Technical & Commercial Conference

Technical & Commercial Conference

Impact of EU proposal for a regulation on methane emission along the whole value chain: The perspective of the Italian industry

Angelo Lo Nigro — RINA
Fabio Brogini — Baker Hughes
Alberto di Lullo — eni
Matteo Fraccastoro — Engineering Management Contracting
Matteo Mistri — Shell
Alessandro Morgagni — Gruppo HERA
Paola Pantaleone — Maurel & Prom
Tiziana Paolicelli — Schneider Electric
Pierpaolo Rocca — Gas Plus Italiana S.r.l.
Andrea Roccato — Energean
Gabriele Ruffini — Bonatti
Davide Scrocchi — snam
Antonio Spadaccini — pansoinco

Agenda

- The EU proposed regulation
- What is the industry already doing
- Assorisorse's contribution
- Our *white paper* on methane emissions
- Our feedback on the proposal
- Takeaways

What are the key changes introduced?

What are the hot topics under discussion?

How can we ensure the future regulation will be effective?

Which industries have specific needs to be considered?

How do we prioritize interventions?

How can we maximize the positive return of the investments?

What is the timing for the implementation?

Are we keeping the door open to future innovations?

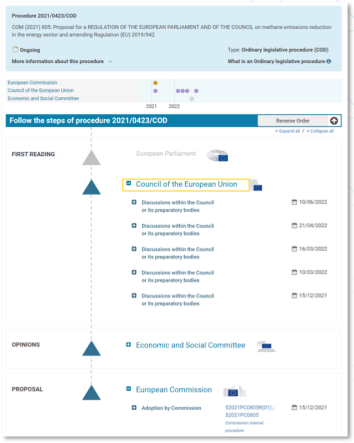
2

The EU proposed regulation

A key milestone for the industry

3

EU ordinary legislative procedure



4

Subject matter and scope

- Main objectives of the proposal:
  - Highest standard of **MRV** – measurement, reporting and verification;
  - **Immediate reduction** of emissions through mandatory **LDAR** (leak detection and repair) and ban on **venting** and **flaring**
  - Transparency on emissions related to **fossil gas imported into the EU**.
- The Regulation applies to the oil, gas and coal sectors.
- It includes:
  - Oil and fossil gas upstream facilities;
  - Gas transmission / distribution systems, UGSs and LNG terminals operating with fossil and/or renewable methane;
  - Coal mines.
- **Renewable (bio or synthetic) methane production facilities are excluded.**

5

Background

What are methane emissions

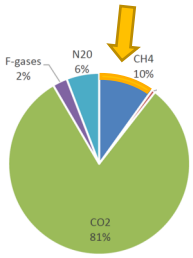
What is the Italian industry doing

How is Assorisorse contributing

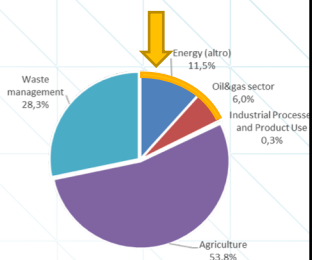
6

Introduction

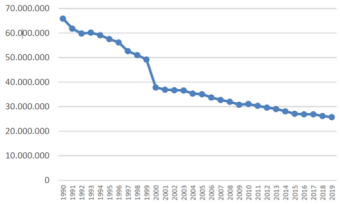
- Methane is the biggest contributor to climate change after CO2, and responsible for about 30% of current global warming
- Energy sector is globally responsible for 18% of anthropogenic methane emissions
  - 79,2 Mtons in 2021 (129 bcm)
  - Potential for rapid, efficient & effective reduction:
    - 71% abatement possible (IEA GMT 2022)
    - 41% can be avoided at no cost (IEA GMT 2022)
- EU action on methane is meant to help achieve our common objectives, such as
  - decrease GHG emissions by at least 55% by 2030,
  - achieve climate neutrality by 2050
  - achieve Paris Agreement goals



