

EU METHANE REGULATION

POSSIBLE OUTCOME FOR SUBSEA LEAKAGE DETECTION AND QUANTIFICATION

Forum for miljøovervåking, 1.11.2023

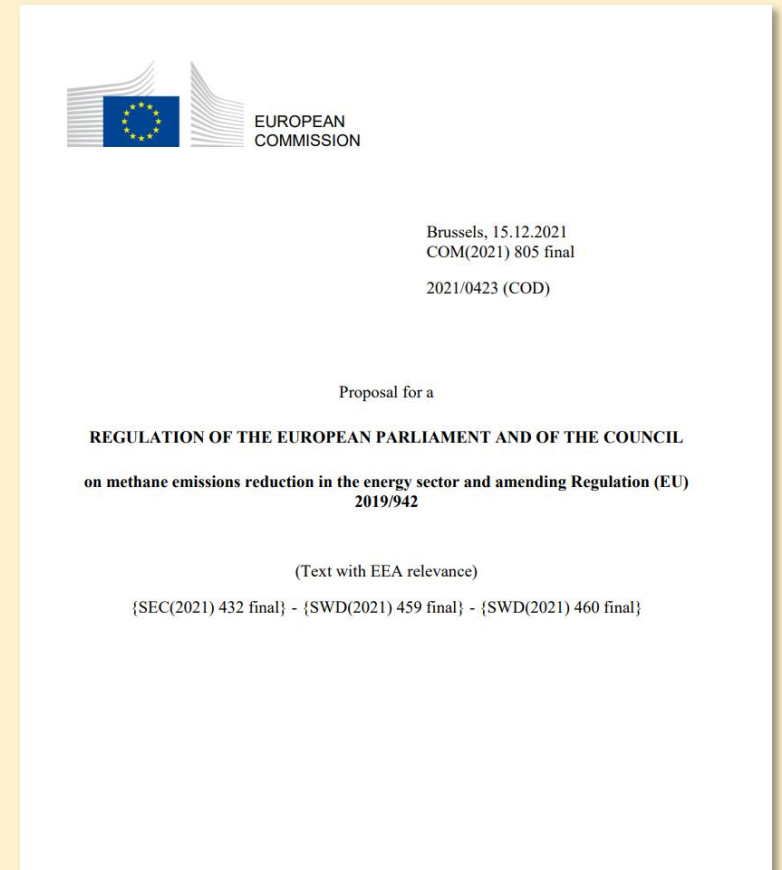
Ann-Cathrin Vaage, fagsjef klimapolitikk, Offshore Norge

