CARBON LIMITS

EDF – EU MR MRV compliance costs

March 2026 – commissioned by Environmental Defense Fund Europe

Objective

Provide a cost-focused, high-level analysis that sheds light on the expected financial implications of monitoring, reporting and verification, for exporters affected by the EU Methane Regulation.

Methodology

Scope, assumptions

Cost boundaries

Assumptions

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Conservative costing approach

- Measurement campaigns assumed to be performed by external service providers
- Activities that can be outsourced are assumed to be outsourced.

This provides conservative estimates, as the operator will revert to internal sourcing if cheaper

Scope exclusions

- Internal staff time is not included (e.g., Procurement, site access, training) but described.
- The costs of mitigation are not included in this analysis.

Implementation pathway

Producers are expected to reach OGMP 2.0 Level 5 over three years:

- Year 1 (2027): Level 3
- Year 2 (2028): Level 4
- Year 3 (2029): Level 5

Annual verification begins in Year 1 and continues each year thereafter.

Cost estimates are calculated for three typical companies and compared against oil and gas prices associated with each company's production output

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Company 1

3 large centralised offshore platforms

Company 2

1 large central processing facility
2 small dispersed production sites

Company 3

Production field with dispersed pumpjacks connected to 3 gathering stations

For each company, costs are presented within a range that includes both the best case and conservative scenarios, taking into account the main cost elements and their key drivers.

Offshore platform (picture – Norwegian platform): https://akerbp.com/wp-content/uploads/2020/10/credit-equinorequinor-try-js-4k-v2-3840-2160.jpg
Processing facility (picture): https://hotlargesidetasseledslouchyhobo.blogspot.com/2021/06/processed-petroleum-oils-mail-processed.html
Production site (picture – Permian basin): https://fineartamerica.com/featured/oil-wells-in-the-permian-basin-jim-westscience-photo-library.html

Verification

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Overview of the three methane verification scenarios evaluated

- The blue front shows which level of intensity aligns with EEMDL[1] or the closest level.

Verification elements	Simplest	Intermediary	More advanced
Site visits	Desk-based only.	• Hybrid: desk review + targeted/risk-based site visits.	Systematic site visits to all facilities + unannounced checks possible
Verification of boundaries and emission sources	Desk confirmation of boundaries. Sampling-based completeness check.	Sampling-based boundary review. • Sampling-based completeness check with some on-site checks.	• Comprehensive review of boundaries. Full engineering review (P&IDs, logs) + site walkdowns for all sources.
Verification of activity data and emission factors	Sampling-based verification. Check the existence and appropriateness of selected measurement equipment.	• Sampling-based verification. • Check the existence and appropriateness of selected measurement equipment.	Comprehensive verification.
Verification of methodologies and uncertainty	Sampling-based verification of methodologies. Qualitative uncertainty review.	• Sampling-based verification of methodologies. Uncertainty verified.	• Full review of methodologies and full uncertainty assessment.
Calculation check and verification of missing data	High-level recalculation. Confirm conservative replacement of missing data.	• Full recalculation of total emissions. Confirm conservative replacement of missing data.	Comprehensive recalculation across all sources. Strict missing-data procedure review.
Verification of the reconciliation process	Targeted review of discrepancies between source- and site-level data.	• Targeted review of discrepancies between source- and site-level data.	Full assessment of reconciliation, corrections, traceability, and QA/QC integration.
Review of temporal/emission behavior	Simple trend and anomaly checks.	• Cross-check with historical emissions.	Full temporal and operational trend analysis across assets
Verification of data flow/monitoring procedures	High-level qualitative review of monitoring procedures.	Documented procedures required.	• Comprehensive review of procedures, data flows, controls and QA/QC.

Note: as of March 2026, EU methane regulation verification requirements are still being developed. This analysis outlines effective verification elements based on current knowledge and experience, categorizing them into three levels of process intensity. This assessment reflects Carbon Limits' interpretation of the protocol to the best of our current knowledge.