GHG emissions in 2019 in EU



Anthropogenic Methane emissions in EU (2019)



Methane emission trend in oil & gas industry in EU
1990 –2019 (CO2 eq. tonn)

[UNFCCC data]

7

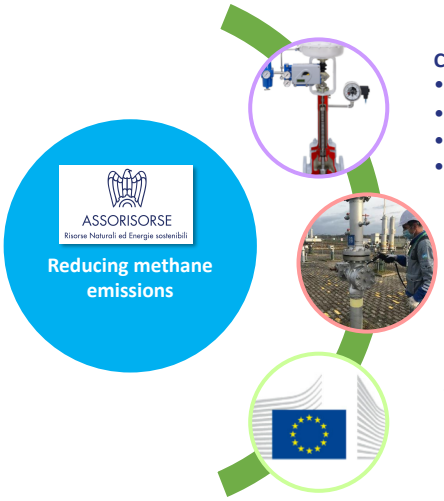
Reducing methane emissions: a team effort

- Role of natural gas
  - **Energy transition**
  - **EU Taxonomy**
  - LNG and **security** of supply
  - **«km 0» domestic gas**
- Use of natural gas shall be associated to the highest commitment to reduce methane emissions:
  - Common targets **(Green Deal, Fit-for-55, REPowerEU)**
  - Individual operator targets (**OGMP 2.0**)
- It is a **team effort**: designers, technology providers, EPC contractors, operators, engineering consultants, certification bodies, regulators, and institutional stakeholders
  - **Collaboration** (best practices)
  - **Prioritization** of interventions (efficacy and ROI)
  - **Transparency**

8

Operators' commitment

Supporting the industry to target carbon neutrality



Continuously reduce emissions
- Develop emission reduction plans
- Adopt best practices and BAT
- Implement LDAR program
- Define KPIs and set targets for reduction

Improve data accuracy & transparency
- Adopt universally applied methodologies
- Use field measurements to update emission factors
- Diligently report emissions in a complete and transparent manner

Support policies and regulations development
- Cooperate with international institutions, associations, industry (e.g., OGCI)
- Contribute to technical standards development
- Partnership with operators along the whole value chain

9

Assorisorse's contribution

Working group on methane emissions

Marcello Bondesan
Fabio Brogini
Dario Camozzi
Marco Compagnino
Alberto Di Lullo
Matteo Fraccastoro
Monica Giarda
Giammarco Gioco
Andrea Ketoff
Angelo Lo Nigro
Matteo Mistri
Alessandro Morgagni
Paolo Noccioni
William Palozzo
Paola Pantaleone
Tiziana Paolicelli
Pierpaolo Rocca
Andrea Roccato
Gabriele Ruffini
Davide Scrocchi
Antonio Spadaccini

Assorisorse is the Italian Sustainable Energy & Resources Industry Association comprising the companies of the Energy value chain committed to enhancing available natural resources through technological innovation and intellectual cross-fertilization aimed at carbon neutrality and circular economy. The mission is to decarbonize hard-to-abate industrial processes and to promote the environmental, economic and social sustainability. The Association is part of Confindustria and a member of the UN Global Compact. It includes Italian and international companies focussing on issues like: Domestic Resources, Methane emissions, Circular Economy and Zero Waste, Hydrogen value chain, CCUS, Critical minerals, Sustainability of the energy supply chain.

