



Accelerating LNG Supply Chain Decarbonization and Risk Management: Methane Emission Detection Solutions with Satellite Image Analysis and On-the-Ground Measurements

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Sompo Japan Insurance Inc.



Changing environment surrounding methane-emitting companies

Methane gas has approximately 25 times the greenhouse effect of carbon dioxide (CO₂), and according to the International Energy Agency (IEA), methane gas is responsible for 30% of global warming. Furthermore, high concentrations of methane gas can have adverse effects on human health.

The
Environment
Surrounding
Companies

International Developments:

- The EU enacted legislation to regulate methane emissions in 2024.
- At COP28 in December 2023, the Canadian government announced **strengthened regulations for methane emissions**, which are as stringent as U.S. regulations and include penalties.

Domestic Developments (Japan):

- The Ministry of the Environment will begin **providing data on greenhouse gas emissions from companies** free of charge in fiscal year 2025. The objective is to make it easier for companies to prove their decarbonization achievements, thereby supporting fundraising and investment.

Companies
Emitting
Methane

- Methane gas emissions are now being analyzed and visualized using satellite imagery technology.
- This development means that **companies face the risk of discrepancies between their reported methane emissions and those detected by satellite analysis**, which could lead to accusations of "greenwashing."

- Methane gas is considered a valuable asset for companies, and continuous leakage results in economic losses. Additionally, methane leaks can negatively impact employees and local communities.
- To mitigate these issues, companies are actively engaged in detecting methane leaks in pipelines and plants through methods such as drone patrols and the implementation of cameras. However, these measures can be costly for extensive facilities.
- Furthermore, if a company's managed methane gas volume decreases, it is required to conduct a thorough investigation into the cause and report these findings internally.

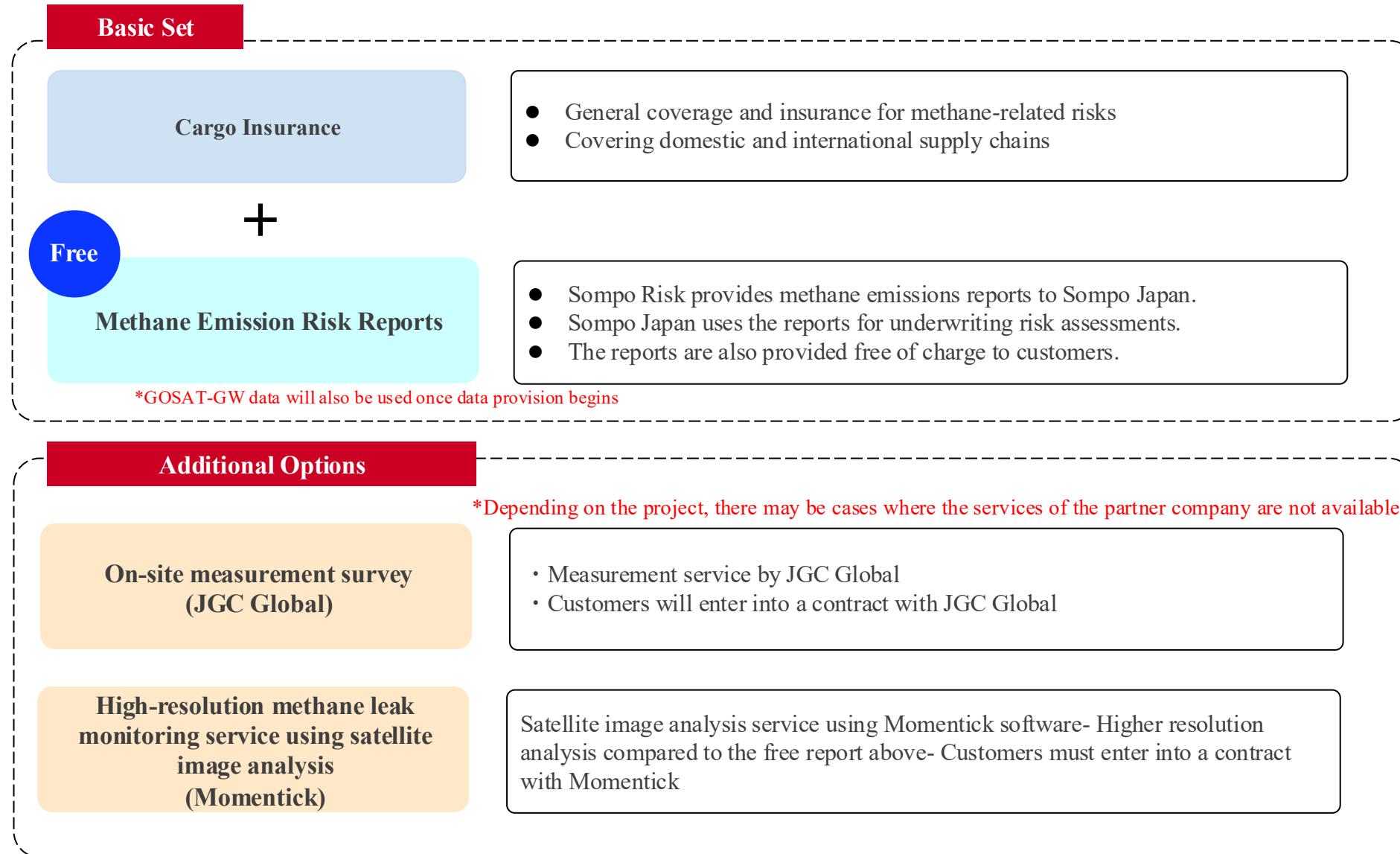
SOMPO's
Goals

- By detecting methane gas emissions and leaks of our clients' assets early, we can encourage early facility repairs and inspections, reducing the risk of fines and other penalties due to methane gas emission regulations in each country and reducing financial losses for our clients.
- We also protect the safety of employees and the local community by preventing the leakage and spread of high-concentration methane gas.

