2013



Breakdown of Industrial Processes' GHG Emissions by Category in the RM in 1990 and 2013

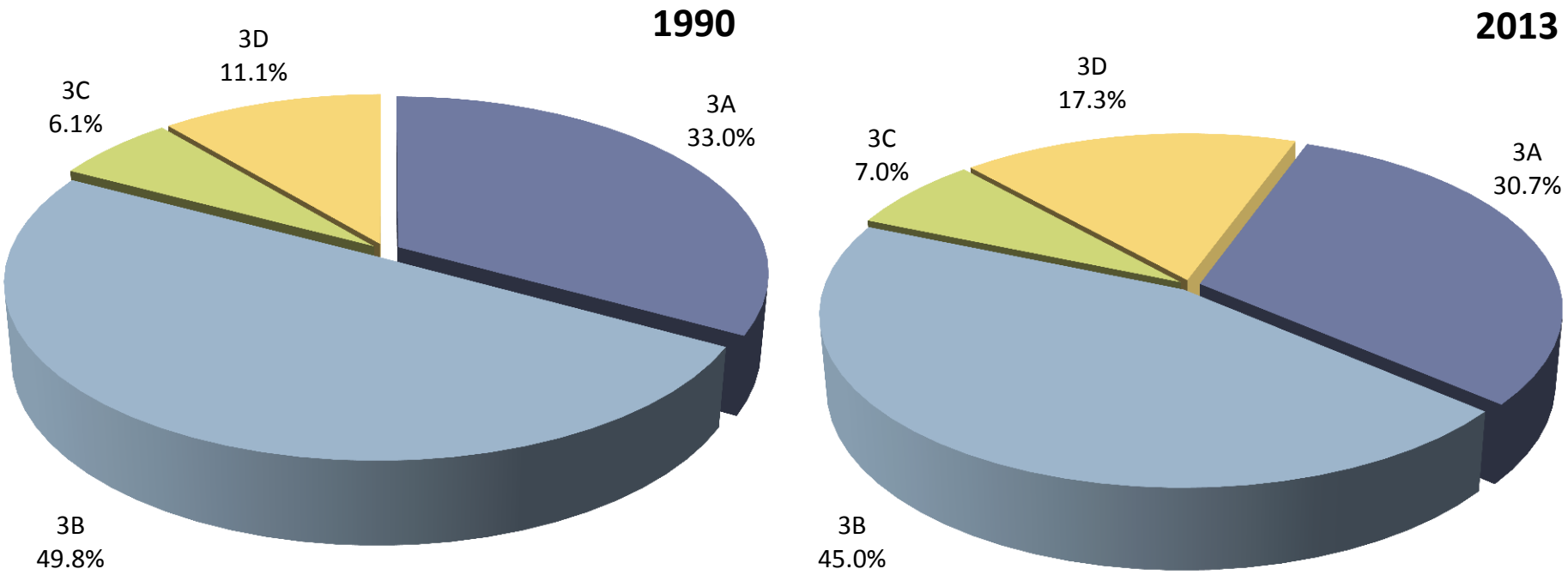
- During 1990-2013 time periods, total sectoral GHG emissions decreased by 63.5 per cent: from 1.84 to 0.67 Mt CO2 eq.
- By categories, the most relevant reductions have been registered within 2C „Metal production" (-73.2%) and 2A „Mineral products" (-71.2%).





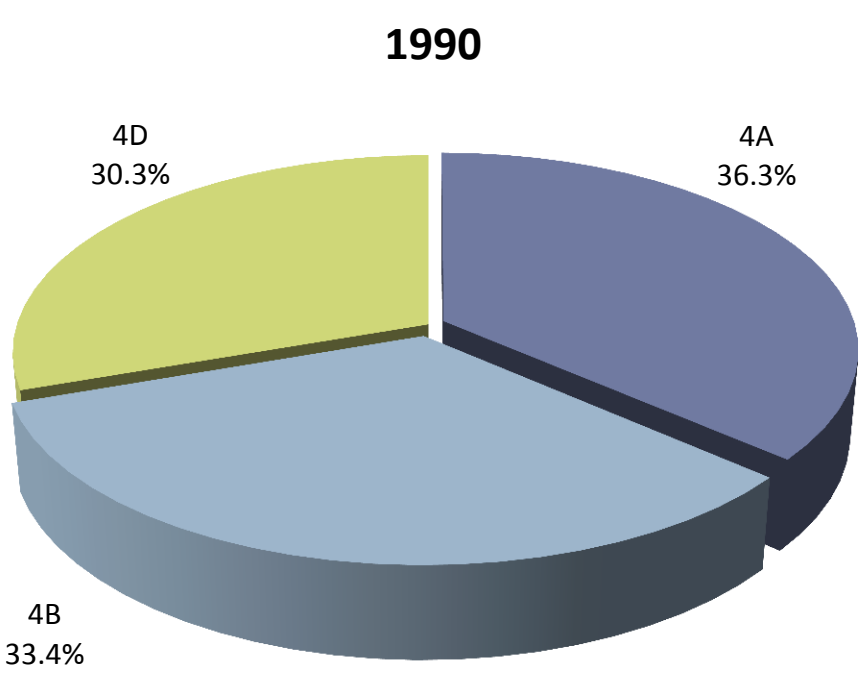
Breakdown of SOPU GHG Emissions by Category in the Republic of Moldova in 1990 and 2013