[1]Energy Emissions Modeling and Data Lab (EEMDL), 2025. European Union Methane Regulation: Verification & Reporting Protocol (Interim Final) https://www.ceesa.utexas.edu/verification-protocol

MRV costs are compared against O&G production value

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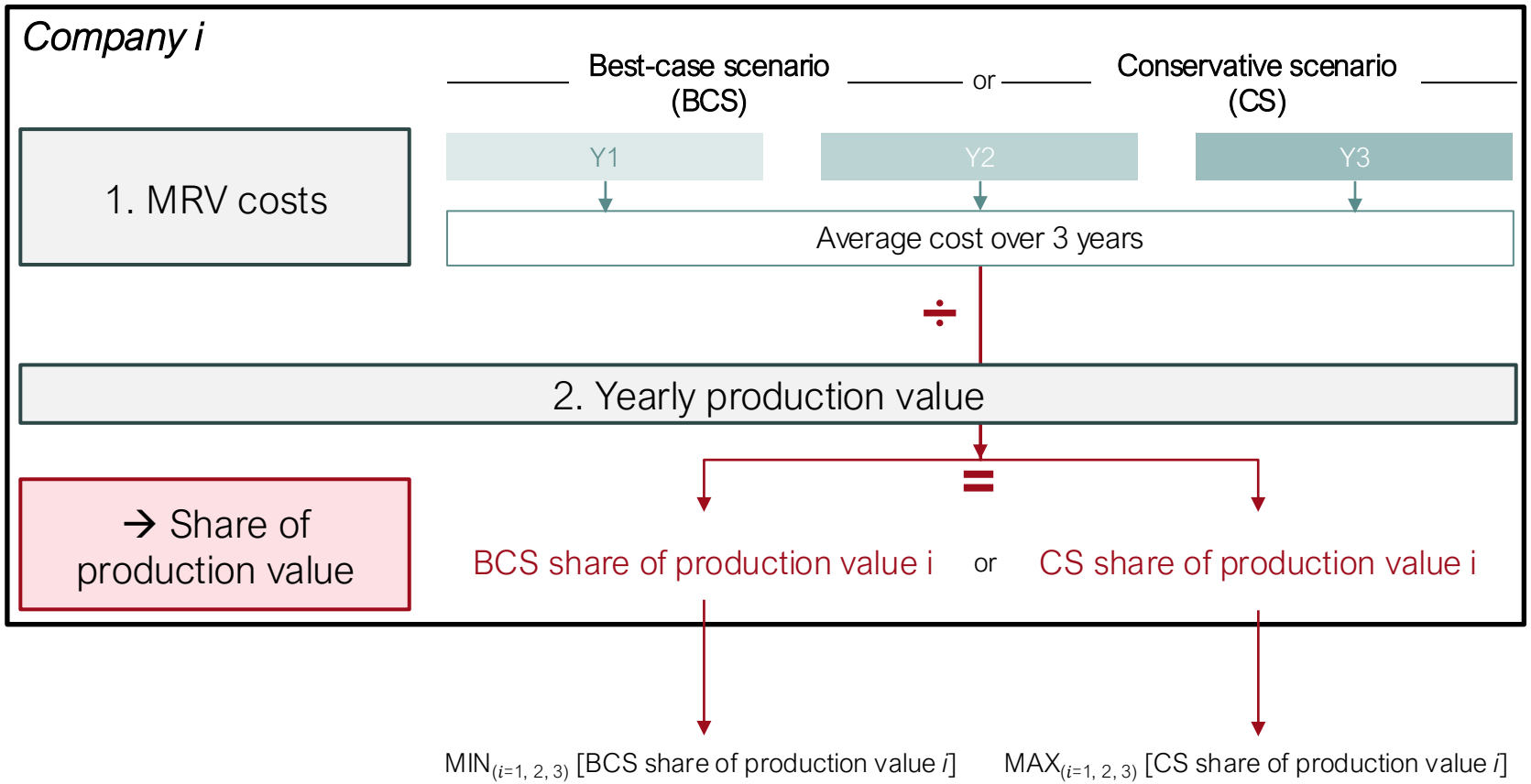
Calculation overview



$$Share\ of\ production\ value\ = \frac{MRV\ costs\ (million\ USD)}{Production\ value\ (million\ USD)}$$

0.03 - 0.6%

of production value.