Technology | Design | Construction | Operation | HSE | Inspection | Certification | Innovation

10

Our white paper on methane emissions

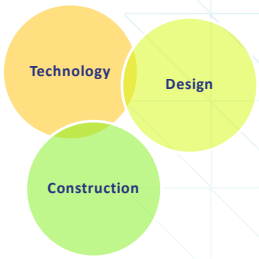
- Role of natural gas in Italy and abroad
- Best available technologies, design and operating practises
- Tools and methods to detect, estimate and report emissions
- Technologies developed by WG's members
- Experiences and lessons learnt
- Cooperation with policy makers, institutions and associations
- Dissemination

(QR-code cards available at Assorisorse's booth – 13C43)

11

Our white paper on methane emissions

- Best design practices to reduce methane emissions
  - Greenfield / brownfield
  - Process systems
  - Equipment
  - Precommissioning, commissioning and start-up



- Best operating practices
- Standards & references (API, EPA, EN, Marcogaz, CCAC, OGMP 2.0, MGP)
- Ongoing working groups
- Tools and methods for field measurements (FID, PID, OGI camera, drones, satellites)

12

Our white paper on methane emissions

- Selection of technologies developed by our associates:
  - Baker Hughes brownfield solutions
  - Schneider solutions for SF6, fugitive emissions and pipeline leak detection
  - Hera Nextmeter

- Case histories and achievements of our associates
- KPI, industry goals and targets set for individual operators
- Data reporting – the experience of Snam

13

Our feedback on the Proposal

14

Feedback on the proposal

- The WG **welcome the proposal** aimed at adopting high standard of MRV, reducing emissions through mandatory LDAR, banning venting & flaring and enhancing transparency on gas imported in EU
- We welcome the concept of **recognition of investments and operating costs** of regulated operators
- **One type of solution does not fit all cases**
- The principles of **materiality** and **proportionality** should be considered, balancing the measures and the expected benefits
- **Flexibility** is needed to **prioritize actions** to ensure the optimal **cost-effective** approach is applied
- Industrial companies and Competent Authorities should agree on methane emissions **mitigation plans**, which will allow **prioritization** of the most cost-effective **mitigation measures**
- **Legislation should not be very prescriptive**, as technologies, practices and methods evolve quickly
- Implementation **timeline** is quite challenging to be met for smaller operators

15

Feedback on the proposal

- Monitoring, Reporting and Verification (MRV):
  - **We welcome a clear reference to OGMP 2.0**, including the reporting framework and template and the technical guidance documents and guides as well as key concepts, definitions and requirements (such as materiality, representative sampling, etc.).
  - **It is necessary that the CEN standards**, when available, become the reference for MRV activities.
  - **Postpone obligations for data reconciliation** between plant and site measurements. **Top-down (site-level) measurements** are **not mature enough** to quantify emissions to allow reconciliation with the bottom-up source level quantification at this stage.
  - Do not consider measurements only, but also **engineering calculations, simulation tools & emission factors**
  - It is requested that any source of methane emission are measured, regardless of materiality of the emissions. **Not-material emissions should not be measured**, and for example estimated with generic emission factors, as allowed by OGMP 2.0
- **Avoid double reporting and/or double verification**
  - Align the new reporting obligations with the current ones (e.g., National Inventory Report, NIR)
  - Reporting of non-operated assets to be done only by the asset operator
  - New reporting responsibilities on LDAR and venting & flaring due on an annual basis, as part of the emissions reporting
- Requirements for verifiers to be aligned with current obligations to avoid unnecessary costs and administrative burden. **1,500+ operators in the EU will need accredited verifiers** in a very short time

16

Feedback on the proposal

- **Leak detection and repair (LDAR)**
  - LDAR to allow for the **different practices successfully used by the operators**, adapted to different parts across the value chain
  - Do not pre-define intervals for LDAR surveys, but rather define them in the **LDAR programme** sent to the Competent Authorities
  - Immediate repairs shall be carried out whenever possible, but the regulation must allow **adequate repair times** that respect the technical, safety, environmental and administrative constraints
  - We recommend developing a **CEN standard** on LDAR methodologies, including scope of the survey depending on operators, programme and repair or replacement criteria
- **Venting and Flaring**
  - it is necessary to consider the methane emissions **mitigation costs** and **grant an exemption when venting is leading to negligible emissions**. It is also important to ensure a lead time for implementing the venting & flaring provisions
- The definition of **inactive wells** lacks accuracy and needs to be improved such that permanently plugged wells are excluded from the definition to avoid incurring in unnecessary and significant costs
- **EU importers** cannot be held liable for elements outside their control or outside the EU's jurisdiction. Responsibility for data quality of emissions occurring outside EU should remain with the exporter