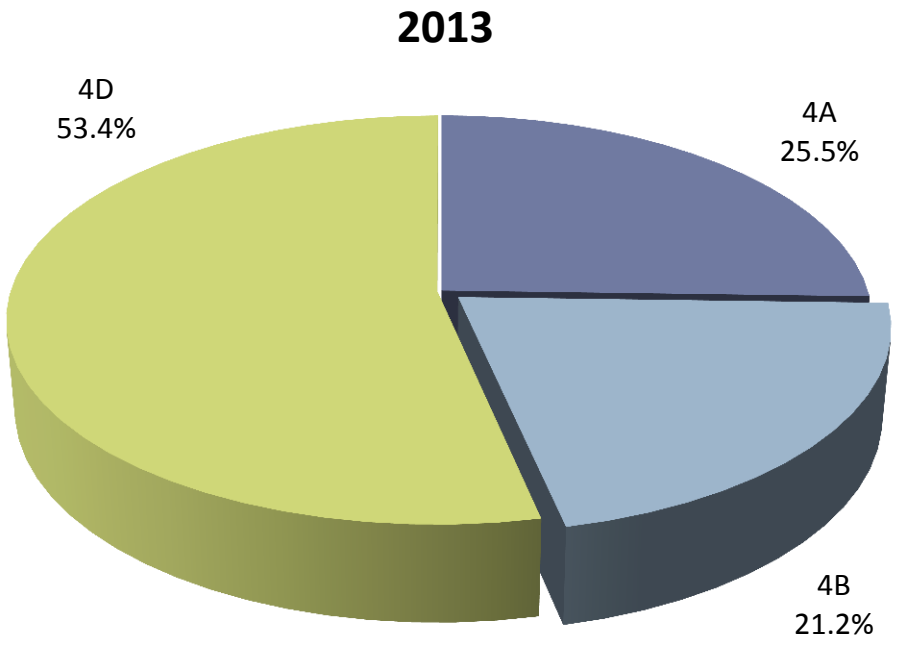
- Between 1990 and 2013 the total GHG emissions covered by this sector decreased by 47.2 per cent: from 0.13 to 0.07 Mt CO2 eq.
- By categories, the most relevant reductions have been registered within 3B „Degreasing and dry cleaning" (-52.2%), 3A „Paints application" (-50.8%) and 3C „Chemical products, manufacturing and processing" (-39.8%).



Breakdown of Agriculture GHG Emissions by Category in the Republic of Moldova in 1990 and 2013

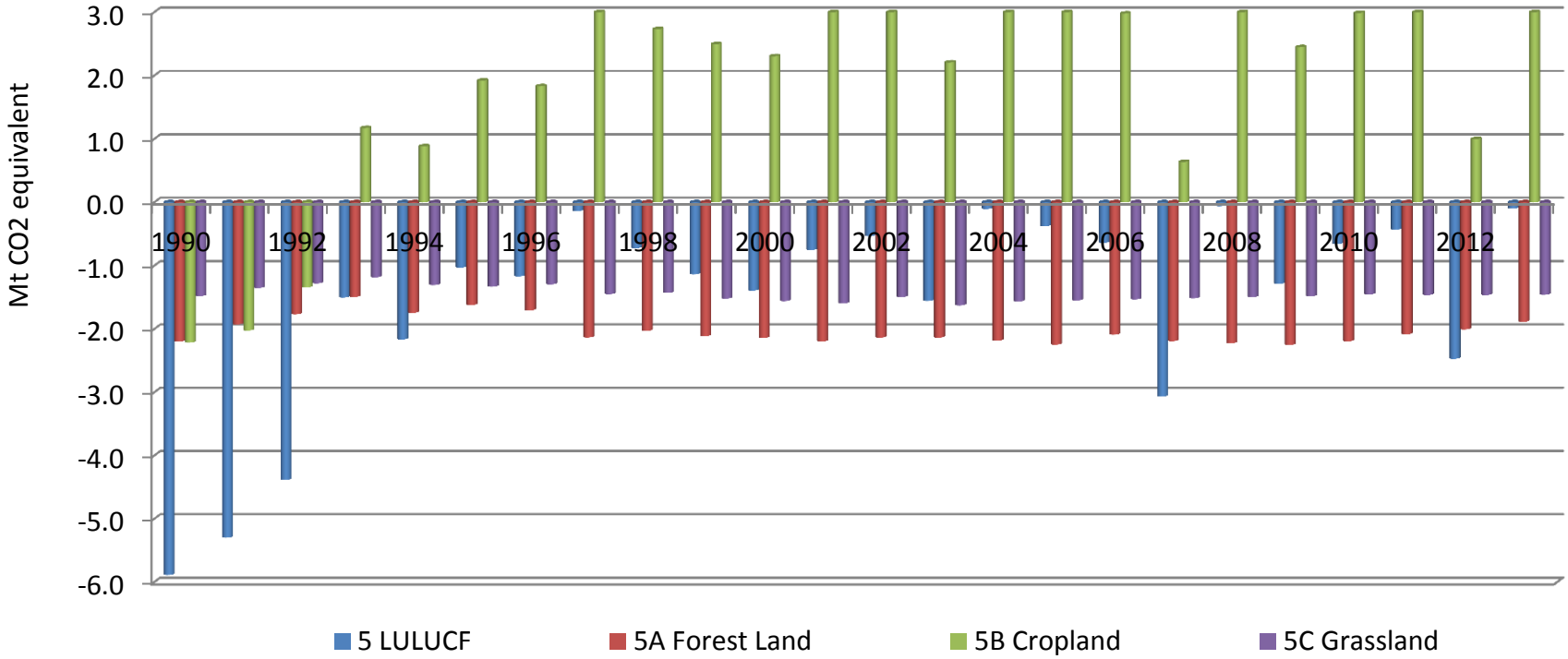
- Between 1990 and 2013 total GHG emissions originated from this sector decreased by circa 58.0 per cent: from 5.1 to 2.1 Mt CO2 eq.
- By categories, the most relevant reductions have been registered within 4B „Manure management" (-73.4%), 4A „Enteric fermentation" (-70.6%) and 4D „Agriculture soils" (-25.9%).