Results

Quantitative and qualitative analysis

EU monitoring, reporting and verification (MRV) compliance costs are small relative to production value

Measurement-related costs*

~0.2-1.3

Million USD/year

Measurement costs include continuous metering systems (CAPEX, OPEX), source- and site-level measurement campaigns (preparation, campaign, data analysis).

Inventory-related costs*

~0.1-0.5

Million USD/year

Inventory costs include equipment list, QA/QC, inventory software (license and use), training, reconciliation, report consolidation and submission.

Value of oil and gas produced

Achieving full EU MRV compliance requires only

0.03-0.6%

of production value.
This equates to **4-80 kUSD/PJ** produced.

(for companies with no methane reporting reaching OGMP 2.0 Level 5 within 3 years)

Verification-related costs*

~0.03-0.2

Million USD/year

Note: For EEMDL specifically: refined to ~ 0.05–0.07 million USD/year.

Verification costs cover both office-based tasks and on-site inspections when applicable, as outlined in the methodology section.

*The cost range covers conservative and best-case scenarios per company for the three companies assessed and represents the average cost across Years 1, 2 and 3. Internal costs are excluded of the quantitative assessment (see qualitative assessment).

Main costs drivers

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MEASUREMENT

- Number of assets and emission sources
- Asset characteristics (location, dispersion, complexity) and site logistics
- Need for additional continuous metering systems
- Type, scope and frequency of measurement campaigns
- Data availability, operator readiness and existing measurement programs
- Selection of technology and service providers

INVENTORY

- Maturity and completeness of the current emissions inventory
- Complexity of data reconciliation and interpretation of findings
- Number of staff to be trained and expected turnover
- Selection and integration of software solutions
- Need for site visits to validate equipment lists when P&IDs are outdated

VERIFICATION

- Scope and required level of intensity
- Number of site visits and associated logistical complexity
- Completeness, accuracy and accessibility of documentation
- Maturity and robustness of existing MRV systems

Qualitative assessment of internal costs related to MRV compliance

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MEASUREMENT

- Procurements process
- Coordination and communication among internal and external stakeholders
- Measurement campaigns: organizing plans, managing logistics with external providers, facilitating site access, and supporting external provider travel arrangements to the country

INVENTORY

- Procurement processes
- Integration of software
- Coordination and communication among internal and external stakeholders
- Providing access to PIDs and relevant documents, as well as supplying necessary documents and data to external providers

VERIFICATION

- Procurements process
- Coordination and communication with verifiers
- Provision of the necessary documents, access to logs etc.
- Site visits: organizing plans, managing logistics with verifiers, facilitating site access, and supporting verifiers travel arrangements to the country

Projected costs to sustain MRV equivalence from Year 4 onwards

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Costs decline overtime, as soon as metering and MRV systems are in place

Main cost elements in the first three years are measurement costs (i.e., continuous metering systems, source- and site-level measurement campaigns).

However, these costs are expected to decrease over time because of:

- Learning curve effects: teams become more efficient (streamlined processes, standardized workflows), more accurate and require less external support (capabilities internalization).
- MRV system fully established: one system is in place, monitoring becomes routine rather than project-intensive.
- Growing market competition: more specialized service providers enter the space, driving prices down.
- Reduced measurement frequency: not all components might require annual measurement through measurement-based emission factors and mitigation action removing some emission points, enabling multi-year cycles.

Additionally, some verification elements can be reviewed with reduced effort in later years if no major changes occur (e.g., boundary check, completeness check, main methodologies).

