



METHANE
GUIDING
PRINCIPLES

Methane Guiding Principles Signatory Reporting

PAO NOVATEK

January 2022





COMPANY: **PAO NOVATEK**

YEAR OF JOINING METHANE GUIDING PRINCIPLES: **October 2020**

SENIOR REPRESENTATIVE: Mark Gyetvay, Deputy Chairman of the Management Board



Principle One: Continually reduce methane emissions

- Please state what specific activities or projects your company has undertaken to reduce methane emissions. Please refer to the previous year's annual MGP reporting where applicable to refer to intended activity. Link to sustainability report where relevant to provide further detail.
- Describe how the reduction was achieved including description of the asset type, technology type, timeframe. What was the end result?
- Provide data to support your description e.g. the actual amount of emissions reduction achieved, or the reduction in methane intensity.



2021 completed activity	2022 intended activity
<p>In 2021, NOVATEK completed the following activities:</p> <ul style="list-style-type: none"> • Using waste heat exchangers at gas compressor units and power plants at NOVATEK–TARKOSALENEFTEGAS. The activity is aimed at replacing boiler fuel gas for heat generation. Fuel gas savings through such replacement with secondary energy resources also has a secondary benefit of emissions reduction. • Using solutions to reinject formation water into wells instead of flaring using horizontal flare units, reconstruction of intra-site networks of NOVATEK–YURKHAROVNEFTEGAS. • Reduction of emissions in the process of well testing (gas and gas condensate wells) at ARCTICGAS (development of the Urengoyskoye field Achimov deposits); conducting field gas condensate studies with hydrocarbon mixture returned to the gas-gathering system at the Yurkharovskoye OGCF, West-Yurkharovskoye GCF, East-Urengoyskoye+North-Yesetinskoye OGCFs of NOVATEK–YURKHAROVNEFTEGAS; technical re-equipment of well pads No. 1, 2 of the North-Russkoye field for conducting gas dynamic and gas condensate studies without gas emissions into the atmosphere at NOVATEK–TARKOSALENEFTEGAS. • Reducing amount of purge gas in the flaring system at NOVATEK-Purovsky Plant. As agreed with the designer, the regulatory consumption rates for purge gas were reduced to maintain the overpressure in the flare head. • Boil-off gas recovery system for LNG storage and loading at Yamal LNG (4 x 9 MW Siemens compressors). Over 10 months of 2021, 227.085 MMcm of methane recovered and returned into the process (instead of flaring). • Using compressors with electric drives at NOVATEK–YURKHAROVNEFTEGAS, ARCTICGAS, Yamal LNG and TERNEFTEGAS. Compressors with electric drives do not emit methane, as different from gas turbine and gas piston compressors (methane slip). 	<p>In 2022, NOVATEK plans the commissioning of the following production facilities:</p> <ul style="list-style-type: none"> • boil-off gas cooling system (desuperheater) at Cryogas-Vysotsk; • screw-type compressor to improve the low-pressure Associated Petroleum Gas (APG) utilization at NOVATEK–TARKOSALENEFTEGAS; • reservoir water reinjection facilities at NOVATEK–YURKHAROVNEFTEGAS; • upgrading (reconstruction) of the existing flaring systems, introducing smokeless flaring technologies at NOVATEK–TARKOSALENEFTEGAS. <p>In addition, NOVATEK plans to conduct well gas dynamic and gas condensate studies without emitting gas into the atmosphere at ARCTICGAS, NOVATEK–YURKHAROVNEFTEGAS, NOVATEK–TARKOSALENEFTEGAS and Yamal LNG.</p>

Principle Two:

Advance strong performance across the gas supply chain

Please include answers to the following questions:

1. Did you participate in any methane research or plan to do so?
2. Did you conduct any outreach on methane management?



- Describe what action you have taken to engage industry players across the value chain to better understand how to achieve robust methane emissions management. Outreach activity could include training sessions, participation in webinars, influencing of NOJV partners, or publication of guidance. Activity could also include commercial incentives or engagement with investors to drive better performance by others.
- Provide details of any outcomes that resulted from your action.