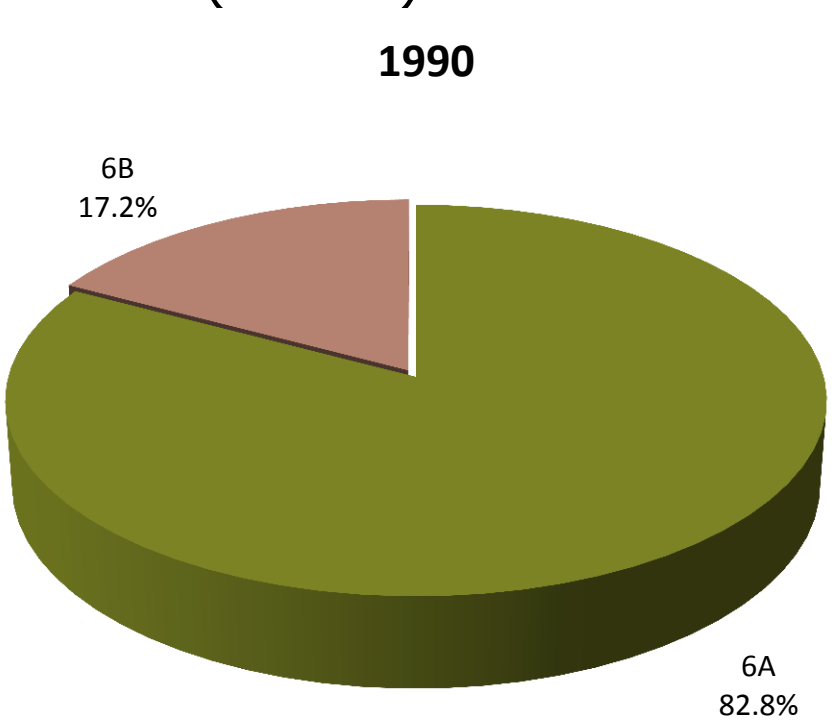
Emissions / Removals in LULUCF Sector by Source / Sink Categories in the RM within 1990-2013 periods

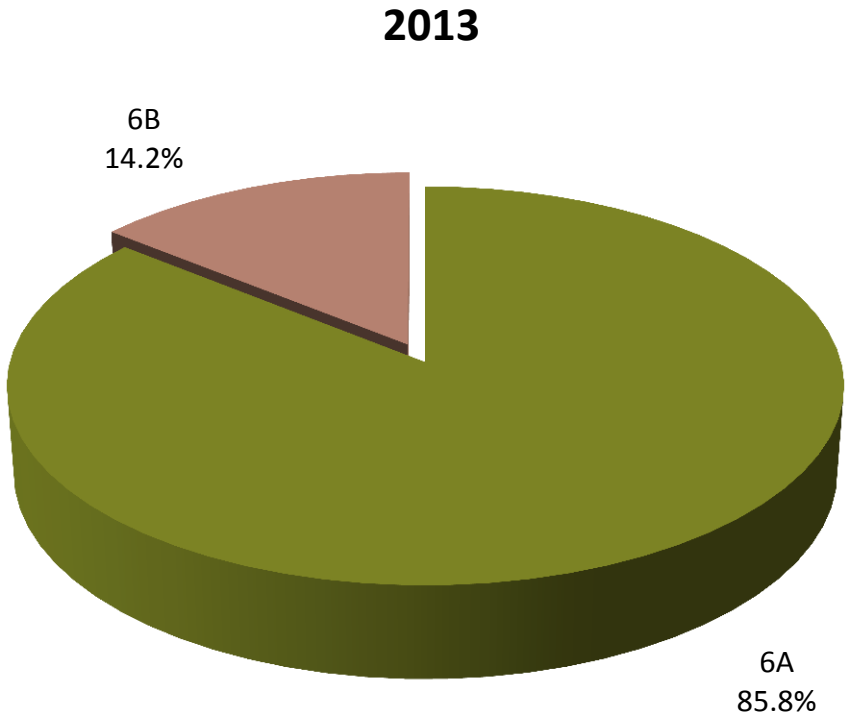
- Within the 1990-2013 period, net CO2 removals registered a decreasing trend, reducing by 98.3 per cent: from -5.9 Mt to -0.1 Mt.
- By categories, the most relevant reductions have been registered within 5B „Croplands" (-246.6%), 5A „Forest Lands" (-14.2%) şi 5C „Grassland" (-1.3%).



Breakdown of Waste GHG Emissions by Category in the RM in 1990 and 2013

- In the time series from 1990 through 2013, total GHG emissions from this sector decreased by 16.1 per cent: from 1.9 to 1.6 Mt CO2 equivalents.
- By categories, the most relevant reductions have been registered within 6B „Wastewater handling" (-30.9%) and 6A „Solid Waste Disposal on Land" (-13.0%).