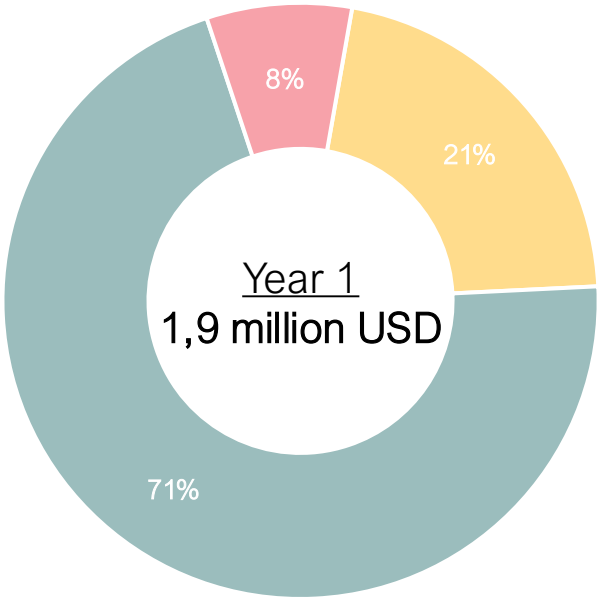
Annex

More detailed results, per company type and year

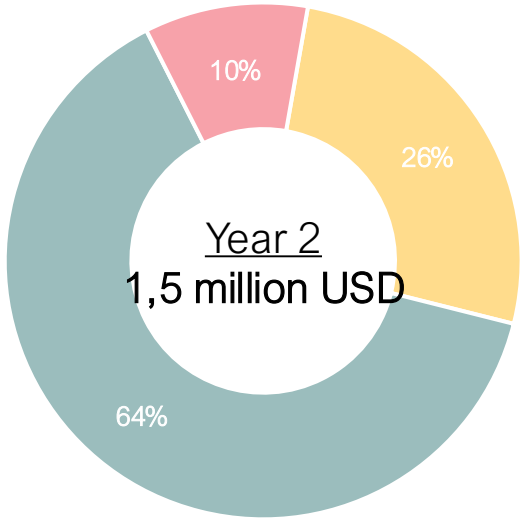
Company 1 3 offshore platforms

CARBON LIMITS

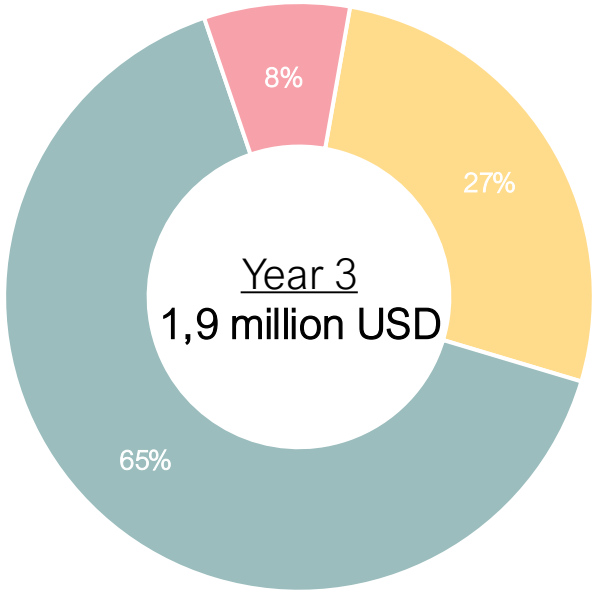
Conservative costs to reach MRV-equivalence within 3 years



Year 1
1,9 million USD



Year 2
1,5 million USD



Year 3
1,9 million USD

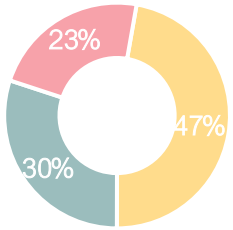
- Inventory
- Measurement
- Verification

The size of the pies corresponds to the costs.