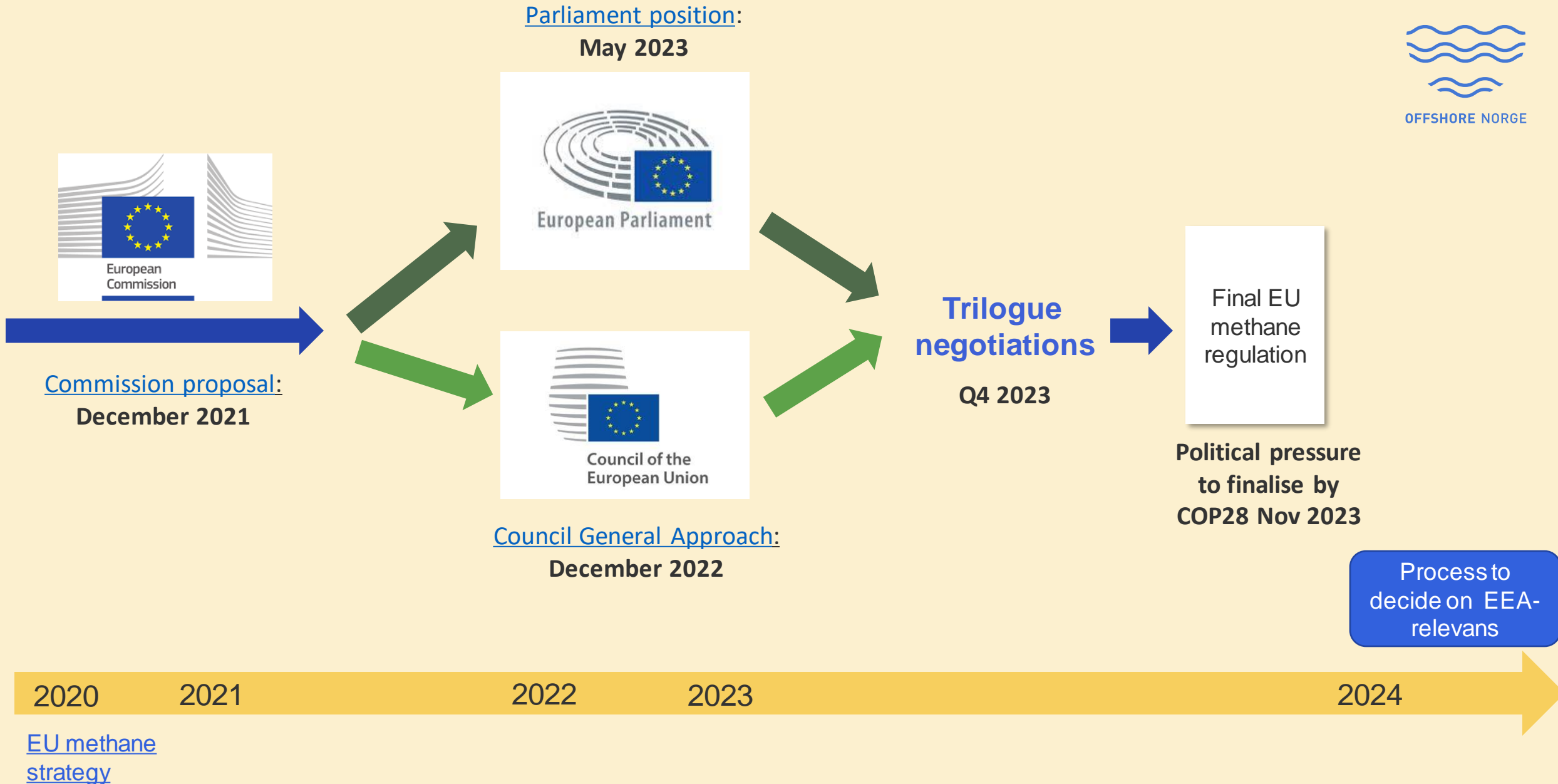
EUs methane regulation

General objective: reducing methane emissions from fossil energy produced or consumed in the Union



- Improve the **accuracy of information** on the main sources of methane emissions
 - ensure the availability of asset-level data and robust quantification of emissions, and thereby **increase the accuracy of measurements**
- Ensure further effective **reduction of methane emissions** across the energy supply chain in the EU.
- Improve the availability of information to provide incentives for the reduction of methane emissions related to **fossil energy imported to the EU**
 - As the majority of methane emissions linked to fossil energy consumed within the EU occur outside the EU, this specific objective seeks to set **incentives to reduce methane emissions in partner countries** by creating transparency in the market.