17

Takeaways

18

Takeaways

- **Role of natural gas** (energy transition, EU taxonomy, security, km 0 production)
- **Why methane emissions are important and what we are doing to reduce them**
- **What is Assorisorse doing**
- **What are the key contents of the proposed EU regulation**
- **How we can further improve it**

ASSORISORSE
Risorse Naturali ed Energie sostenibili

Working group on methane emissions

Baker Hughes, eni, Maurel & Prom, Schneider Electric, Bonatti, Gas Plus, pansoinco, Shell, Engineering Management Contracting, Energean, Hera, RINA, snam

- consider materiality and proportionality
- one solution does not fit all
- improve timeline for the implementation
- refer to OGMP 2.0 and CEN standards
- calculations, simulation & emission factors
- plant and site measurements reconciliation
- leave room for new technologies
- exclude permanently plugged wells
- assign proper responsibilities for imported gas
- avoid double reporting
- adapt LDAR to criticality
- consider mitigation costs
- exempt negligible emissions

19

Thank you very much for your kind attention!

angelo.lonigro@rina.org
https://www.linkedin.com/in/angelo-lo-nigro/
+39-334-667-1499

Visit Assorisorse's booth 13C43

20

Back-up slides

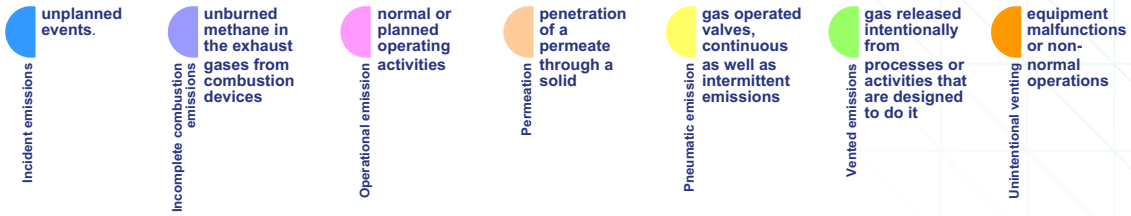
21

Back-up slide

Sources of methane emissions in Oil & Gas

There are various sources of methane emissions, depending on the origin, reason, and duration

Eat the elephant one bite at a time (starting from the highest priorities!)



22

Back-up slide

Key contents of the regulation

- **Cost of regulated operators (art. 3)**
  - Regulatory authorities shall consider the **costs incurred and investments** made to comply with the obligations under this Regulation insofar as they correspond to those of an efficient and structurally comparable regulated operator
  - Every three years the ACER (European Union Agency for the Cooperation of Energy Regulators) shall establish and make publicly available a **set of indicators** and corresponding reference values for the comparison of unit investment costs linked to measurement, reporting and abatement of methane emissions for comparable projects
- **Competent authorities & inspections (art. 5-6-7)**
  - Each Member State shall designate one or more **competent authorities** responsible for monitoring and enforcing the application of this Regulation
  - Competent authorities shall carry out periodic **inspections** to check the compliance of operators with the regulations (**site checks or field audits** examination of documentation and records)
  - The first inspection shall be completed by **18 months** after the date of entry into force of the Regulation
  - After first inspection authorities shall draw up a programme of routine inspections based on environmental risk which **shall not exceed two years**. Authorities shall carry non routine inspections as well
  - **Penalties** will be applied to infringements of the provisions of the Regulation