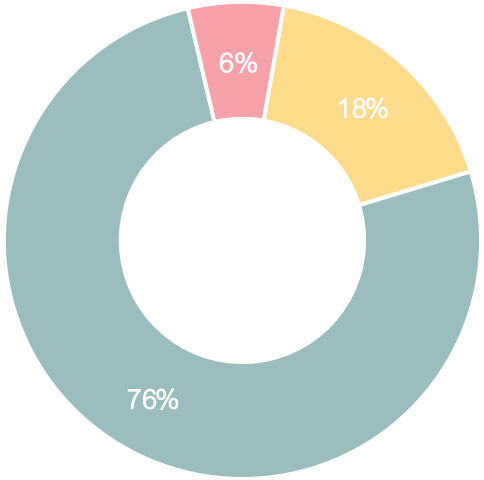
Company 1 3 offshore platforms

CARBON LIMITS

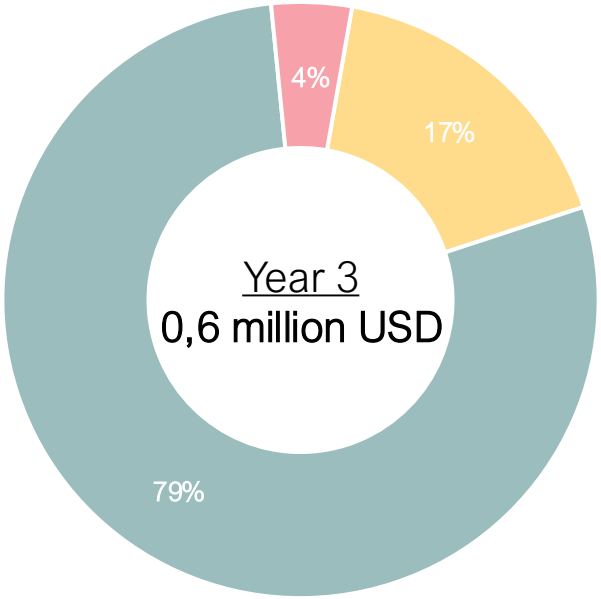
Best-case costs to reach MRV-equivalence within 3 years



Year 1
0,1 million USD



Year 2
0,4 million USD



- Inventory
- Measurement
- Verification

The size of the pies corresponds to the costs.

Company 1 3 offshore platforms

CARBON LIMITS

Tables

MRV costs

	Costs Y1 (kUSD)	Costs Y2 (kUSD)	Costs Y3 (kUSD)
Inventory	50 - 400	70 - 400	100 - 500
Measurement	30 – 1,400	300 – 1,000	450 – 1,200
Verification	25-150	25-150	25-150
TOTAL	~ 105 – 1,950	~ 395 – 1,550	~ 575 – 1850