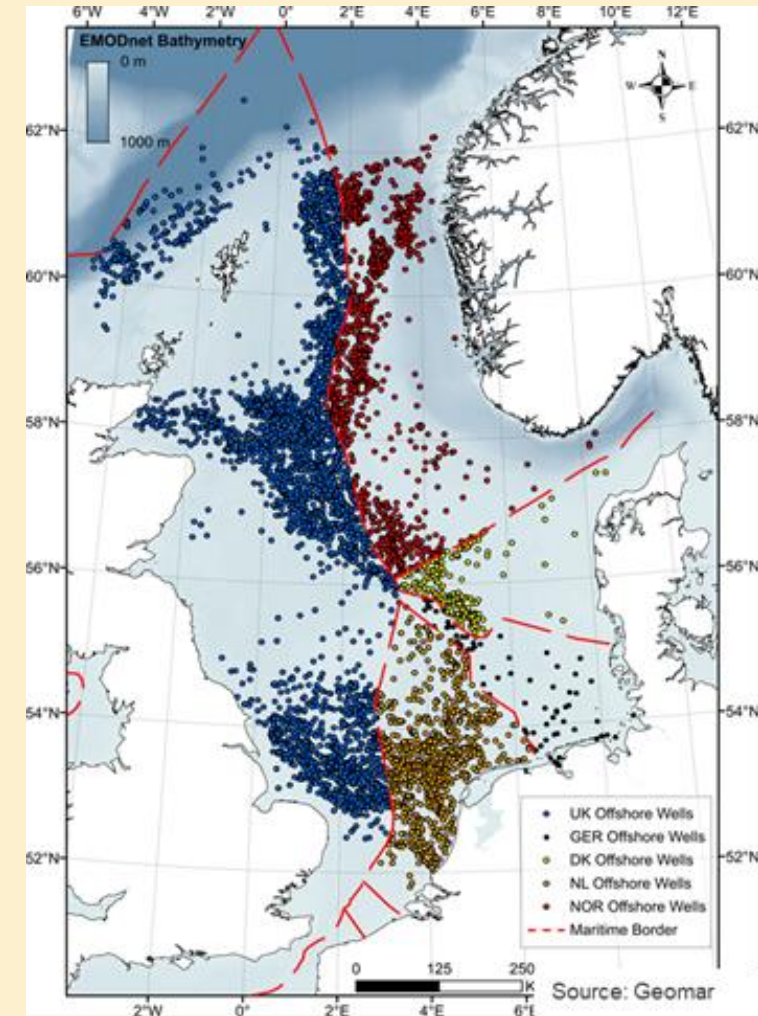




POSSIBLE OUTCOME: ANNUAL QUANTIFICATION OF EMISSIONS FROM NON-PRODUCING WELLS



- Reports containing **information on quantification of methane emissions** and, where such monitoring equipment exists on wellheads, pressure monitoring, from **all inactive wells and temporarily plugged wells** shall be submitted to the competent authorities by 24 months of the date of entry into force of this Regulation and by 31 May **every year** thereafter and cover the last available calendar year.
- ‘quantification’ means operations to determine the quantity of methane emissions, **based on direct measurements** and where those are not feasible, based on other methods such as simulation tools and other detailed engineering calculations or a combination of such methods.



POSSIBLE OUTCOME: REGULAR LEAK DETECTION AND REPAIR SURVEYS FOR SUBSEA COMPONENTS

- *In carrying out the surveys, operators shall use detection devices with a **minimum detection limit** as follows:*
 - ✓ *7000 parts per million or 17 grams per hour for **offshore components below the sea level and below the seabed** at standard temperature and pressure in compliance with the manufacturer specifications for operation and maintenance.*
- ✓ *Operators shall **repair or replace** all components found to be emitting at least:*
 - ✓ *7000 parts per million or 17 grams per hour for **offshore components below the sea level and below the seabed** at standard temperature and pressure.*

Type of LDAR survey		Frequency of survey
Type 1 LDAR survey	Offshore components above the sea level	12 months
	Offshore components below the sea level	24 months
	Offshore components below the seabed	36 months
Type 2 LDAR survey	Offshore components above the sea level	24 months

‘component’ means any part or element of equipment used in oil or gas sites or infrastructure that could be the source of fugitive emissions or venting of methane, including but not limited to, valves, connectors and flanges, open-ended lines, pressure release valves, thief hatches, walls of vessels or aboveground or underground pipelines.

