PROSPECTIVE ESTIMATION OF GREENHOUSE GAS EMISSIONS IN INDUSTRY IN THE REPUBLIC OF BELARUS

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The Republic of Belarus is seriously concerned with the problem of greenhouse gases and their affect on climate change.

The prediction of greenhouse gases emissions plays the important role in the development of the national programs containing measure under indemnification of modifications of a climate change by antropogeneous ejections, maintenance of greenhouse gase concentration at such level, which would prevent dangerous antropogeneous interference in a climatic system.

The prospective estimation of greenhouse gas emissions provided the following six modules: energy, industry (industrial processes), agriculture, land use change and forestry, waste.

The prediction of greenhouse gases emissions in industry was based on available predicted indicators of development of main sectors that are sources of greenhouse gases are metallurgy, chemical and petrochemical industry, constraction materials industry.

Production facilities of these industrial sectors generate and emit practically all greenhouse gases, but the input of different sectors to the total emission strongly varies.

Also, the greenhouse gas emissions are different between production facilities of the same sector. The most significant sources of greenhouse gases emission in industrial sectors are production of cement (CO_2, SO_2) and lime (CO_2); production of electrical steel (CO, NO_x, CH_4) and ferrous metal rolling (CO, NO_x); production of cast iron (CO); production of caprolactam (CO, NO_x); production of ammonia (SO_2, CO, NMH), nitric acid (NO_x, NO_2) and sulfuric acid (SO_2).

The general methodology of the prospective estimation of greenhouse gas emissions was based mainly on the volumes of production and emission factors per unit of produced production with allowance of implementation of the industrial

enviromental policy and measures. In many cases partial or even completely prognosis was based on expert evaluations and enough universal propositions.

The main sources of SO_2 emission are production of cement, ammonia and sulfuric acid. Since 94 – 96% of SO_2 emission is due to production of sulfuric acid, then this source will be determinining the total emission trend.

The sources of nitrous oxide emission are metallurgy and some chemical industries, but the main source of NO_2 emission is production of nitric acid, then the predicted magnitude of emission will not practically change by 2020. Some reduction of emissions may take place due to planned reconstruction of outdated equipment.

The sources of methane emission are chemical industries (ethylene and methanol) and electric steel industry.

But as in general issue CH4 on metallurgy (in particular on production of electrosteel) it is necessary 90,1 % (on a level 2000г), the prognosis of issue of methane was based on planned magnification of volumes of production of electrosteel.

The main sources of non – methane hydrocarbon (NMH) emission are production of ammonia, whose input into the total volume of NMH emissions is over 82%, therefore the information about perspectives of development of this sectors was used

Prediction fluorocarbon emissions was failed, as fluorocarbon are not produced in Belarus and emissions related to replacement of ozone – depleting refrigerants with HFS 134a and emissions induced by operating refrigerating equipment were taken into account are very low amounting to ~0.001 Gg. so it may be actually neglected.

Calculation show that by 2020 there may be a 15% maximum growth of CO_2 emission against 2000, SO_2 – more than 45%, CO – less than 3%, CH_4 – about 9%, NMH and nitrous oxide - will not practically change .

Calculation show that for the period of from 2000 to 2020 is possible an increase in the total global warming effect from industrial processes by 11.7 %.

So it is possible to make a conclusion, that the prediction of greenhouse gases emissions was based on mainly due to the rates of growth of production volumes, but growth of greenhouse gases emissions will be lower than the rates of growth of production, due to planned measures on maintenance ecological of safe realization of economic activity in the republic (throught introdaction of new machinery and progressive energy- and resource – saving environmentally clean tecnologies).