

Q1 : This criterion is linked to a Learning Outcome Summary of problem description

The primary issue tackled by Orbio Earth is the inadequate data on methane emissions from the global energy industry, which constrains the effective management of methane emission risks. Traditional data collection methods are manual, cost inefficient, and not universally applied across all oil & gas assets worldwide. This data deficit under-represents methane emissions by about 70%, hindering sustainability and risk analysts from properly managing emissions within their energy portfolios. Mis-management of these emissions can lead to stock devaluations, stranded assets, and exacerbated global warming.

Q2 : Highlighting of their launch post Links to an external site.where you identify the relevant nouns and verbs

Nouns

Verbs

 **Orbio Earth - Monitoring methane emissions with satellites**

We help sustainability **analysts** manage **methane emission risks**

Jack Angela

[Orbio Earth](#)

3 months ago

<https://www.orbio.earth/>

#energy#climate#analytics#satellites#artificial_intelligence

tl;dr Orbio makes it easy for sustainability and **risk** professionals to **identify** large methane emission risks across global **energy portfolios**. If you're interested in finding out more check out our website [here](#), and feel free to book a product demo [here](#)!

For more information read on below 

Hi everyone, thanks for stopping by our launch YC post. We are Rob and Jack and we are on a mission to power the low-carbon transition through methane monitoring.

Why methane I hear you ask?

Methane emissions from the energy industry, if prevented would have the climate impact equivalent to taking all cars and trucks off the road globally. It is a short-lived pollutant, therefore stopping this gas getting to the atmosphere is one of the best levers we have in the climate change mitigation fight.

The Problem: Poor data on understanding where emissions occur

Existing data collection processes are manual, involving hand-held cameras on a site, expensive and not frequently available on all 12 million oil & gas assets globally. Poor data collection processes mean poor data.

Existing methane inventories under-represent methane emissions by around 70%. This is preventing sustainability and risk analysts from managing emissions in their global energy portfolios. Mismanagement of these emissions can lead to stock devaluations, stranded assets and increases global warming.

The solution: Global and frequent methane emissions data

Orbio helps sustainability and risk analysts identify where in their large energy portfolios the biggest methane emission risks are. Identifying previously unknown risks and doing this on a frequent basis gives these analysts the tools to effectively manage emission risks.

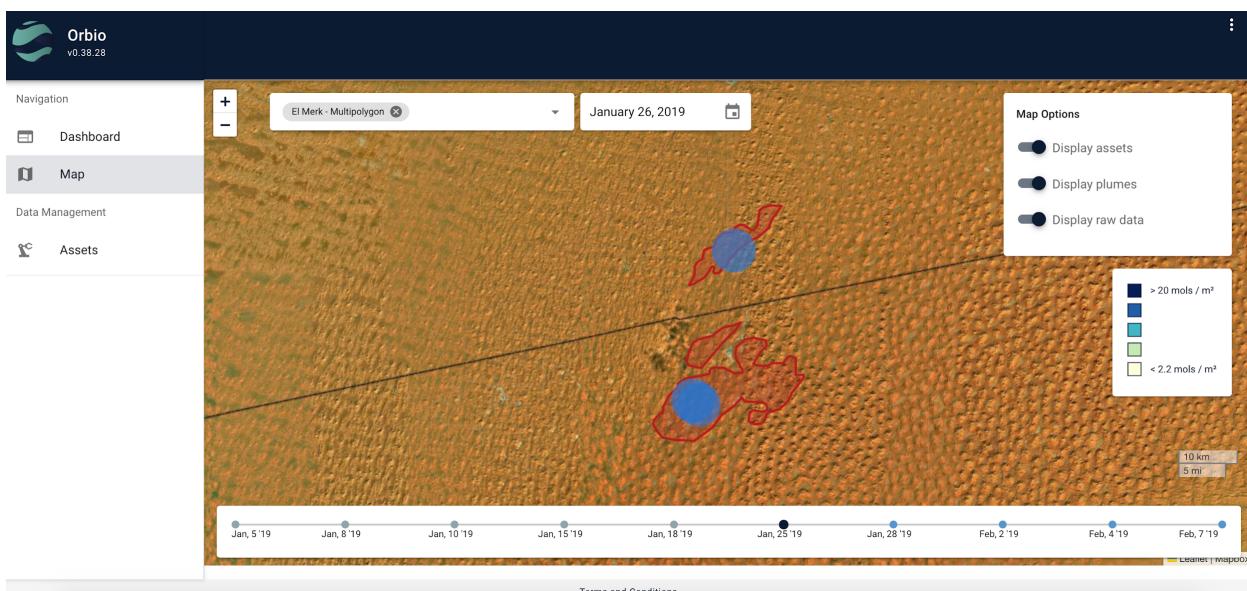
How it works: Processing non-methane emission satellite data

Orbio leverages the power of satellite data. We have developed an algorithm capable of processing data from satellites not previously designed to monitor methane emissions. Using these satellites enables us to deliver world-leading data across global scales, at an asset level (e.g. an oil well) and on a frequent basis.

Benchmarking assets, operators and countries on methane emission performance:

The screenshot shows the Orbio platform interface. On the left, there's a navigation sidebar with 'Dashboard' selected. Below it are sections for 'Data Management' and 'Assets'. A central search bar says 'Search Asset'. To the right is a 'Performance Table' titled 'Performance Table' with columns for 'Assets', 'Fields', 'Operators', and 'Countries'. The table lists five assets: Alrar, Hassi R'Mel, El Agreb, El Merk - Multipolygon, and El Gassi, each with its aggregated emissions, total plumes, YOY trend, and actions. At the bottom of the table are 'Terms and Conditions' and a 'Print' icon.

