



International
Association
of Oil & Gas
Producers

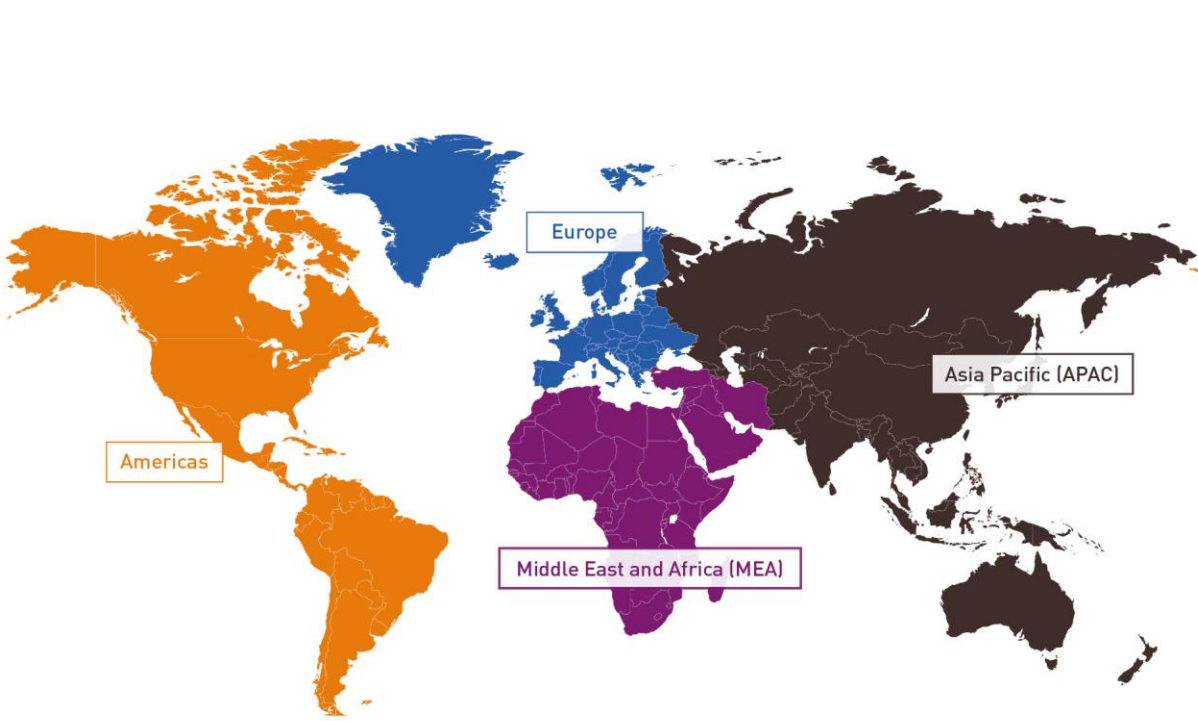
EU Regulation on methane emissions reductions in the energy sector

Emils Lagzdins, Senior Policy Officer
Methane Mondays Webinar, 11 December 2023



We speak on behalf of a global membership

90 Members as of May 2023



Americas

API	Hess
ARPEL	IADC
Atlantic LNG	IBP
Baker Hughes	Kosmos Energy
CAPP	Oxy
Cenovus Energy	Pan American Energy
Chevron	Petrobras
Colombian Security Council	Pluspetrol
ConocoPhillips	SLB
EnerGeo Alliance	Suncor
ExxonMobil	YPF SA

Europe

Aker BP	Neptune Energy
Aker Solutions	Offshore Energies UK
Assala Energy	Offshore Norge
bp	OMV
BVEG	OPITO
BW Energy	PKN Orlen S.A.
Capricorn Energy	Repsol
Cepsa EP	Saipem
Christof Industries	SBM Offshore
DNV	Shell
Element NL	Spirit Energy
Energy Institute	TechnipFMC
Eni SpA	TotalEnergies
Equinor	Trident Energy
Harbour Energy	Tullow Oil
HeliOffshore	Vår Energi
Ipieca	Wintershall Dea
MOL	

Middle East and Africa (MEA)

Addax Cameroon	Dragon Oil
ADNOC	EGPC
AKT	Genel Energy
Aramco	Gulf Keystone Petroleum
Azule Energy	Kuwait Oil Company
Basrah Gas Company	nogaholding
CCED	North Oil Company
Crescent Petroleum	Qatar Energy
Dana Gas	Qatargas
Dolphin Energy	Sonangol

Asia Pacific (APAC)

APPEA	PETRONAS Carigali
Beach Energy	Prime Energy
Brunei Shell Petroleum	PT Pertamina Hulu Energi
CNOOC International	PTTEP
INPEX	SOCAR
KazMunayGas	Woodside Energy
NCOG	

The map shows the division of the world into four regions on which subscription shares are based. The delineation of zones is not intended to reflect offshore boundaries.