23

Back-up slide

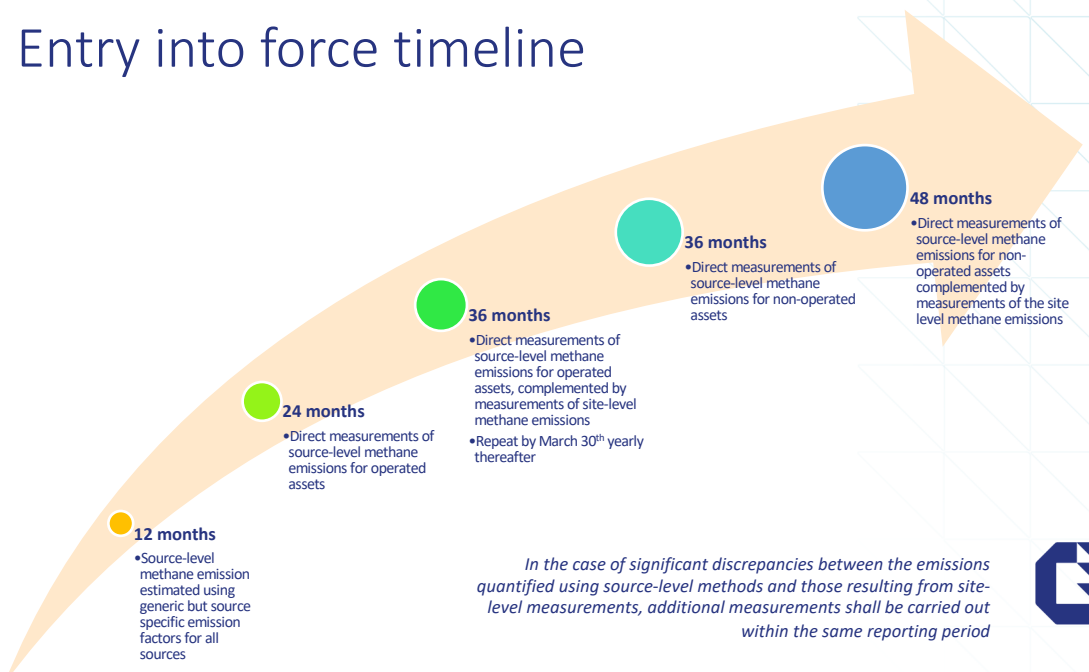
Key contents of the regulation (cont'd)

- **Verification activities and verification statement (art. 8-9)**
  - Verifiers shall **assess the conformity of the emissions reports submitted to them by operators** in accordance with the Regulation. They shall review all data sources and methodologies used in order to assess their reliability, credibility and accuracy.
  - Verifiers shall issue a **verification statement** verifying the conformity of the emissions report
  - Verifiers shall be **independent** from the operators and **accredited** by a national accreditation body
- **Monitoring and reporting (art. 12)**
  - **Reports to be submitted by operators to the competent authorities** after the entry into force of the regulators (reports shall be verified)
  - Reports should include at least the following information:
    a. Emission source type and location
    b. Data per detailed, individual, emission source type
    c. Detailed information on the quantification methodologies employed to measure methane emissions
    d. All methane emissions for operated assets
    e. Share of ownership and methane emissions from non-operated assets multiplied by the share of ownership
    f. A list of the entities with operational control of the non-operated assets
- **General mitigation obligation (art. 13)**
  - Operators shall take **all measures available** to them to prevent and minimize methane emissions in their operations

24

Back-up slide

Entry into force timeline



In the case of significant discrepancies between the emissions quantified using source-level methods and those resulting from site-level measurements, additional measurements shall be carried out within the same reporting period

25

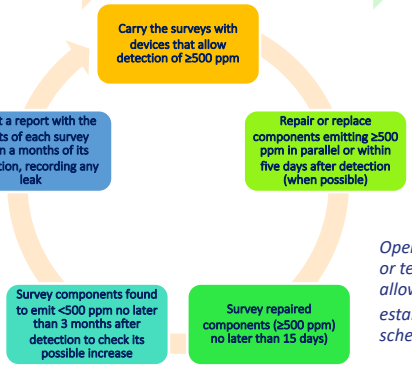
Back-up slide

Leak detection and repair (art. 14)