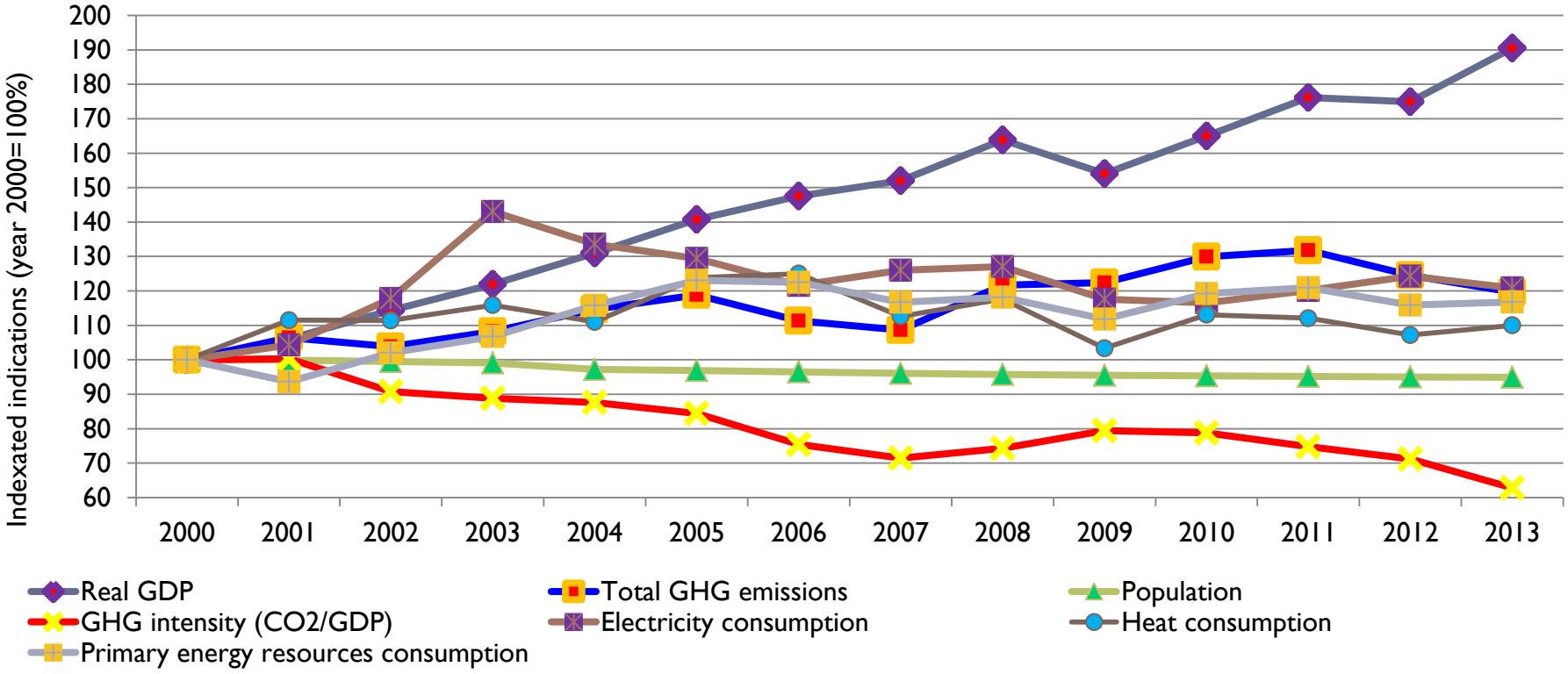


Trends in associated variables

- It is obvious that the registered reduction in GHG emissions over the last 24 years is in full consistency with a decrease in some important socio-economic indicators:
  - consumption of primary energy resources decreased by 78.3%,
  - Electricity consumption – by 52.3%,
  - Heat consumption – by 82.4%,
  - Real GDP – by 32.2%,
  - GHG intensity (CO_2 eq./PIB) – by 56.4%,
  - Population number – by 6.8%.
- Concomitantly, within 2000-2013, it was noted a considerable increase of real GDP:
  - real GDP increased by 90.5 per cent, from 3.5 to 6.7 billion 2010 US$10.
- The considerable GDP growth achieved since 2000 seems to indicate that the economy is finally developing in the correct direction, although it should be remembered that in 2013 the real GDP reached only 68 per cent of the 1990 year level.

Trends in associated variables (cont.)

- In the above mentioned context, it is worth mentioning that from 2000 to 2013, the electricity consumption increased by 20.8%; the heat consumption – by 10.0%, the consumption of primary energy resources – by 16.8%; while the GHG intensity (CO2eq/GDP) decreased by 37.2%, showing the first signs of the decoupling of economic growth from the growth in GHG emissions, by 19.6% within 2000-2013 periods.



Thank you for attention!