2 Map shows locations of Member Head Offices. Many operate globally

European Membership



Members – Upstream Companies

- | | |
|---------------------|-----------------|
| Aker BP | OMV |
| bp | PKN Orlen S.A. |
| Capricorn Energy | Repsol |
| Chevron | Shell |
| CNOOC International | Spirit Energy |
| ConocoPhillips | Suncor |
| Eni SpA | TotalEnergies |
| Equinor | Tullow Oil |
| ExxonMobil | Vår Energi |
| Harbour Energy | Wintershall Dea |
| INPEX | Woodside Energy |
| MOL | |
| Neptune Energy | |

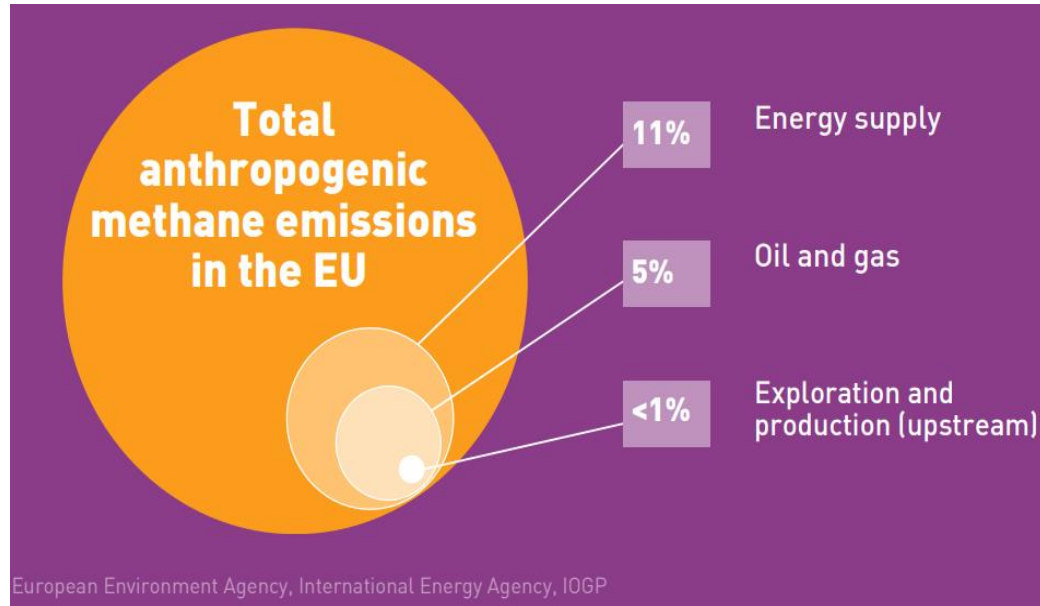
Members – National and Other Associations