SUBSEA LEAK QUANTIFICATION



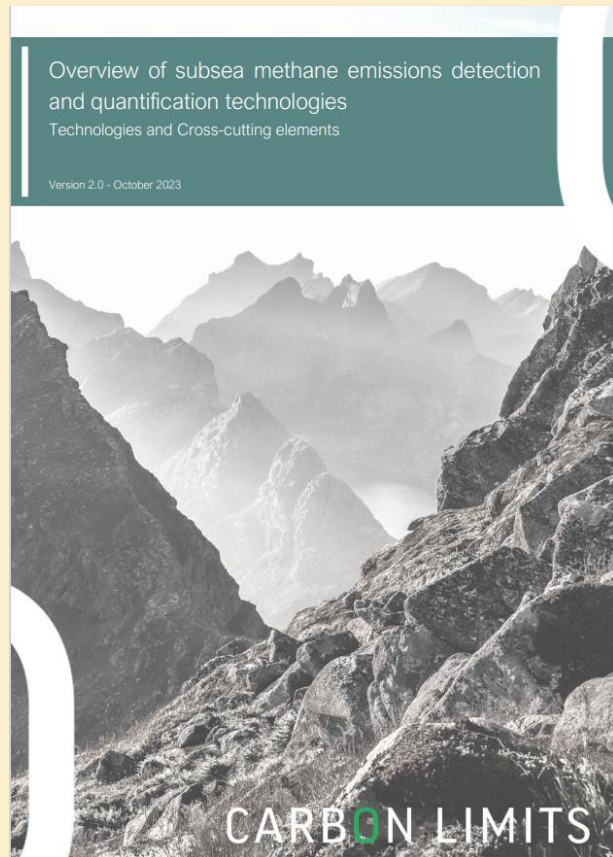
- Subsea gas leaks can be **detected** by cameras or acoustic instruments
- Suitable technology to **quantify** the leaks are not commercially available
- Methane content in **bubbles varies** - dependent on pressure (water depth), temperature, gas composition etc.
- Difficult to differ between **natural occurring methane seepage** and gas leaks
- As methane dissolves in seawater, the amount **released to the atmosphere** varies depending on water depth and other conditions.
- Subsea components/wells are usually remotely located and **require vessels** to operate the ROVs/AUVs - which requires time, economic resources, and environmental consideration.

Hence, subsea quantification requirements should be excluded from Article 14 (LDAR) and 18 (non-producing wells) in the EU methane regulation.



Carbon Limits report, October 2023 v2 ([link](#))

- 11 detection and quantification technologies from 6 technology providers reviewed
- None of the technologies can be used for quantification specifically



Methane-specific quantification

Figure 2 Summary of Technology Data Sheets

Technologies	Sensor Type	Gas Detection?	Gas Quantification?	Methane-specific Quantification?	Threshold	Frequency	Deployment method	Sensor type	Type of sources	Performance Validation	Possible to isolate anthropogenic methane	Maturity (TRL)
SubCtech	Sniffer	✓	✗	✗	10 ppm CH4	📅	🔧🔌	👉	🏠🏢🏭	✗	✗	3
Franatech METS	Capacitance	✓	✓	✗	0.01L/min CH ₄ †	🕒📅	🔧🔌	👉	🏠🏢🏭	✓	+	7
Franatech LMS	Sniffer	✓	✓	✗	0.01L/min CH ₄ †	📅	🔌	👉	🏠🏢🏭	✓	+	7
Franatech HLD	Sniffer	✓	✓	✗	0.01L/min CH ₄ †	🕒	🔧	👉	🏠🏢🏭	✗	✓	7
Metas	Active Acoustic	✓	✓	✗	42g/h @200m range (100% CH ₄)	🕒	🔧	📶	🏠🏢🏭	✓	✗	6
Naxys SALD	Passive Acoustic	✓	✗	✗	N/A	🕒	🔧	📶	🏠🏢🏭	✓	✗	7
Naxys SLLD	Active Acoustic	✓	✓	✗	N/A	🕒	🔧	👉	🏠🏢🏭	✗	✗	6
Wavefront Sentry IMS	Active Acoustic	✓	✓	✗	0.1L/min at 500m range	🕒	🔧	📶	🏠🏢🏭	✗	+	6
Wavefront Sostice MAS	Active Acoustic	✓	✓	✗	1L/min at 100m range	📅	🔧🔌👉	📶	🏠🏢🏭	✗	+	6
Colmar	Passive Acoustic	✓	✓	✗	0.1 L/min	📅	🔧🔌👉	📶	🏠🏢🏭	✗	+	7
Volume Collection	Funnel	✓	✓	✗	<0.1 L/min	📅	🔧🔌👉	👉	🏠🏢🏭	✗	+	NA

