Preparation of Industrial processes and product use projections

Egle Kairiene
Inga Ziukelyte
Environmental Protection Agency
10/11/2015

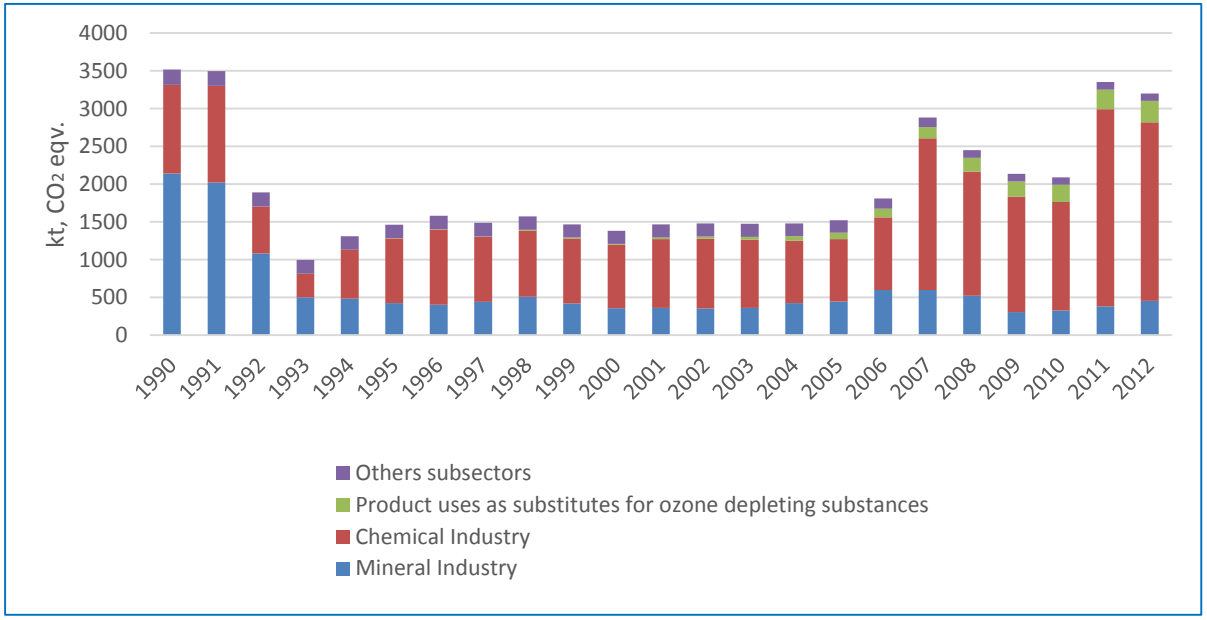
Emissions occurring in IPPU sector

Main sources responsible for the highest CO_2 emission in industrial processes and product use (IPPU) sector are:

- ✓ cement and lime production (CO_2);
- ✓ nitric acid production (N_2O);
- ✓ ammonia production (CO_2).

The share of GHG emissions by categories in 2012, %

In 2012 emissions from IPPU contributed 27% to the total GHG emissions in Lithuania.



Emissions from mineral industry was 14% of the total IPPU sector emissions. Cement production is the biggest source of GHG in the mineral industry, and in 2012 was 78%. The second biggest source is lime production.

Emissions from chemical industry in 2012 was 74% of the total IPPU sector emissions. Ammonia and nitric acid production are the biggest emission sources in chemical industry subsector. In 2012 emission from ammonia production was 76%, from nitric acid – 24%.

Methodology and key assumptions

The GHG emissions projections were provided only for the main emitters in IPPU sector:

- ✓ Cement producing company;
- ✓ Lime producing company;
- ✓ Ammonia and nitric acid producing company.

The projections of CO_2 emissions from cement and lime production (including lime produced in sugar industry) were performed by applying emission factor from the National GHG Inventory report submitted in 2012, and equals 0.54 t CO_2/t for clinker (correction for CKD was incorporated) and 0.8 t CO_2/t for lime production (correction for LKD was incorporated).

Clinker production

Planned clinker production volume in 2015-2035.

No	Planned production	2015	2020	2025	2030	2035
1.	Clinker production, kt	1,000	1,500	1,500	1,500	1,500

- ✓ The projections of CO_2 emissions from clinker production was based on activity data provided by cement producing company's authorities.
- ✓ It was assumed that clinker production will increase in the period of 2015-2020. From 2020 clinker production volume will remain stable until 2035.

Lime production

Planned lime production volume in 2015-2035.

No	Planned production	2015	2020	2025	2030	2035
1.	Lime production, kt	80	80	80	80	80

- ✓ The projections of CO_2 emissions from lime production was based on activity data which was provided by the lime producing company's authorities.
- ✓ It was assumed that lime production volume will remain stable in the period of 2015-2035.

Nitric acid and ammonium production

Planned production volume and gas consumption in 2015-2035.

No	Planned production	2015	2020	2025	2030	2035
1.	Ammonia production, kt	1,130	1,130	1,130	1,130	1,130
2.	Natural gas consumption, mln.m^3	1,190	1,160	1,160	1,160	1,160
3.	Nitrogen acid production, kt	1,400	1,400	1,400	1,400	1,400

- ✓ The projections of N_2O and CO_2, which are emitted during the nitric acid and ammonium production process, respectively were based on data provided by the main manufacturer in Lithuania.