- BVEG
- Element NL
- Offshore Energies UK
- Offshore Norge

Associate Members

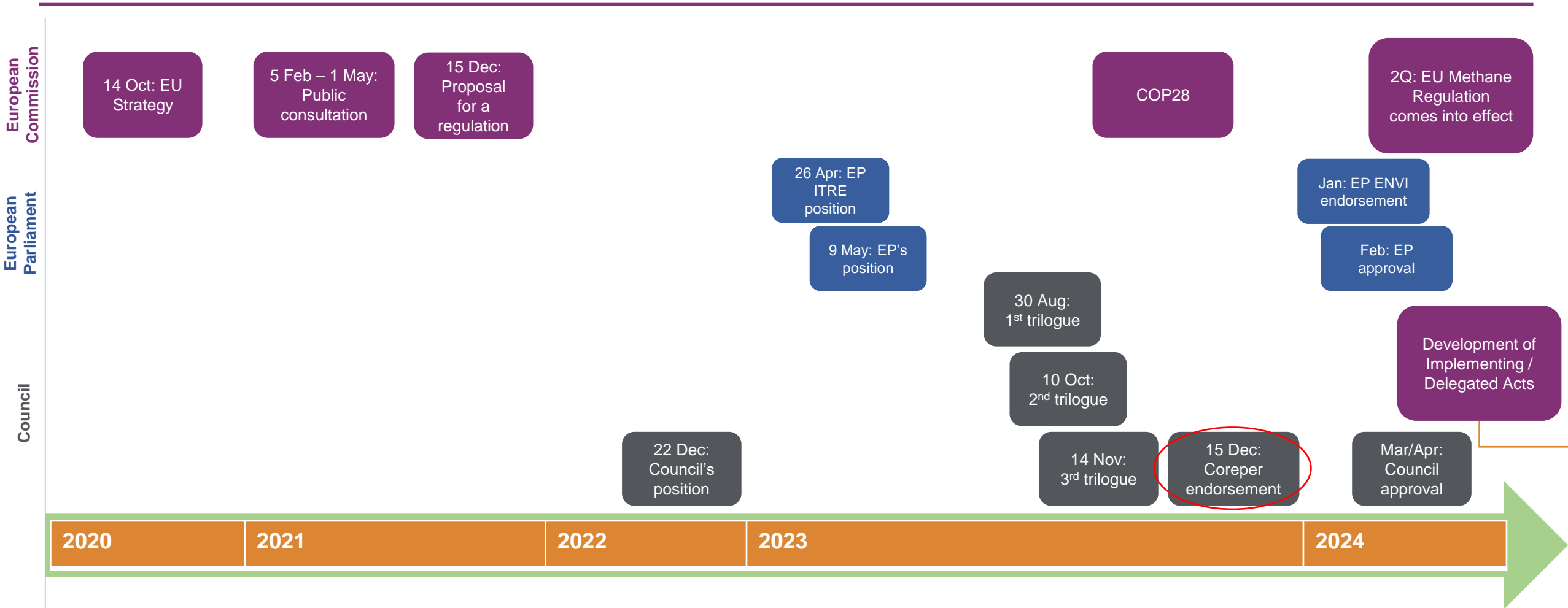
- Aker Solutions
- Baker Hughes
- OPITO
- SLB
- TechnipFMC

O&G upstream industry committed to tackle methane emissions and supports EU Methane Regulation