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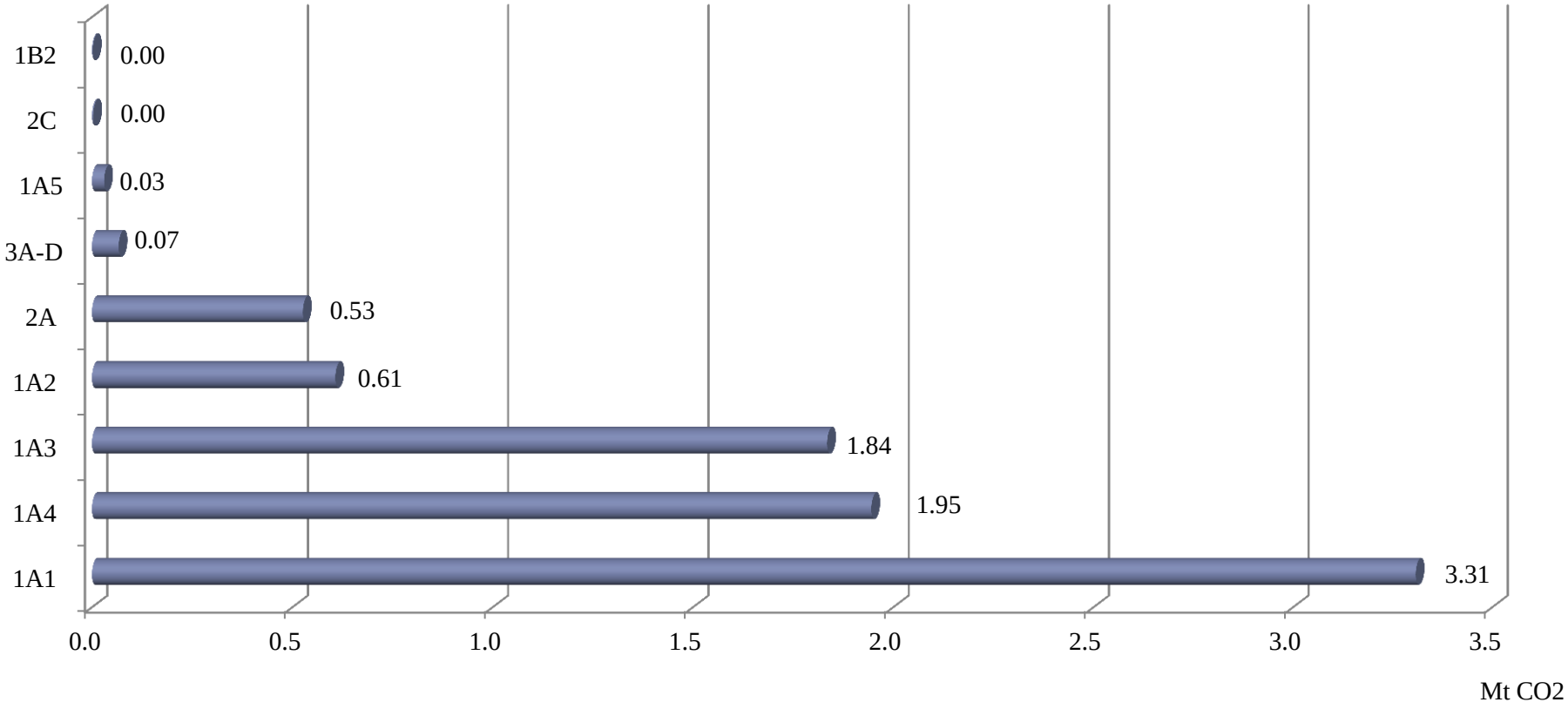
Annex

În Annex it is presented the share of different source categories in the structure of total GHG emissions, situation at the 2013 year level:

- CO_2
- CH_4
- N_2O
- NO_x
- CO,
- NMVOC
- SO_2.

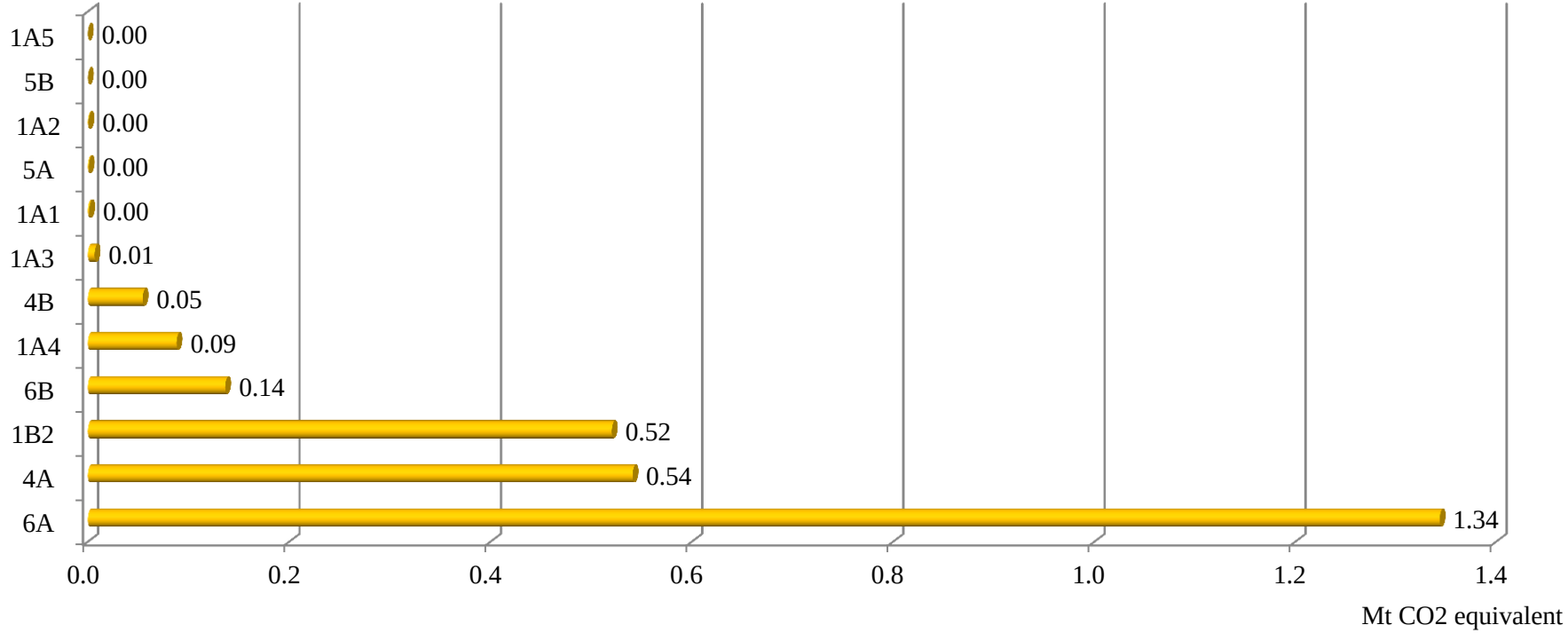
Source Categories of CO2 in the Republic of Moldova in 2013

In 2013, the source categories having the biggest share in the total CO2 emissions were: 1A1 'Energy Industries' (39.7% of the total), 1A4 'Other Sectors' (23.4%), 1A3 'Transport' (22.0%), 1A2 'Manufacturing Industries and Constructions' (7.3%) and 2A 'Mineral Production' (6.3%).



