Methane emissions management in Russia: Gazprom case study (for MRV session)

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In contrast to the US and the European Union, Russia has laws that list methane not only as a greenhouse gas but also as a "toxic substance" whose emissions must be reported and taxed. Therefore, at first all enterprises receive permits for methane emissions, then emissions are measured, and then fees are paid commensurate with the amount of emissions. The inventory of methane emissions is mandatory for all production processes of the oil and gas industry. In addition, the Federal Service for Supervision of Natural Resources verifies the information provided and carries out regular spot checks. Methane emissions are also controlled by the Ministry of Energy of the Russian Federation which sets standards for gas losses during extraction and transportation via pipelines and monitors their implementation. A leaks control system in subsidiary companies of Gazprom is implemented in accordance with the approved Programs of detection, measurement and metering of gas leaks which are based on the corporate standards provisions and requirements: "The standard program for gas emissions evaluation at Gazprom facilities" and "Methods of measuring the volume of methane emissions into the atmosphere at Gazprom facilities". This ensures transparency and completeness of data collection on methane emissions in Russia.

In order to prevent and reduce methane emissions into the atmosphere, Gazprom's subsidiaries conduct helicopter surveys of trunk gas pipelines' technical condition using laser gas leak detectors; detect natural gas leaks at compressors stations with the use of infrared imagers; conduct in-line inspection to prevent gas losses. Gazprom employs a range of technologies and practices with the aim of reducing and preventing negative impacts on the climate. For example, the following are BATs for reducing methane emissions: gas dynamic testing and well logging without venting, blowing out the well with a concentric gas lift, regular monitoring of leakage resistance, maintenance and overhaul of wellhead X-mass trees, shut-off and control valves of GPU process equipment, outgassing in low-pressure pipelines during planned preventive maintenance of equipment, diversion of natural gas from the separated part of the pipeline to the adjacent part of the main pipeline, gas withdrawal from the pipeline section under repair to the entrance of another pipeline section by means of a mobile CS, etc. These measures resulted in the prevention of methane emissions during the repair at the amount of 21.16 mln tons of CO_2e in 2019.

According to 2019 data, methane emissions from Gazprom's production facilities amounted to 0.02 % of the volume of gas produced, 0.29% of the volume of gas transported, and 0.03% of the volume of natural gas stored underground. The methane emissions rates that Gazprom provides in its annual reports are verified by KPMG. Since 1997, Gazprom, together with its international partners – the US Environmental Protection Agency, Uniper, Gasunie, Engie, and Japan Technical Information Service Corp. – has been carrying out the recording and measurement of methane emissions, and the results are made public.

Independent Environmental & Sustainability experts also report on methane emissions from cross-border gas supplies. For example, the German DBI report on GHG emissions from Natural Gas (2016); the life cycle analysis by thinktep AG on the GHG Intensity from Natural Gas in Transport, and the GHG Intensity of Natural Gas Transport (both dated 2017). Furthermore, the German Environmental Protection Agency (UBA) confirms these figures in their independent assessment. The German Environmental Protection Agency (UBA) also investigated the LNG footprint in comparison to pipeline gas confirming that the use of pipeline gas is preferred over LNG in that respect.

Overall, the isotopic analysis proved that the natural gas from the Russian fields is excluded from the causes of the increase in methane concentration in the atmosphere. In addition, in 2018, Gazprom signed the Guiding Principles on Reducing Methane Emissions, aiming to further reduce emissions and encourage other market participants to do the same. Together with its partners the company performs detection and metering of methane emissions.

In order to obtain more reliable data on the impact of methane emissions on the climate system, and taking into account the 5th Assessment Report of the Intergovernmental Panel on Climate Change (IPCC) and in accordance with the decision of the Conference of the Parties serving as the meeting of the Parties to the Paris Agreement, the Global Temperature change Potential over a 100-year time horizon mentioned in the 5th Assessment Report is recommended to calculate cumulative emissions in CO_2e. Thus, to represent fossil methane emissions (CH_4) in CO_2-equivalent, conversion factor 6 should be used. Further information can be found in the publication of the International Business Congress.