Yearly oil and gas production value

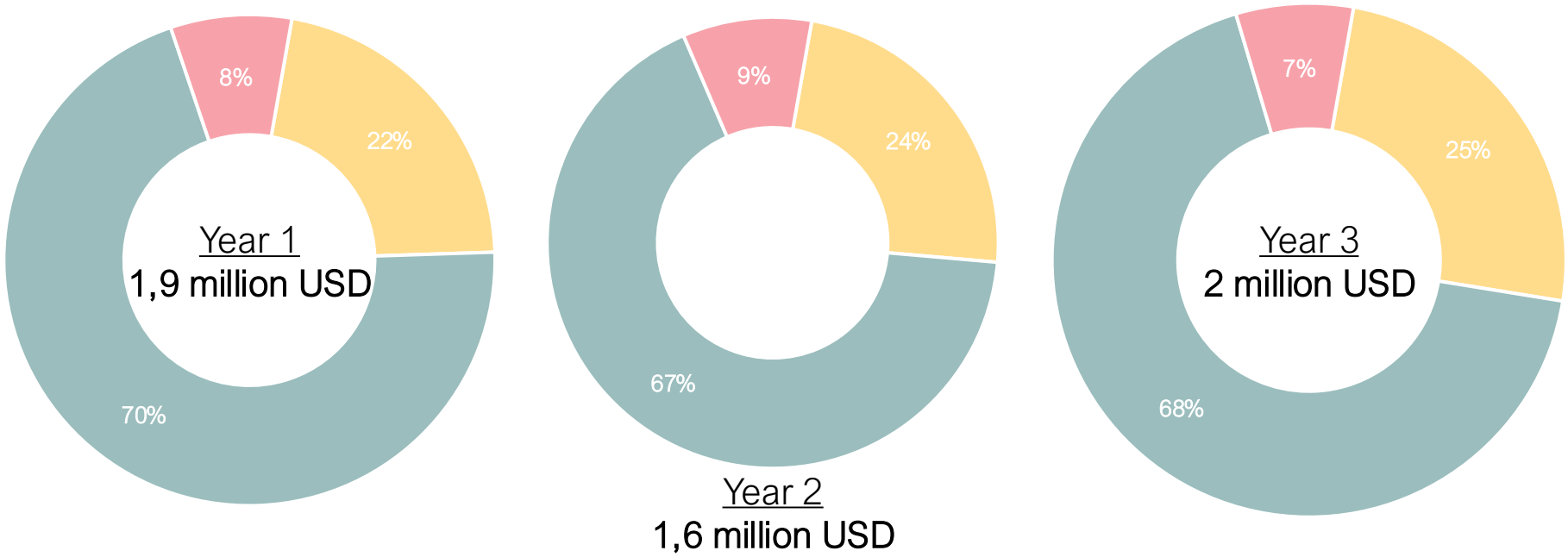
1.2 billion USD/year

Representing **90 PJ/year** of oil and gas

Company 2 1 large processing facility and 2 dispersed production sites

CARBON LIMITS

Conservative costs to reach MRV-equivalence within 3 years

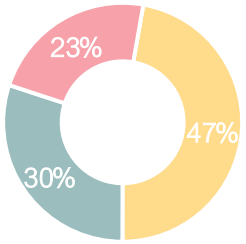


The size of the pies corresponds to the costs.

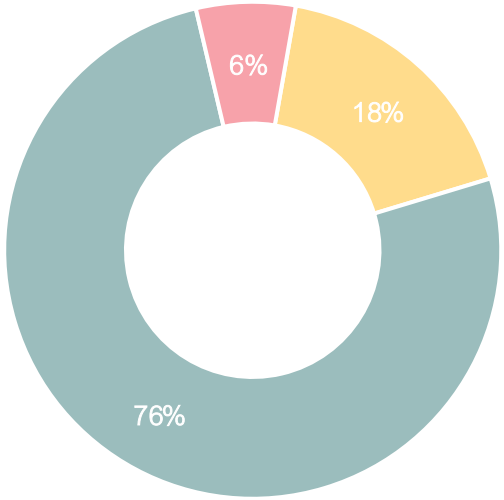
Company 2 1 large processing facility and 2 dispersed production sites

CARBON LIMITS

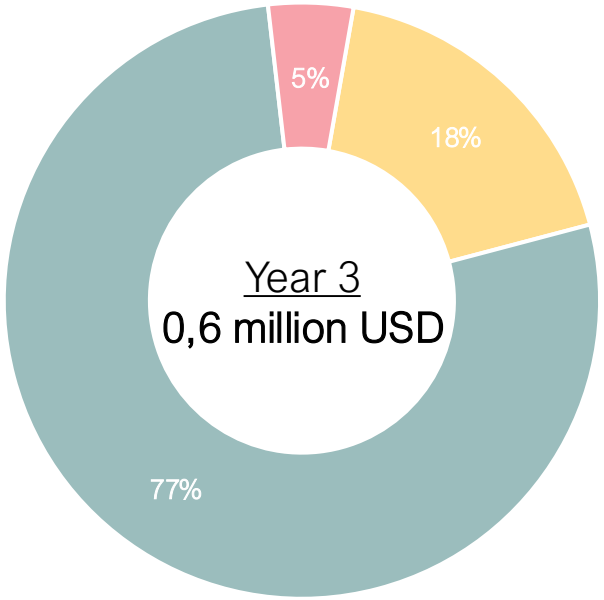
Best-case costs to reach MRV-equivalence within 3 years