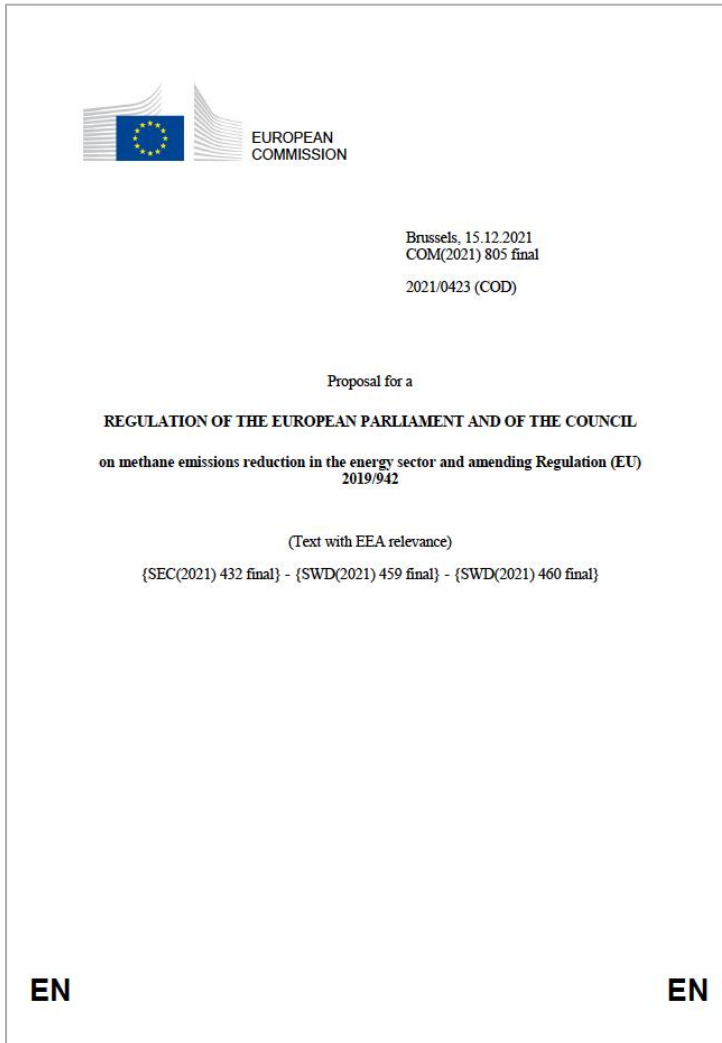


- A well-designed EU Methane Regulation **complements the existing mature framework in Europe for exploration & production activities**
 - Leak prevention is **inherent to our industry's 'licence to operate'**, just like safety
- Natural gas produced in Europe has the **lowest greenhouse gas footprint**
 - **All of Europe's natural gas can be produced** while still meeting the net zero objective
- We cannot solve the issue alone: the **upstream sector represents <1%** of total EU anthropogenic methane emissions

Timeline – EU Methane Regulation likely to come into force in 2Q 2024



Proposal for a EU Methane Regulation - Content



- **Improve data quality:**

- Impose measuring and reporting obligations
- Establish independent verifiers

- **Reduce emission in EU supply chain:**

- Impose LDAR routines
- Impose a ban on routine venting and flaring

- **Reduce imported emissions:**

- Impose information obligation on importers
- International Methane Emissions Observatory
- Opportunity for additional Delegated Acts on importer emission data requirements

Key highlights from the compromise text (status 7/12/23)

Draft compromise on LDAR (status 7/12/23)

- **Submission of LDAR survey programme** to the competent authority
- **Differentiation between components:** aboveground, underground, distribution and transmission, and offshore (including below sea level and below the seabed)
- LDAR to be carried out by **Type 1 (e.g. OGI) and Type 2 (e.g. FID) surveys**
 - **Different survey frequencies** ranging from every 3 months to every 36 months
 - **Minimum Detection Limits (MDLs) to be set out in secondary legislation** by EC
- **Use of advanced detection technologies** (e.g. drones, continuous monitoring) under specific conditions
- Varying minimum leak **repair thresholds ranging from 1g/h or 500 ppm to 17g/h or 7000 ppm**
- Repair / replacement: first attempt no later than 5 days after detection, **30 days for complete repair**
 - **Further delays allowed under specific criteria** (up to one year or next system shutdown)
 - **Resurveying of components** within 45 days after repair (above repair threshold), 3 months (below repair threshold)
- **Good performance awarded** by relaxation of periodic LDAR surveys