Mapping out where these methane emission risks lie in energy portfolios



💰 The opportunity: A growing market being pulled by new regulation

A sweep of regulation being introduced across the globe in 2023. This is putting pressure on the energy industry, financial professionals and insurers, totalling around 60,000 companies worldwide, to get a better understanding of what the associated emission risks in their energy portfolios.

💡 Our ask: How you can help

- Connect us with sustainability risk analysts in the energy, finance and insurance industries. [Click here](#)
- We are hiring, if you know anyone on the marketing and commercial side we would love to have an intro! [Click here](#)

Q3 Summary and Aggregate the nouns and verbs:

Summary:

Nouns:

1. methane
2. emission risks
3. energy portfolios.
4. methane emissions
5. methane inventories
6. sustainability and risk analysts
7. satellite data.
8. asset level
9. regulation

Verbs:

1. monitor
2. identify
3. process
4. manage

Aggregated:

Analysts

- type [Sustainability, Risk]
- organization
- Contact_info
- analyst_id

Emissions

- emission_id
- type [Methane, other fuel if possible]
- source (e.g., oil well, gas assets)
- amount/quantity
- location

Satellites

- satellite_id
- data
- emmision_id
- freqDataCollection
- timestamp

Assets

- asset_id
- type [Oil Well, Gas Asset]
- location
- associatedEmissionQuantity

Regulations

- regulation_id
- regulationVolume
- shortDescription
- acronym

EnergyPortfolio

- energy_portfolio_id
- assets_id
- company_id

Company

- company_id
- came
- location

Explanations of relations:

- 1. Regulations (1..) regulate Companies (0..):**
 - This suggests that one or more regulations can regulate zero or more companies. It's possible for a company to be regulated by multiple regulations, and each regulation can apply to multiple companies.
- 2. Company (0..) aggregates/manages Energy Portfolio (1..):**
 - This implies that a company can manage one or more energy portfolios. The management of an energy portfolio is essential for a company, but a company could have multiple portfolios, for different purposes or regions perhaps.
- 3. Analysts (1..) identify risks of Energy Portfolio (0..):**
 - This suggests that one or more analysts are required to identify risks associated with zero or more energy portfolios. It's possible for multiple analysts to work on identifying risks for multiple portfolios.
- 4. Energy Portfolio (8..) composites Assets/Resources (1..):**
 - This implies that an energy portfolio is composed of one or more assets or resources, and there are at least eight energy portfolios in this system. Each portfolio can have multiple assets and resources.
- 5. Assets and Resources (1..) aggregates Emissions (0..):**

- a. This suggests that assets and resources aggregate or account for zero or more emissions. It's a one-to-many relationship where multiple emissions can be associated with a single asset or resource.
6. **Emissions (0..) monitored by Satellites (0..):**
- a. This implies that zero or more emissions can be monitored by zero or more satellites. It's possible for multiple satellites to monitor multiple emissions, and not all emissions might be monitored.

Q4 Narratives - Rules. Bullet points of the rules of the product using your nouns and verbs

1. Monitoring Methane Emissions:

- A satellite can monitor multiple emissions.
- An emission can be monitored by multiple satellites.
- Emissions have a type, source, quantity, and location.

2. Managing Data and Risks:

- An analyst can manage multiple emissions data.
- Emissions data can be managed by multiple analysts.
- Analysts need role-based access control on updating the database to prevent unauthorized deletion or insertion, etc.

3. Identifying Emission Hotspots:

- Analysts can identify emission hotspots by processing the data collected from satellites.
- The system should provide tools for benchmarking and mapping emissions to assist analysts in identifying emission hotspots.

4. Regulatory Compliance:

- Companies must adhere to regulations concerning methane emissions.
- Regulations apply to multiple companies, assets, and emissions.
- Regulations should have a clear description and a unique identifier.

5. Asset Management:

- Companies manage multiple assets.
- Assets can be of different types like Oil Well, Gas Asset and have associated emission quantities.
- Assets should have a location and a unique identifier.

6. Satellite Data Processing:

- Satellites process data of multiple emissions.
- Data processing should have a timestamp and a frequency of data collection.
- The system should ensure the data from satellites is in the correct format.

7. Connecting with Stakeholders:

- The system should facilitate connecting analysts with companies for better coordination on emission control.
- Hiring qualified analysts and technical staff is crucial for continuous monitoring and managing emissions.

8. Global Scale Monitoring:

- The system should be capable of delivering emissions data across global scales.
- Global scales monitoring helps in mapping out where the methane emission risks lie in energy portfolios.

Q5 Creative Add-ons

Advanced Security Features:

1. **Encryption at Rest and in Transit:** Ensure that data is encrypted not only while being transmitted but also when stored.
2. **Anomaly Detection:** Implement machine learning algorithms to detect unusual access patterns and potential data breaches.

Q6 Challenging questions

1. How will the database ensure consistency in the data, especially when there are changes in ownership of assets or companies?
2. What validation rules are in place to ensure that all required fields are filled out and that relationships between entities are correctly maintained?
3. How will historical data be managed, especially in scenarios where assets change ownership between companies or emissions data gets revised?
4. What is the minimum frequency to collect the emission data?
5. How to support compliance audits and reporting?