Consumption of NF_3 gases

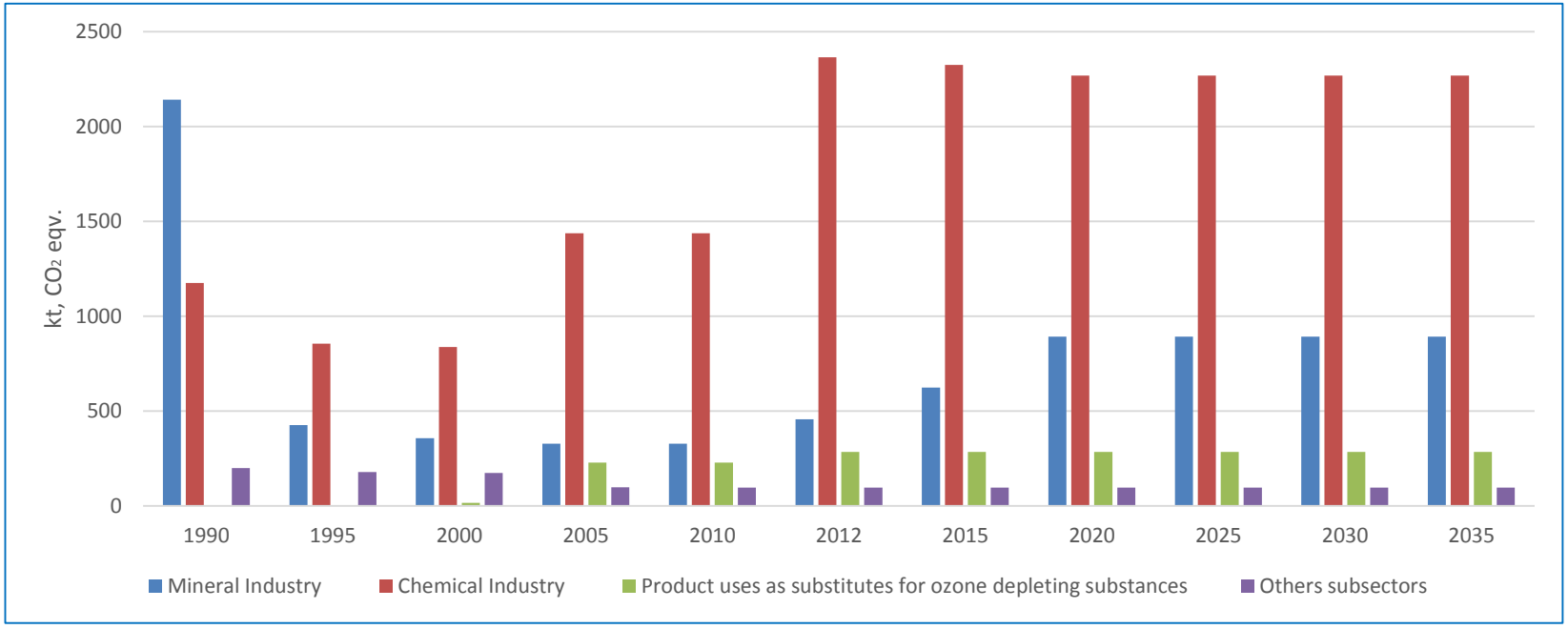
Planned consumption of NF_3 gases in 2015-2035.

No	Planned use of gases	2015	2020	2025	2030	2035
1.	Consumption of NF_3, kg	3,896	15,585	15,585	15,585	15,585

- ✓ The projection of consumption of NF_3 gases was based on activity data provided by NF_3 gases consuming company's authorities.
- ✓ It was assumed that consumption of NF_3 gases will increase until 2020, and after 2020 remain stable until 2035.
- ✓ Emissions of the other fluorinated gases is projected to be equal to 2012 level during the period 2015-2035.

Total historical and projected emissions, kt CO_2 eq.

Economy recovery started in 2010 had increased industrial production. The GHG emissions in industry sector are determined by technology processes and notable emission reduction per production output is hardly possible. Therefore, it is expected that GHG emissions will grow together with increasing industrial production.



Total emissions in IPPU sector

- ✓ The main GHG emission source in IPPU sector remains from nitric acid and ammonium production.
- ✓ As data from manufacturing companies revealed the GHG emissions trends will remain stable in a period of 2015-2035 due to constant production volume.

No	IPPU subsector	Base year	With existing measures				
		2012	2015	2020	2025	2030	2035
1.	2.A Mineral Production	456	624	893	893	893	893
2.	2.B Chemical Industry	2,364	2,325	2,269	2,269	2,269	2,269
3.	2.C Metal Production	3	3	3	3	3	3
4.	2.D Non-energy products from fuels and solvent use	73	73	73	73	73	73
5.	2.E Electronics Industry	4	4	6	6	6	6
6.	2.F Product uses as substitutes for ozone depleting substances	284	284	284	284	284	284
7.	2.G Other product manufacture and use	3	3	3	3	3	3
8.	2.H Other Production	13	13	13	13	13	13
9.	**Total**	**3,200**	**3,329**	**3,544**	**3,544**	**3,544**	**3,544**


Thank you for your attention!