After the entry of the regulation, operators shall…

LDAR applied to relevant components

Operators shall



Operators can demonstrate that safety or technical considerations do not allow immediate repair, provided they establish a repair and monitoring schedule

26

Back-up slide

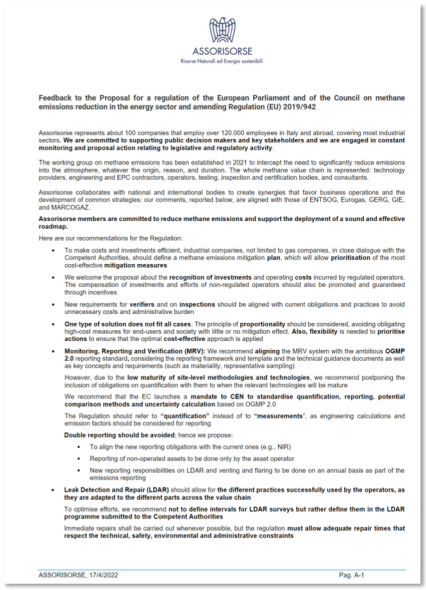
Key contents of the regulation (cont'd)

- Limits to flaring and venting (art. 15)
  - **Venting shall be prohibited** except for emergency or malfunction or when strictly necessary for the operation, repair, maintenance or testing of components or equipment, including blowing down and depressurizing equipment to perform repair and maintenance
  - **Operators shall vent only where flaring is not technically feasible** or risks endangering safety of operations or personnel
  - **Flaring shall only be allowed where either re injection, utilization on site or dispatch of the methane to a market are not feasible** for reasons other than economic considerations
  - Operators shall **demonstrate** to the competent authorities the necessity to opt for venting instead of flaring and the necessity to opt or flaring instead of either re-injection, utilization on site or dispatch of the methane to a market
- Reporting of flaring and venting events (art. 16)
  - Operators shall notify the competent authorities **within 48 hours** of the start of the event or when the operator became aware of it
    a) caused by an emergency or a malfunction
    b) lasting a total of 8 hours or more within a 24-hour period from a single event
  - Operators shall also submit to the competent authority **quarterly reports** of all venting and flaring
- Methane emissions occurring outside EU (Chapter 5)
  - Obligation on **importers of fossil energy** to provide information on methane emissions in countries of origin
  - Establishing a **methane transparency database** to inform the purchasing decisions of importers of fossil energy and provide transparency to other stakeholders and the public, to inform bilateral dialogues and to promote awareness and remedial actions
  - Take further action at the international level once all data is available

27

Back-up slide

Our feedback on the regulation



ASSORISORSE
Risorse Naturali ed Energie sostenibili

Feedback to the Proposal for a regulation of the European Parliament and of the Council on methane emissions reduction in the energy sector and amending Regulation (EU) 2019/942

Assorisorse represents about 100 companies that employ over 120.000 employees in Italy and abroad, covering most industrial sectors. **We are committed to supporting public decision makers and key stakeholders and we are engaged in constant monitoring and proposal action relating to legislative and regulatory activity**.

The working group on methane emissions has been established in 2021 to intercept the need to significantly reduce emissions into the atmosphere, whatever the origin, reason, and duration. The whole methane value chain is represented: technology providers, engineering and EPC contractors, operators, testing, inspection and certification bodies, and consultants.

Assorisorse collaborates with national and international bodies to create synergies that favor business operations and the development of common strategies: our comments, reported below, are aligned with those of ENTSOG, Eurogas, GERG, GIE, and MARCOGAZ.