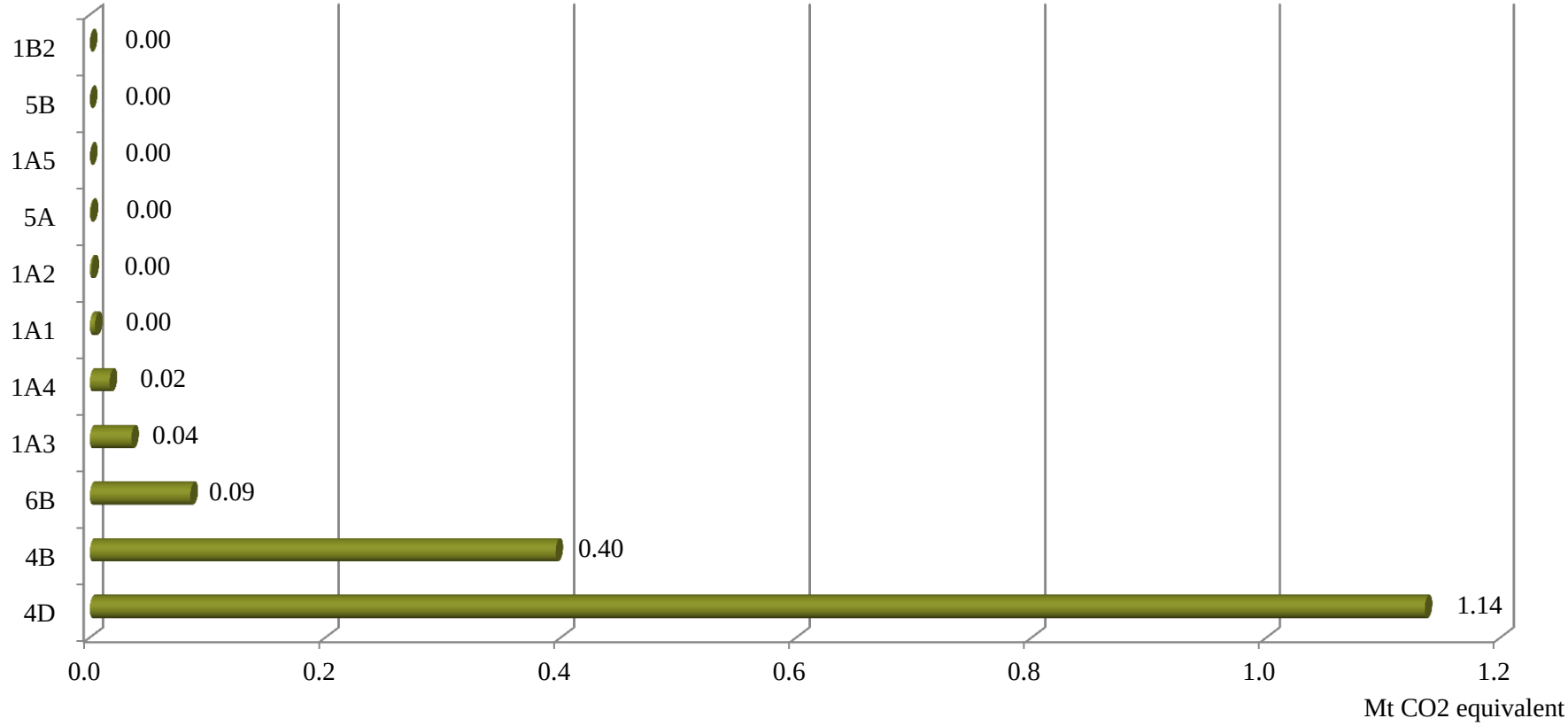
Source Categories of CH_4 in the Republic of Moldova in 2013

In 2013, the source categories having the biggest share in the total CH4 emissions were: 6A 'SWDL' (49.9% of the total), 4A 'Enteric Fermentation' (20.1%), 1B2 'Fugitive Emissions From Oil and Natural Gas' (19.3%), 6B 'Wastewater Handling' (5.1%), 1A4 'Other sectors' (3.3%) and 4B 'Manure Management' (2.0%).