Key

Threshold: Lowest value stated by tech providers

Frequency

Continuous🕒

Periodic📅

Deployment Method

Permanent Installation🔧

ROV/AUV🔧🔌

Diver🔧🔌👉

Vessel Deployed🔧🔌👉🚢

Sensor Type

Point Sensor👉

Area coverage📶

Type of sources

Site Level🏠Yes🟢

Equipment Level🏢No🔴

Component Level🔧No🔴

Performance validation

(of any kind with publicly available information)

Yes🟢

No🔴

Possible to isolate anthropogenic methane

Yes🟢

Yes, with auxiliary information+

No🔴

Maturity

API 17N

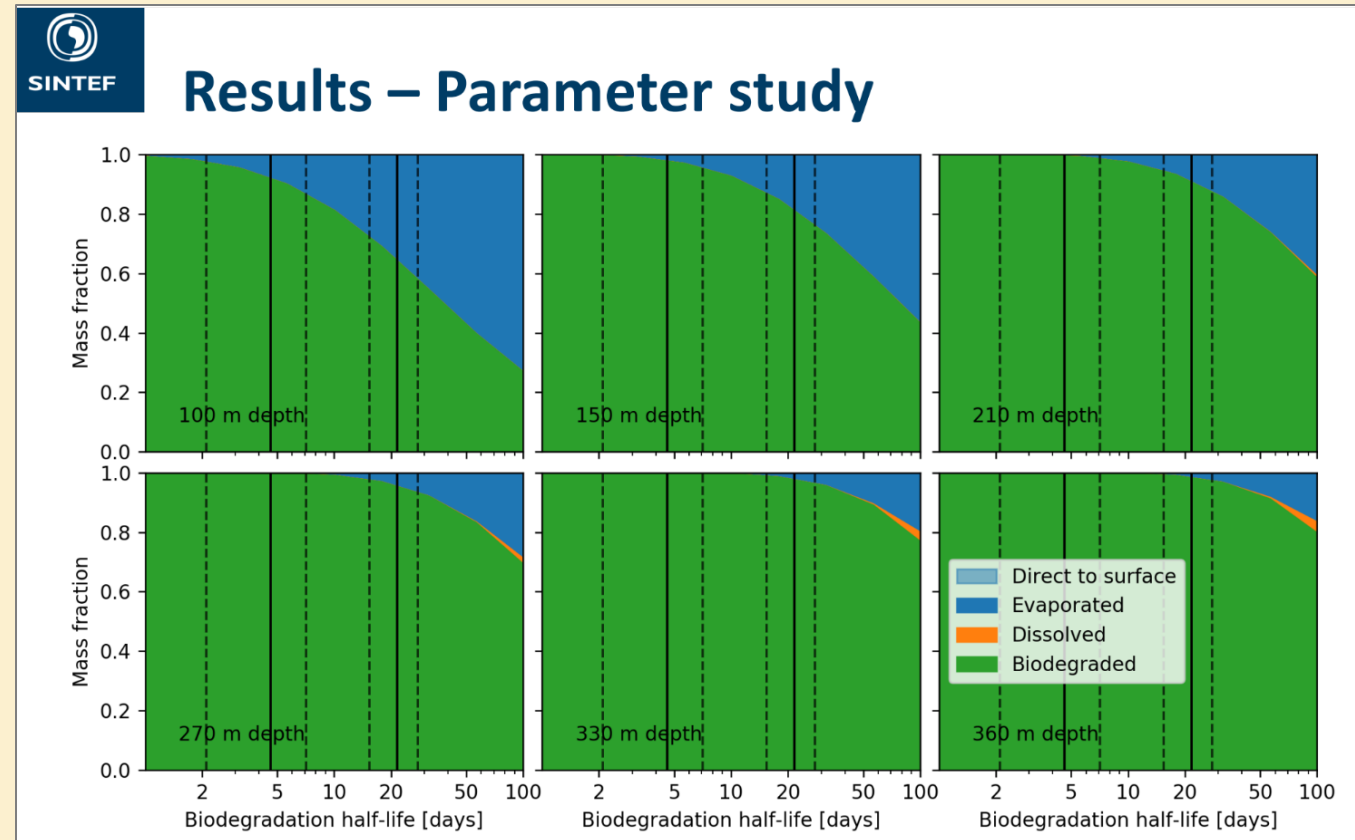
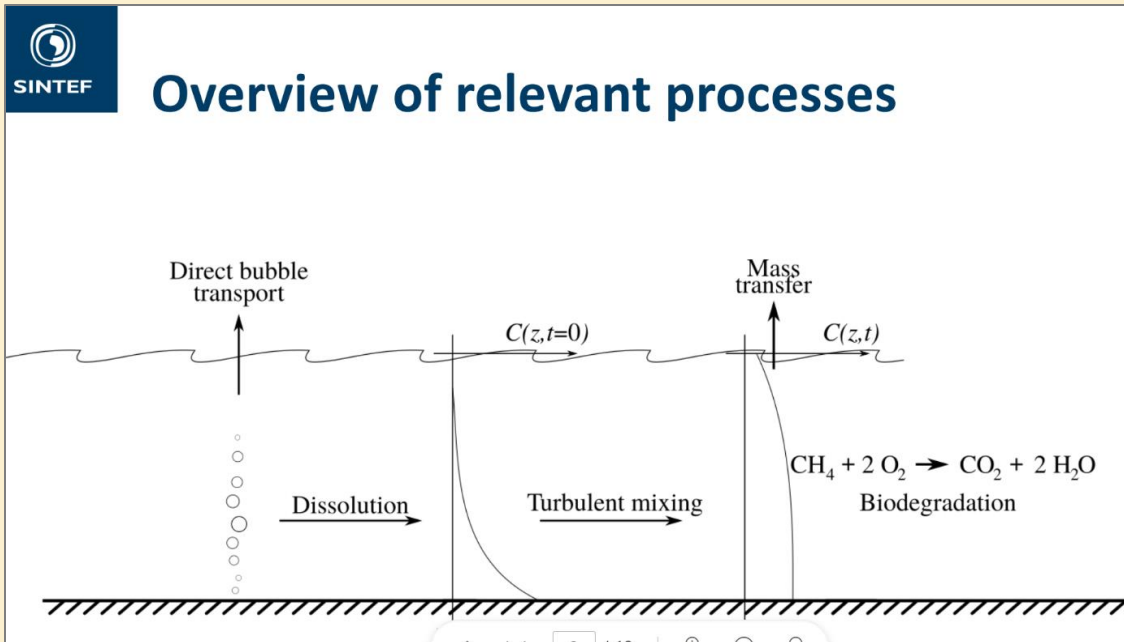
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† Franatech detection limits based on proprietary software (not yet available)

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Sintef report, October 2022 ([link](#))

- Methane released subsea will dissolve and convert to CO₂ and water
- The amount methane released to the atmosphere varies depending on water depth and other conditions



ARTICLE 2: DEFINITION OF SOURCE

- ‘source’ is defined as a “component or a geological structure that releases methane into the atmosphere whether intentionally or unintentionally, intermittently or persistently”
- The term ‘geological structure’ is understood to include naturally occurring emissions from the seabed (methane seepage)
- Methane seepage is not in the scope of this regulation

Hence, “**or a geological structure**” should be deleted



SUMMARY

- Outcome of the EU trilogue process regarding subsea quantification/detection requirements highly uncertain
- Political pressure to finalise the regulation by COP 28 end November 2023
- Offshore Norge recommends that subsea quantification is excluded from the EU methane regulation and has provided technical input to the EU institutions – on our own and with member companies, IOGP, other NOIAs, the Norwegian authorities and EU member states (DK, NL, GER).
- Not decided yet if the EU methane regulation will be found EEA relevant and apply for the Norwegian Continental Shelf.