Risks related to methane gas emissions

The main risks for companies that emit methane gas are:

Risk Classification	Risks and Assumptions
Risk of asset outflow	<ul style="list-style-type: none"> Continuous, small leaks of gases containing methane from long pipelines can lead to reduced profits for companies. Early identification of leaks and repairs/measures can protect corporate assets and prevent loss of sales. Satellite monitoring is particularly useful for large facilities and long pipelines.
Risk of fines	<ul style="list-style-type: none"> Under each country's methane gas regulations, companies may be subject to fines based on their methane emissions. Identifying the sources of methane gas emissions can help reduce emissions that could result in fines.
CSR Risk	<ul style="list-style-type: none"> If there is a significant discrepancy between the methane gas emissions reported by a company and the methane gas emissions determined by satellite image analysis, the company risks being subject to severe criticism from the international community. In order to avoid such risks, it is important for companies to understand their own actual emissions.
Safety Risk	<ul style="list-style-type: none"> High concentrations of methane gas can have adverse effects on the human body. To prevent accidents that could result in large-scale methane gas leaks and affect employees and local residents, leaks are checked monthly or quarterly to detect and address any leaks that exceed normal levels (which may indicate abnormal operation) early on.
Soil contamination Risk	<ul style="list-style-type: none"> Organic waste landfills contain trace amounts of methane, which can ignite and cause fires. We will identify risks in the soil of existing and planned facilities both in Japan and overseas.



Sharing a Methane Emission Risk Report (Sample below)

- Sompo Risk provides methane emissions reports to Sompo Japan.
- Sompo Japan uses the reports for underwriting risk assessments.
- The reports are also provided free of charge to customers.

○○○○株式会社 御中

SOMPOリスクマネジメント

UnderWritingレポート

本報告書は、対象地に潜在するメタン漏洩リスクを明らかにすることを結果を示すものです。
Sentinel-5P衛星搭載のTROPOMI(Tropospheric Monitoring In TROPOMIは複数のスペクトルバンドを持ち、その中にメタンの強い吸定が可能です。
本レポートで示している推定メタン量(ton)は、衛星画像に移っている対TROPOMIの空間解像度は数キロメートル単位と比較的粗いため、本引必要があります。

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メタン漏洩可能性評価結果

過去00年間のうち、メタン漏洩が疑われるイベントが00回確認されました

日別メタン排出量

メタン検出量 TOP10イベント (推定量)

No.	日付	推定量 (ton)
1	2024-01-28 12:32LT	117
2	2024-03-16 12:32LT	108
3	2024-01-04 13:22LT	84
4		
5		
6		
7		
8		
9		
10		

対象施設情報

お客様名 | ○○○○○○○○○○
対象施設 | COP (緯度: 00.0° 経度: 00.0°)



メタン検出回数

77回

対象地点観測回数

888回

最大検出量 (ton)

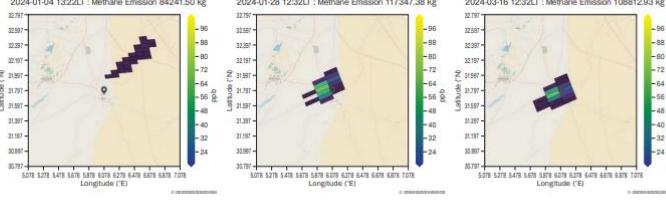
99t

検出時の平均検出量 (ton)

99t

メタン密度マップ

メタン検出量 TOP3イベント (推定量)



Contains modified Copernicus Sentinel data 2025 for Sentinel data 01

Examples of insurance products

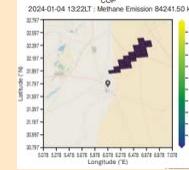
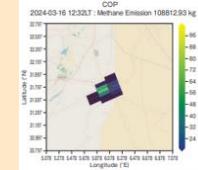
Detecting emissions exceeding the agreed value



Payment of insurance for countermeasure costs

Methane Leak Damage Prevention Cost Special Clause (tentative)

- This special clause is based on the assumption that our company has a cargo insurance contract for methane (natural gas, etc.) cargo.
- If a methane leak is discovered during the insurance period, the insurance will cover additional investigation and repair costs up to 10 million yen (provisional).



Collaboration with partner services



Service Menu
Methane measurement technology evaluation
Methane emission measurement
Consulting on GHG emissions management, including methane



◀ Methane emission measurement and evaluation facility constructed at Research & Development Center (JGC HOLDINGS)