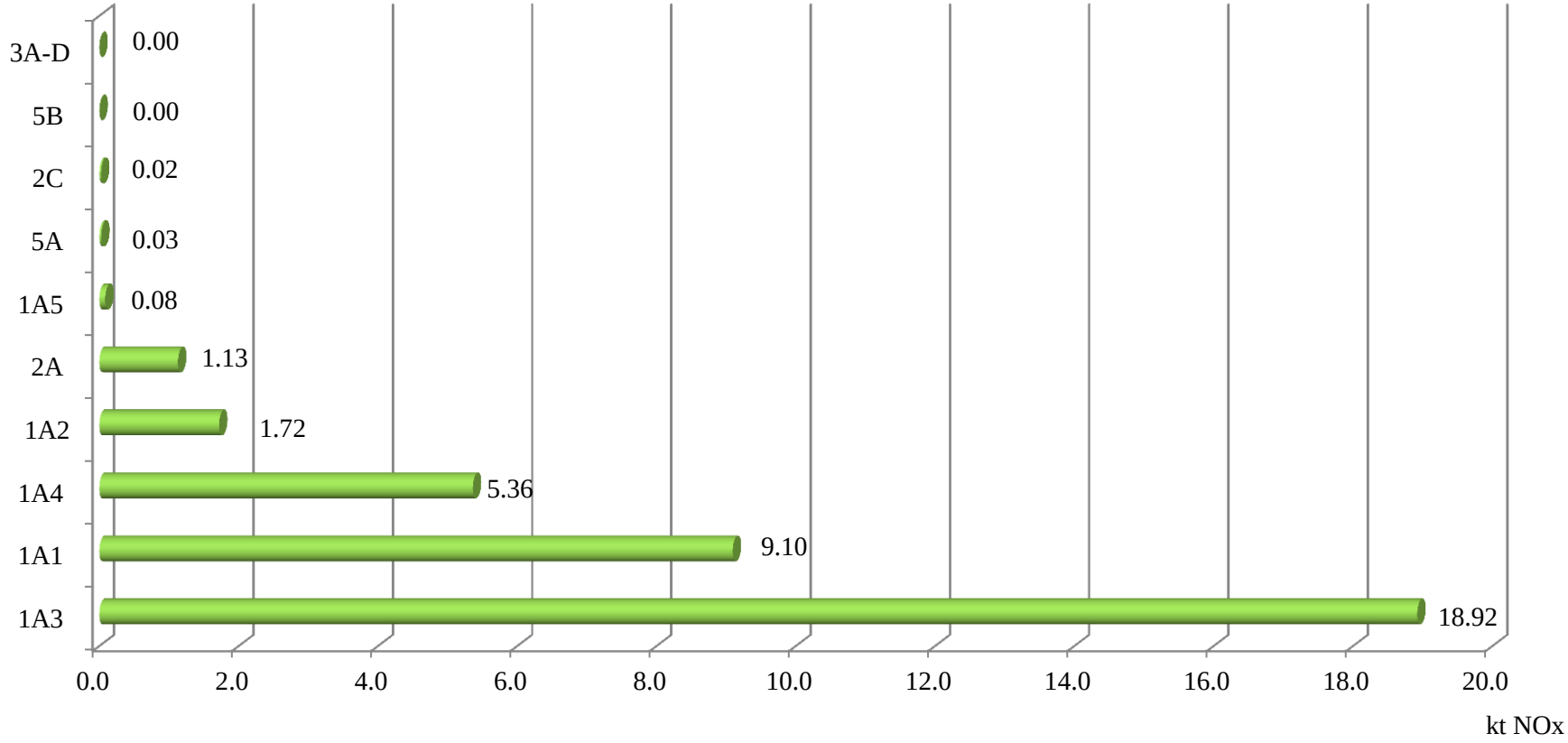
Source Categories of N_2O in the Republic of Moldova in 2013

In 2013, the source categories having the biggest share in the total N2O emissions were: 4D 'Agricultural Soils' (67.8%), 4B 'Manure Management' (23.6%), 6B 'Wastewater Handling' (5.1%), 1A3 'Transport' (2.1%) and 1A4 'Other sectors' (1.0%).



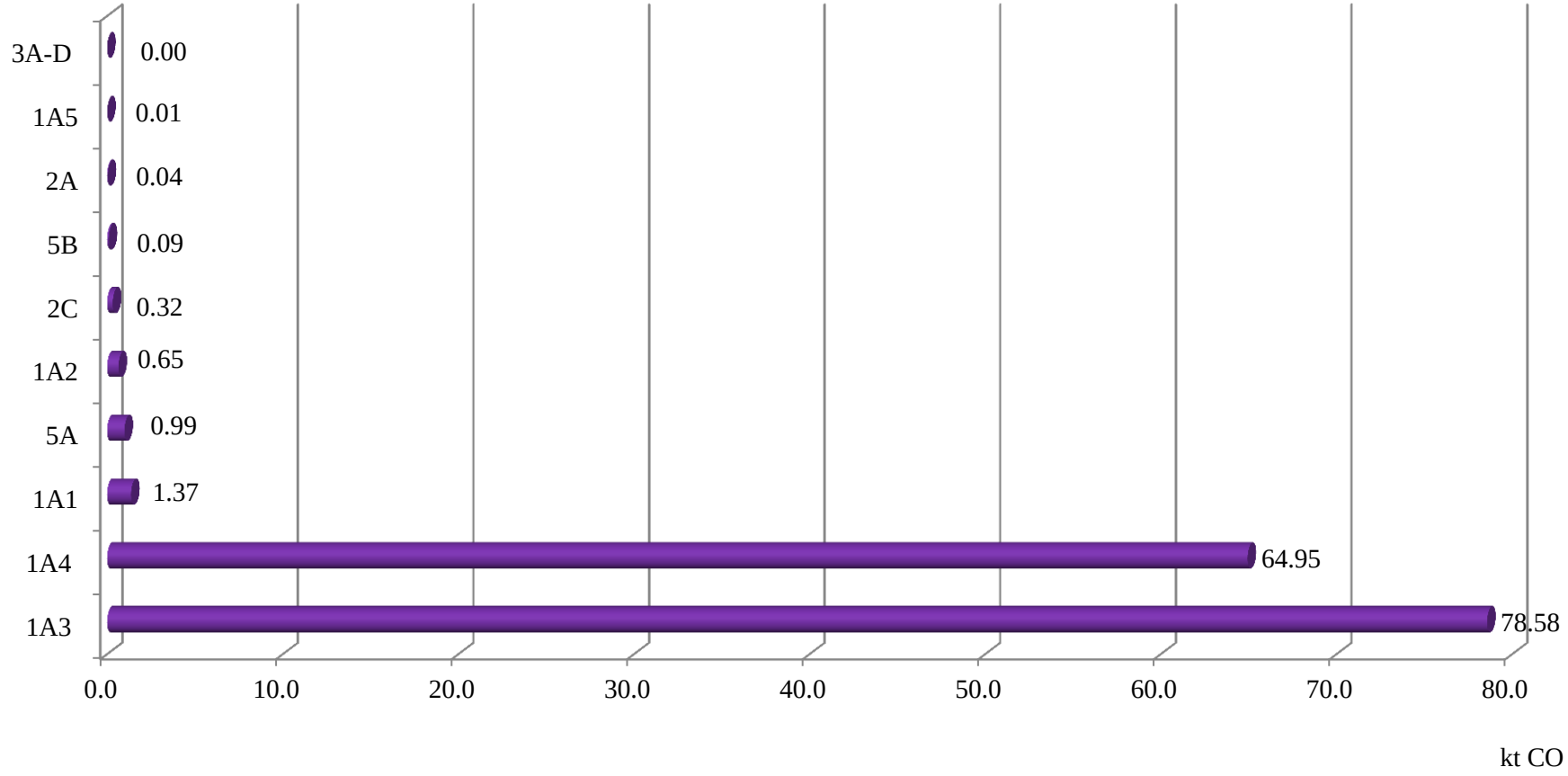
Source Categories of NO_x in the Republic of Moldova in 2013