	LDAR overview (draft compromise, status 7/12/23)								
Submitting LDAR programme to CAs Art.14(1)	9 months: existing sites 6 months: new sites (from the date of start of operations)								
Initial LDAR survey Art.14(2)	First Type 2 LDAR survey of all components carried out by: <ul style="list-style-type: none"> 12 months for existing sites 9 months for new sites 								
Segmentation of components Art.14(2) & Annex I	Aboveground (detection at a level as close as possible to each individual potential emission source)		Underground (detection at interface between ground and atmosphere)		Distribution and Transmission (detection at interface between ground and atmosphere)		Offshore (detection applying the best commercially available detection techniques)		Others
Frequency (every x months) Annex I	Compressor station, underground storage, LNG-terminal, regulating and metering station	Type 1: 4 Type 2: 8	Bitumen sheet, grey cast iron	Type 1: 3 Type 2: 6	Compressor station, regulating and metering station (design pressure >16 bar)	Type 1: 4 Type 2: 8	Above the sea level	Type 1: 12 Type 2: 24	Type 1: 6 Type 2: 12
					Valve station (design pressure >16 bar)	Type 1: 9 Type 2: 18			
			Asbestos, ductile cast iron	Type 1: 6 Type 2: 12	Regulating and metering station (design pressure <=16 bar)	Type 2: 9	Below the sea level	Type 1: 24	
					Valve station (design pressure <=16 bar)	Type 2: 21			
	Valve station	Type 1: 9 Type 2: 18	Non-protected steel, copper	Type 1: 9 Type 2: 18	Grey cast iron, bitumen sheet	Type 1: 3 Type 2: 6	Below the seabed	Type 1: 36	
					Asbestos, ductile cast iron	Type 1: 6 Type 2: 12			
			Polyethylene, PVC, protected steels	Type 1: 15 Type 2: 18 (30 for protected steel)	Non-protected steel, copper	Type 1: 12 Type 2: 24	Offshore components located at water depth >700m exempt , if robust evidence can be provided that the impact on the climate of potential emissions from those components is highly likely to be negligible.		
					Polyethylene, PVC, protected steel	Type 1: 24 Type 2: 36			
<ul style="list-style-type: none"> When the type of material cannot be determined, the highest frequency survey for the respective LDAR survey type shall be used. (Annex I) Operators may choose to carry out a Type 2 LDAR survey instead of Type 1 when a Type 1 survey is due. (Art.14(2e)) 									
Minimum detection limits (MDLs) Art.14(3)	By 12 months, EC to develop Implementing Acts specifying: <ul style="list-style-type: none"> MDLs and detection techniques to be employed for the different detection devices to be used for meeting the requirements specific to all components in Art.14(4) (i.e. repair thresholds) Use of best available technologies and detection techniques until Implementing Act developed 								
Leak repair thresholds Art.14(4)	<ul style="list-style-type: none"> In case of type 1 leak detection and repair surveys: 7000 ppm or 17 g/h In case of type 2 leak detection and repair surveys: <ul style="list-style-type: none"> 500 ppm or 1 g/h for aboveground components and for offshore components above the sea level 1000 ppm or 5 g/h for the second step of underground components 7000 ppm or 17 g/h for offshore components below the sea level and below the seabed 								
Repair of leaking components Art.14(4a)(4b)	Repair shall take place immediately, or no later than 5 days for first attempt and 30 days for a complete repair , unless specific criteria is met which permits additional delay by one year or until next shutdown (whichever is earliest)								
Resurveying of repaired components Art.14(5)	<ul style="list-style-type: none"> Leaks above repair thresholds: no later than 45 days Leaks below repair threshed: no later than 3 months (to ensure that leaks rate has not increased) 								
Recognition of good performance Art.14(2aa)	LDAR frequency reduced for non-leaking components if during 5 proceeding years <1% of total components and subcomponents in each site are leaking , and that methane emissions associated with these leaks aggregated represent <0.08% of the total volumes of gas or 0.015% of total mass of oil processed/extracted: <ul style="list-style-type: none"> For all components at processing locations, Type 1 LDAR surveys at least every 12 months; For at least 25% of all components at processing locations, Type 2 LDAR surveys are performed every 12 months, ensuring that all components are checked every 48 months; For all components at production locations, Type 1 LDAR surveys at least every 36 months and Type 2 LDAR at least every 60 months 								
Inclusion of advanced technologies Art.14(2f)	As part of LDAR, operators may use advanced detection technologies: <ul style="list-style-type: none"> Upon approval from the competent authority, and If measurement undertaken at the level of each individual potential emission source, and If comply with MDLs and repair thresholds 								

Draft compromise on Venting and Flaring (status 7/12/23)

- Venting / flaring **only allowed in cases of emergency or malfunction**
- Submission of an **annual report** on all venting and flaring events
- **Audio, Visual and Olfactory (AVO) inspections** of flare stacks every 15 days or **use of remote/automated monitoring systems**
- Flare stacks to comply with a **removal and destruction efficiency of 99%** within 18 months
- New, replaced, or partially refurbished sites **must use commercially available zero-emission** pneumatic devices, compressors, storage tanks, sampling and measurement devices, and dry gas seals
- Operators to **replace venting equipment with non-emitting alternatives** if available and meeting standards

Draft compromise on wells (status 7/12/23)

- MS to establish an **inventory of inactive, temporarily plugged, and permanently plugged & abandoned (P&A) wells**
- Operators/MS to submit **annual reports on methane emissions** (derived from quantification, and where applicable, pressure monitoring) for inactive and temporarily plugged wells...
 - Onshore wells excluded if no methane emissions in the last 5 years
 - Offshore wells excluded if no methane emissions in the last 3 years
- **Permanently P&A wells excluded** unless verified evidence of material methane emissions
- If methane emissions detected, **necessary measures for remediation, reclamation, and plugging to be taken** by responsible parties
- **Exemptions for offshore wells:**
 - Offshore wells >700m water depth may be exempted if evidence shows negligible impact on climate
 - Temporarily plugged wells and permanently P&A Wells between 200 and 700m depth may be exempt if operator demonstrates negligible impact during environmental assessments

Draft compromise on imports (status 7/12/23)

- Annual importer reporting requirement submitted to Competent Authority (in line with Annex VIII)

By 2026
Data collection and monitoring tool



- ...establish **public methane transparency database**
- ...publish **methane performance profiles**
- ...establish **rapid reaction mechanism for super emitting events**
- ...establish **global methane monitoring** tool using satellite data