2021 completed activity	2022 intended activity
<p>NOVATEK actively interacts with its partners across Liquefied Natural Gas (LNG) value chain, including within the framework of previously signed agreements. We focus on carbon capture technologies, as well as on the analysis of potential forms of cooperation under our agreements in decarbonization.</p> <p>In 2021, NOVATEK signed the following Memorandums Of Understanding on decarbonization:</p> <ul style="list-style-type: none"> • with TotalEnergies on reduction of GHG emissions by implementing Carbon Capture and Storage (CCS) technologies and utilizing renewable energy source; • with Fortum on cooperation in renewable power: NOVATEK, including the Cryogas-Vysotsk LNG project in particular, will purchase electricity produced by Fortum’s renewable power facilities in Russia. Using green energy produced by wind farms owned by Fortum and its joint ventures at the Company’s LNG plant in Vysotsk will enable NOVATEK to offer its LNG customers a more sustainable product with a reduced Scope 2 carbon footprint; • with Siemens Energy on strategic partnership for LNG production decarbonization; • with the NLMK Group, a major consumer of NOVATEK products, on decarbonization confirming the companies’ intention to cooperate in carbon dioxide capture, utilization and storage, hydrogen production technology development and hydrogen fuel usage, as well as development of new products for low-carbon technologies; • with Uniper to explore and assess capabilities of building a hydrogen supply chain; • with Nuovo Pignone, a subsidiary of Baker Hughes, to cooperate in the development of electric and gas-turbine solutions for gas production and liquefaction and reduction of carbon dioxide emissions; • with Severstal on cooperation in the field of alternative and hydrogen energy to reduce GHG emissions; • with JBIC to cooperate on projects to produce hydrogen and ammonia, CCUS technologies, as well as renewable energy projects in Russia, including ammonia and hydrogen production projects in the Yamal Peninsula; 	<p>NOVATEK plans to exchange experience with TotalEnergies on the use of satellite imagery to determine methane leaks.</p>





- with RWE to mutually cooperate in the field of LNG supply and decarbonization.

In October 2021, NOVATEK became the design partner to Kayrros new Environmental Impact Monitoring Project. Kayrros is a leading advanced data analytics company measuring environmental impact from space, including methane emissions. Under this initiative, NOVATEK and Kayrros will cooperate in the field of tracking methane emissions and developing the methodology to estimate the methane emissions based on an allocation of general observations from remote sensors combined with on-site data.



Principle Three: Improve accuracy of methane emissions data

- Describe action taken to improve methane emissions data collection methodologies. This could be application of new technology at an operated site(s), investment and participation in R&D initiatives, development of monitoring/modelling software, or support to research that improves the accuracy of the quantification of methane emissions.
- Where new technology /software has been piloted or adopted, it is helpful to describe how it works, the reasons it was selected, and how it was deployed. Any data that can be shared to demonstrate improvements is useful.
- How these new methods/technologies has been adopted into your accounting process if at all.

2021 completed activity	2022 intended activity
<p>In 2021, NOVATEK explored the possibility of using Sentinel-2 and Sentinel-5 satellites for methane detection at gas and gas condensate production, treatment, and transportation facilities as well as the capabilities of GHGSat (GreenHouseGas Satellite) for detecting methane leaks.</p> <p>In addition, we explored the capabilities of VIIRS (Visible Infrared Imaging Radiometer Suite) satellite radiometers for detecting the scale of flaring.</p>	<p>NOVATEK intends to build the inventory of GHG emission sources. This then allows instrumental measurement of emissions. As of today, more than 4,000 sources of GHG emissions have been identified, including more than 2,000 sources of methane emissions.</p> <p>In addition, CO₂ and methane instrumental control systems are planned to be designed in 2022.</p> <p>In 2022, NOVATEK plans to test equipment for remote methane leak detection from flange joints of process equipment and pipelines, as well as a system for methane leak quantification and visualization which allows calculation of mass and volume leakage rate.</p>



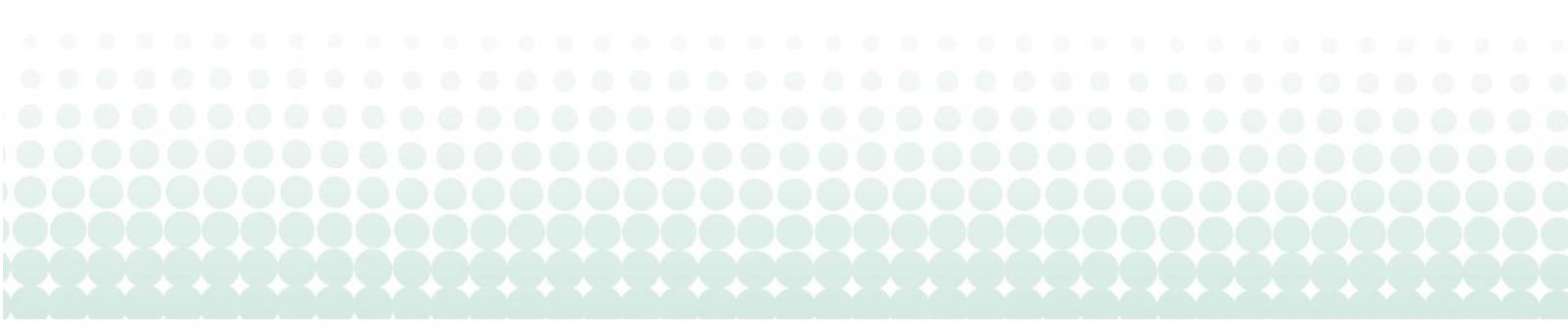
Principle Four:

Advocate sound policy and regulations on methane emissions

Advocacy consists of active participation in legal consultation processes, external policy statements, and direct engagement with government

- Consider providing details on the region or regulation involved, how you undertook your advocacy, others involved, and the outcome.