Assorisorse members are committed to reduce methane emissions and support the deployment of a sound and effective roadmap.

Here are our recommendations for the Regulation:

- To make costs and investments efficient, industrial companies, not limited to gas companies, in close dialogue with the Competent Authorities, should define a methane emissions mitigation **plan**, which will allow **prioritisation** of the most cost-effective **mitigation measures**
- We welcome the proposal about the **recognition of investments** and operating **costs** incurred by regulated operators. The compensation of investments and efforts of non-regulated operators should also be promoted and guaranteed through incentives
- New requirements for **verifiers** and on **inspections** should be aligned with current obligations and practices to avoid unnecessary costs and administrative burden
- **One type of solution does not fit all cases.** The principle of **proportionality** should be considered, avoiding obligating high-cost measures for end-users and society with little or no mitigation effect. **Also, flexibility** is needed to **prioritise actions** to ensure that the optimal **cost-effective** approach is applied
- **Monitoring, Reporting and Verification (MRV):** We recommend **aligning** the MRV system with the ambitious **OGMP 2.0** reporting standard, considering the reporting framework and template and the technical guidance documents as well as key concepts and requirements (such as materiality, representative sampling)

  However, due to the **low maturity of site-level methodologies and technologies**, we recommend postponing the inclusion of obligations on quantification with them to when the relevant technologies will be mature

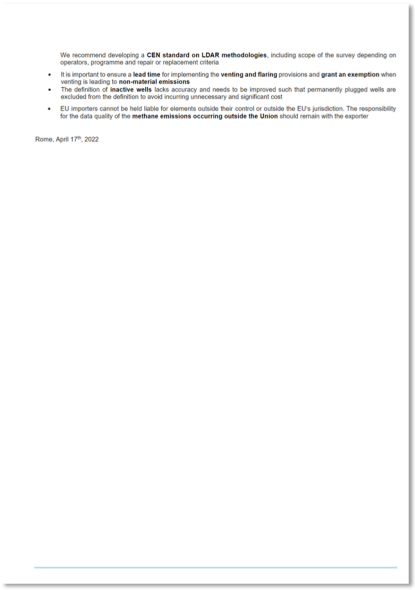
  We recommend that the EC launches a **mandate to CEN to standardise quantification, reporting, potential comparison methods and uncertainty calculation** based on OGMP 2.0

  The Regulation should refer to **"quantification"** instead of to **"measurements"**, as engineering calculations and emission factors should be considered for reporting

  Double reporting should be avoided; hence we propose:
  - To align the new reporting obligations with the current ones (e.g., NIR)
  - Reporting of non-operated assets to be done only by the asset operator
  - New reporting responsibilities on LDAR and venting and flaring to be done on an annual basis as part of the emissions reporting
- **Leak Detection and Repair (LDAR)** should allow for **the different practices successfully used by the operators, as they are adapted to the different parts across the value chain**

  To optimise efforts, we recommend **not to define intervals for LDAR surveys but rather define them in the LDAR programme submitted to the Competent Authorities**

  Immediate repairs shall be carried out whenever possible, but the regulation **must allow adequate repair times that respect the technical, safety, environmental and administrative constraints**



We recommend developing a **CEN standard on LDAR methodologies**, including scope of the survey depending on operators, programme and repair or replacement criteria

- It is important to ensure a **lead time** for implementing the **venting and flaring** provisions and **grant an exemption** when venting is leading to **non-material emissions**
- The definition of **inactive wells** lacks accuracy and needs to be improved such that permanently plugged wells are excluded from the definition to avoid incurring unnecessary and significant cost
- EU importers cannot be held liable for elements outside their control or outside the EU's jurisdiction. The responsibility for the data quality of the **methane emissions occurring outside the Union** should remain with the exporter

Rome, April 17th, 2022

Assorisorse WG sent a feedback to the Commission, suggesting a few improvements

Such feedback is aligned to the one presented by other industrial associations