By 2027
MRV Equivalency



- ...set requirement for exporters/3rd countries to meet **equivalent monitoring, reporting, and verification measures** (MRV in line with Art 12; OGMP 2.0 Level 5)
- ...**determined equivalency** via secondary legislation

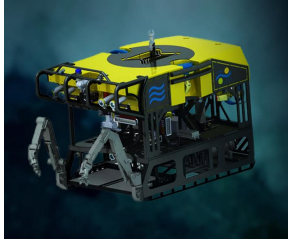
By 2030
Methane emissions intensity obligation



- ...adopt **methodology for calculating methane intensity at the producer level**
- ...set a **maximum binding methane intensity values for imports** (contracts concluded/renewed 6 years after Reg comes into force)

Key concerns

LDAR - Some terms not implementable / proportionate



LDAR obligations for 'subsea' / 'sub seabed' components **not implementable**

- **Exclude from scope or reflect existing practices for subsea environment**
- Expert studies (Carbon Limits) and recent EC non-paper recommendations confirm this



Advanced detection technologies (ADT) cannot be applied ... if limiting criteria maintained

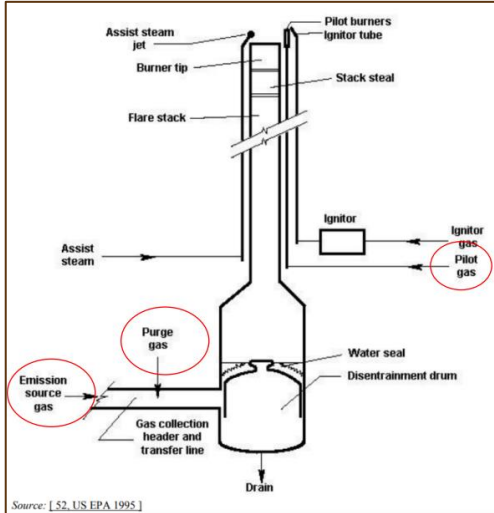
- **ADT not designed to be applied at point source level of components (criteria b), neither to comply with same Minimum Detection Limits as hand-held devices (criteria c)**
- **Rather find a big leak quickly (with ADTs) than only after X months (with handheld-devices)**
- **Incentivize good performance:** relax survey frequencies if operators demonstrate combination of surveys & ADTs yields better abatement potential



Avoid disproportionately low repair threshold of 1g/h

- **Little or negative environmental benefit** (finds <1% of possible leak volumes) but significant activities
- 1g/h is **14 times lower** than emissions from one dairy cow

Venting & Flaring and Wells - Some terms not proportionate



Art. 15(3) on V&F: would result in vast operation shut-ins

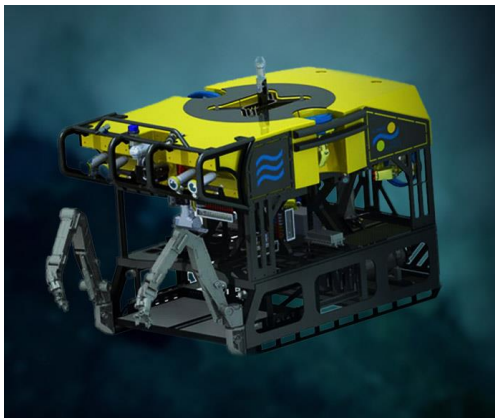
- Minor (but continuous) **pilot flame and** (stack-filling) **purge gas flames are paramount** to ensure safe operations ... but current text does NOT provide for it

Art. 17(1) flare stack removal & destruction efficiency of 99% not corresponding to design specs of many / most flare stacks (being 98%)

- Increasing from 98% to 99% may mean various replacements; this is disproportionate and likely results in negative net environmental impact
- **Use 98% RDE** instead

Art.18(3): non-implementable, unnecessary quantification obligations for subsea wells

- Not implementable (see previous slide)



Key recommendations to enhance the effectiveness of EU Methane Regulation

- Avoid technically infeasible LDAR **obligations** for 'subsea' and 'sub seabed' components
- Ensure technology openness: **allow advanced technologies in conjunction with periodic LDAR surveys**
- Recognize that different factors **impact LDAR survey frequencies and minimum detection limits** across different operations
- Shift focus towards '**finding & fixing**' of possible emissions from subsea wells instead of technically impossible quantification (i.e. allow pressure monitoring)
- Recognize **existing safety practices (i.e. safety flaring)** in upstream operations



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