2021 completed activity	2022 intended activity
<p>NOVATEK is involved in discussing legislative initiatives and policy papers regarding regulation of GHG emissions (including methane) and other efforts towards carbon neutrality of its business.</p> <p>Consultations were held on the following draft laws:</p> <ul style="list-style-type: none"> • draft Federal Law On Limiting Greenhouse Gas Emissions; • draft order of the Russian Ministry for Economic Development On Approving the Procedure and Template for Submitting a Climate Project Implementation Report, and the Climate Project Classification Procedure and Criteria; • draft Federal Law On Conducting an Experiment to Implement Special Regulations for Greenhouse Gas Emissions and Sinks in the Sakhalin Region; • draft Decree of the Russian Government On Approving the Rules for GHG Reporting and Verification and GHG Report Templates. <p>In 2020, the Russian Ministry of Natural Resources and Environment approved the Methodology for Calculating Air Pollutant Emissions from Air-Assisted APG Flares (used at Yargeo facilities or similar units). Starting from 2021, this methodology will be adopted for all the APG flaring calculations at Yargeo facilities, including calculations of methane emissions from air-assisted flaring.</p>	<p>NOVATEK will report the plans and results of methane emissions control and reduction in Sustainability Report 2021.</p>



Principle Five: Increase transparency

Please include answers to the following question:

1. Are you participating in OGMP 2.0 or do you intend to do so? If you are participating in OGMP 2.0 you may provide a link to the website.
- Describe what activity you have carried out e.g. providing information in relevant external reports on methane emissions data, methodologies, and progress and challenges in methane emissions management.
 - If you have contributed towards the standardisation of comparable external methane reporting describe the activity you have taken.

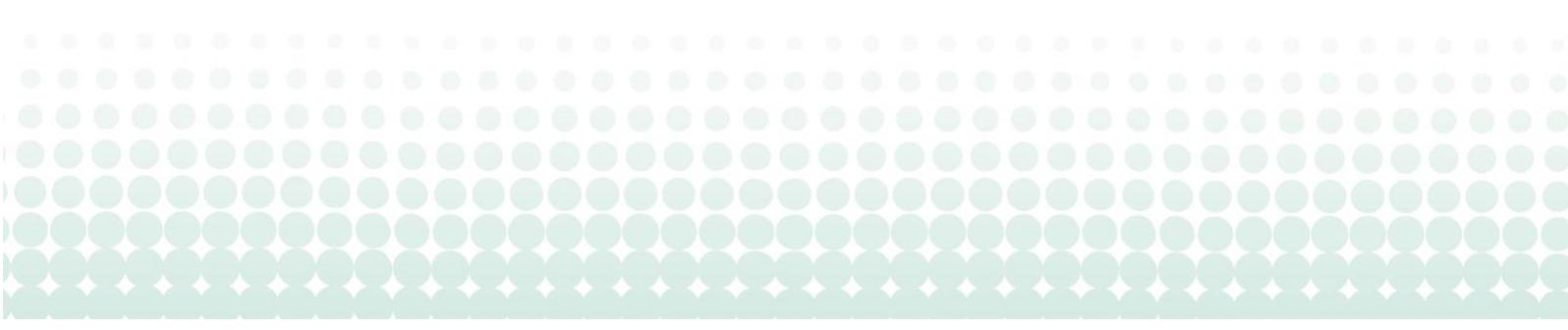
2021 completed activity	2022 intended activity
<p>NOVATEK's reports which contain information on methane emissions include:</p> <ul style="list-style-type: none"> • annual reporting in the Rosstat's format for federal statistic monitoring, which is later used as the basis used for regional and federal reports on environment protection (in particular, governmental reports on the environmental situation in the Yamal-Nenets Autonomous Area are published on the website of the Department of Natural Resources, Environment, and Agroindustrial Sector of the Yamal-Nenets Autonomous Area at https://dpr.yanao.ru/activity/3469/, in the Leningrad Region – on the website of the Committee on Natural Resources of the Leningrad Region at https://nature.lenobl.ru/ru/deiatelnost/ohrana-i-monitoring-okruzhayushej-sredy/); • annual Sustainability Report (published on the Company's website at https://www.novatek.ru/en/development/). <p>Since 2008, NOVATEK annually reports on greenhouse gas emissions (including methane) to the global initiative called Carbon Disclosure Project (CDP, https://www.cdp.net/).</p>	<p>Since 2022, NOVATEK plans to switch to quarterly reporting on GHG emissions, including methane.</p> <p>NOVATEK will study the possibility of emissions disclosure in accordance with the OGMP 2.0 standard and identify the gaps and necessary measures.</p>