In 2013, the source categories having the biggest share in the total NO_x emissions were: 1A3 „Transport” (52.0% from the total), 1A1 „Energy Industry” (25.0%), 1A4 „Other Sectors” (14.7%), 1A2 „Manufacturing Industry and Construction” (4.7%) şi 2A „Mineral Products” (3.1%).



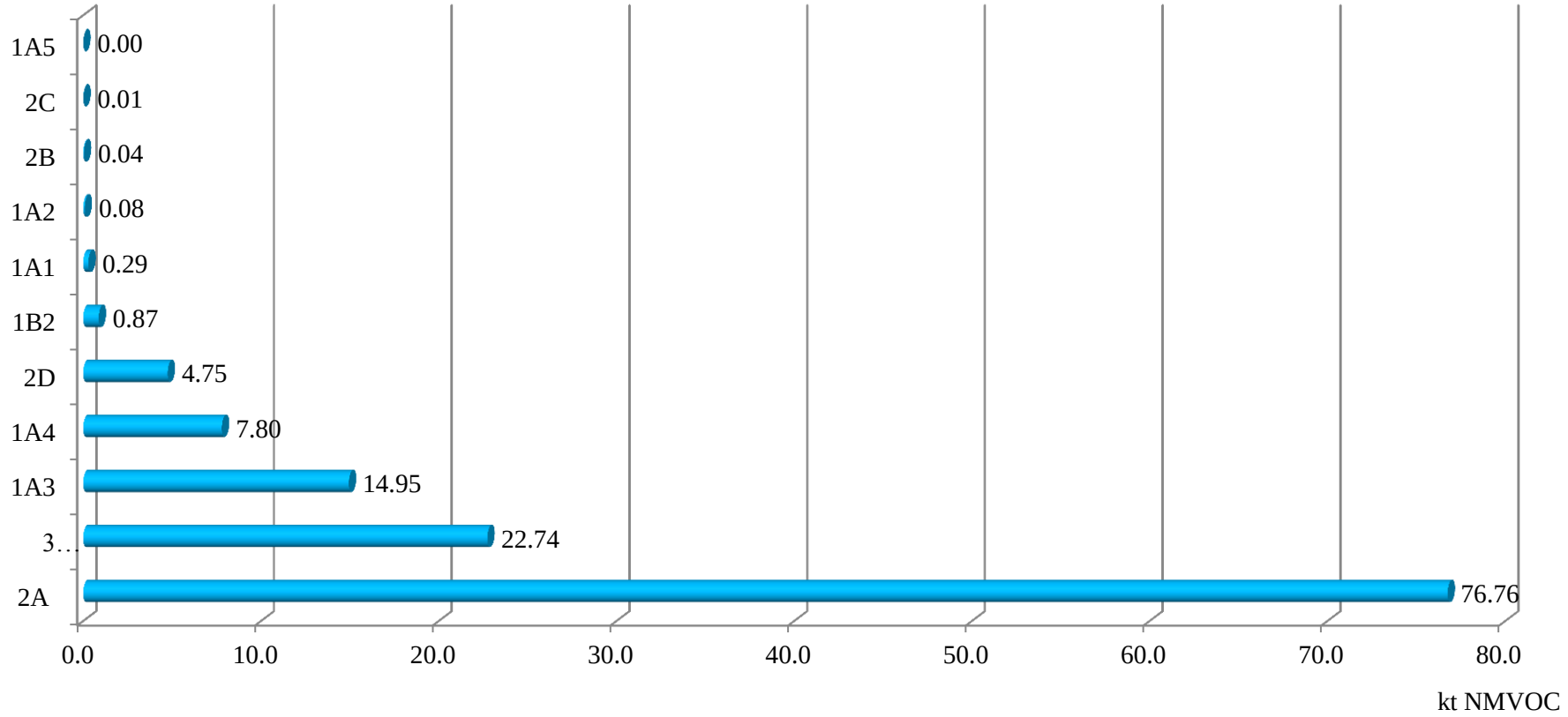
Source Categories of CO in the Republic of Moldova in 2013

In 2013, the source categories having the biggest share in the total CO emissions were: 1A3 „Transport” (53.5% from the total) and 1A4 „Other Sectors” (44.2% from the total).



Source Categories of NMVOC in the Republic of Moldova in 2013

In 2013, the source categories having the biggest share in the total NMVOC emissions were: 2A „Mineral products” (59.8% from the total), 3A-D „Solvents and Other product Use” (17.7%), 1A3 „Transport” (11.7%), 1A4 „Other Sectors” (6.1%) şi 2D „Other Productions” (3.7%).



Source Categories of SO_2 in the Republic of Moldova in 2013

In 2013, the source categories having the biggest share in the total SO_2 emissions were: 1A4 „Other Sectors” (37.5% from the total), 1A1 „Energy Industries” (33.0%), 1A3 „Transport” (13.1%), 1A2 „manufacturing Industries and Constructions” (12.7%) and 2A „Mineral products” (3.1%).