Year 1
0,1 million USD



Year 2
0,4 million USD



Year 3
0,6 million USD

- Inventory
- Measurement
- Verification

The size of the pies corresponds to the costs.

Company 2

1 large processing facility and 2 dispersed production sites

CARBON LIMITS

Tables

MRV costs

	Costs Y1 (kUSD)	Costs Y2 (kUSD)	Costs Y3 (kUSD)
Inventory	50 - 400	70 - 400	100 - 500
Measurement	30 – 1,400	300 – 1,100	450 – 1,400
Verification	25-150	25-150	25-150
TOTAL	~ 105 – 1,950	~ 395 – 1,550	~ 575 – 2,050

Yearly oil and gas production value

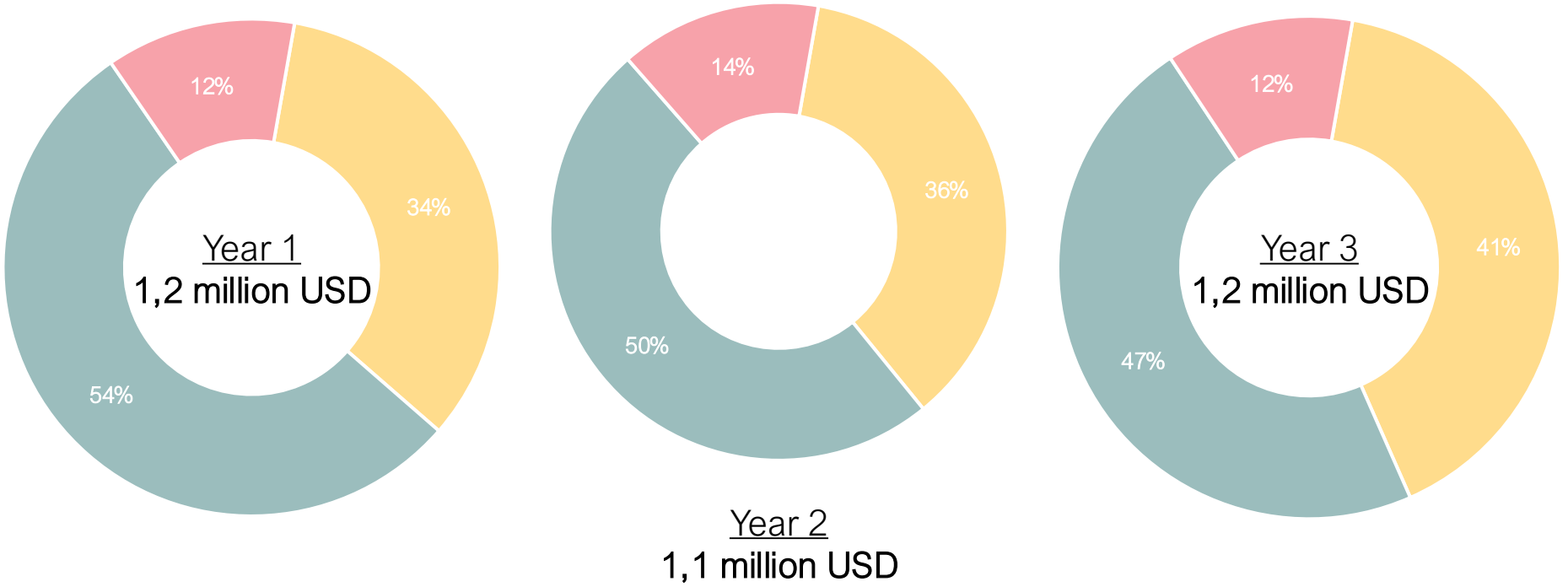
0.4 billion USD/year

Representing **24 PJ/year** of oil and gas

Company 3 Producing field with dispersed pumpjacks connected to gathering stations