Methane Emissions

<p>Do you report absolute methane emissions within your sustainability report? <i>If so provide link.</i></p>	<p>Yes, by type of activity. Please see our ESG databook at https://www.novatek.ru/en/development/dataesg/ and our Sustainability Report at https://www.novatek.ru/en/development/.</p>
<p>Do you report a methane intensity within your sustainability report? <i>If so provide link.</i></p>	<p>Yes, a total by production, processing and LNG facilities. Please see our ESG databook at https://www.novatek.ru/en/development/dataesg/ and our Sustainability Report at https://www.novatek.ru/en/development/.</p>
<p>What are your organisation's total absolute methane emissions? Provide a figure in tonnes. Provide latest data publicly available.</p>	<p>In 2020, methane emissions totalled 8,475 tons. See our Sustainability Report 2020 p. 101. The data for 2021 will be disclosed in our Sustainability Report 2021.</p>
<p>State your methodology.</p>	<p>Guidelines approved by Order of the Russian Ministry of Natural Resources and Environment No. 300 dated 30 June 2015. NOVATEK's methane emissions reporting scope covers production, processing and LNG production facilities of the Company's subsidiaries and joint ventures. Methane emissions are calculated based on the Company's share in hydrocarbons production.</p>
<p>State your reporting boundary.</p>	<p>The following core assets are included in methane emissions scope:</p> <ul style="list-style-type: none"> OOO NOVATEK-Yurkharovneftegas 100% OOO NOVATEK-Tarkosaleneftegas 100% AO Arcticgas 50% ZAO Nortgas 50% OOO Yargeo 100% OAO Yamal LNG 59.97% ZAO Terneftegas 51% OOO Arctic LNG 2 60% OOO NOVATEK-Purovsky plant 100% OOO NOVATEK-Ust-Luga 100% OOO Cryogas-Vysotsk 51% OOO NOVATEK-Chelyabinsk 100%

	<p>OOO NOVATEK-Transervice 100%</p> <p>OOO NOVATEK-Energo 100%</p> <p>OOO Obskiy GCC 100%</p> <p>OOO NOVATEK-AZK 100%</p> <p>OOO Sabetta International Airport 59.97%</p>
<p>What are your organisation's methane intensity?</p> <p>Provide latest data publicly available.</p>	<p>In 2020, methane emissions per unit of production for production, processing and LNG facilities stood at 14.4 tons per mmeob. See our Sustainability Report 2020 p. 102.</p> <p>The data for 2021 will be disclosed in our Sustainability Report 2021.</p>
<p>State your methodology.</p>	<p>To calculate methane emissions intensity, gross methane emissions (from production, hydrocarbon processing and LNG production) in the numerator are divided by hydrocarbon production (gas, gas condensate, oil) in mmeob in the denominator.</p> <p>NOVATEK's methane emissions reporting scope covers production, processing and LNG production facilities of the Company's subsidiaries and joint ventures. Methane emissions are calculated based on the Company's share in hydrocarbons production.</p>
<p>State your reporting boundary.</p>	<p>The following core assets are included in methane emissions scope:</p> <p>OOO NOVATEK-Yurkharovneftegas 100%</p> <p>OOO NOVATEK-Tarkosaleneftegas 100%</p> <p>AO Arcticgas 50%</p> <p>ZAO Nortgas 50%</p> <p>OOO Yargeo 100%</p> <p>OAO Yamal LNG 59.97%</p> <p>ZAO Terneftegas 51%</p> <p>OOO Arctic LNG 2 60%</p> <p>OOO NOVATEK-Purovsky plant 100%</p> <p>OOO NOVATEK-Ust-Luga 100%</p> <p>OOO Cryogas-Vysotsk 51%</p> <p>OOO NOVATEK-Chelyabinsk 100%</p> <p>OOO NOVATEK-Transervice 100%</p> <p>OOO NOVATEK-Energo 100%</p> <p>OOO Obskiy GCC 100%</p> <p>OOO NOVATEK-AZK 100%</p> <p>OOO Sabetta International Airport 59.97%</p>





Do you have a methane emission target?

If yes, please state what it is, including the boundaries and methodology.

If no, are you developing such a target? Please state your intended timeline.

In 2020, NOVATEK approved the target to reduce methane emissions per unit of production in the production, processing and LNG segments by 4% compared to the 2019 level for the period up to 2030.

In addition, in 2020, NOVATEK established a target to cut methane emissions from operations of LNG fueling stations by 20% by 2025.

Please see our Sustainability Report 2020 for more details: https://www.novatek.ru/common/upload/doc/NOVATEK_SR_2020_ENG.pdf