CARBON LIMITS

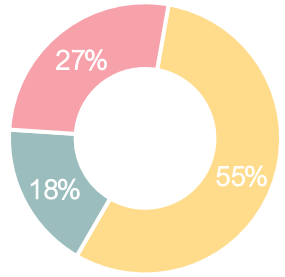
Conservative costs to reach MRV-equivalence within 3 years



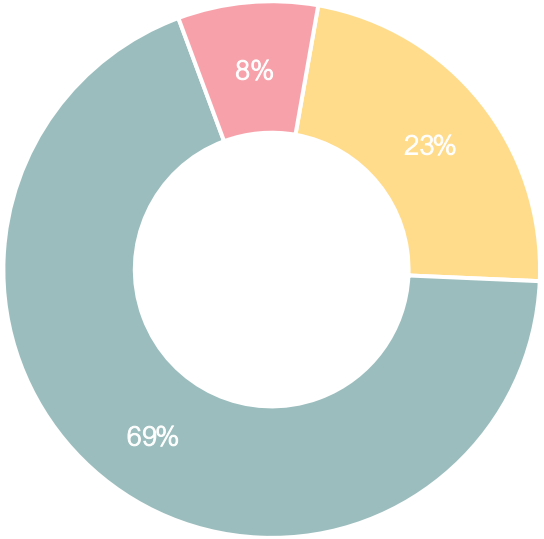
Company 3 Producing field with dispersed pumpjacks connected to gathering stations

CARBON LIMITS

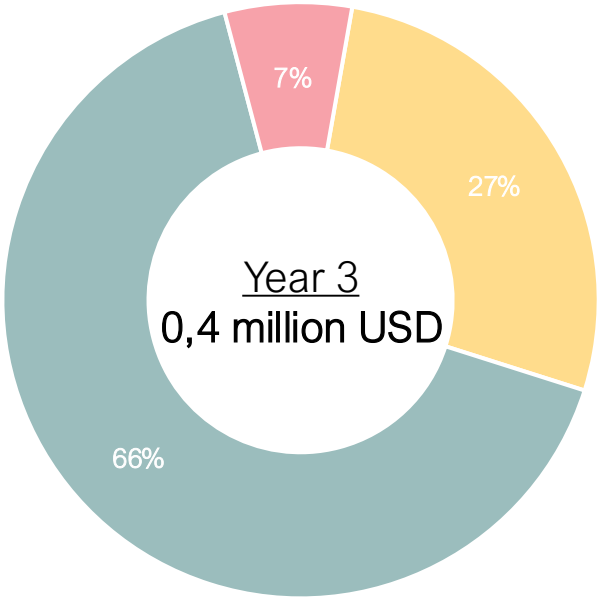
Best-case costs to reach MRV-equivalence within 3 years



Year 1
0,1 million USD



Year 2
0,3 million USD



Year 3
0,4 million USD

- Inventory
- Measurement
- Verification

The size of the pies corresponds to the costs.

Company 3

Producing field with dispersed pumpjacks connected to gathering stations

CARBON LIMITS

Tables

MRV costs

	Costs Y1 (kUSD)	Costs Y2 (kUSD)	Costs Y3 (kUSD)
Inventory	50 - 400	70 - 400	100 - 500
Measurement	20 – 700	200 – 550	250 – 600
Verification	25-150	25-150	25-150
TOTAL	95 – 1,250	295 – 1,100	375 – 1,250

Yearly oil and gas production value

0.5 billion USD/year

Representing **36 PJ/year** of oil and gas