Orphan Wells (OOG) Rating Framework V1.0

WHITEPAPER

Sylvera

Executive Summary

This document details the **V1.0 Rating framework logic for the Orphan Wells (OOG) project type**.

Orphaned and abandoned oil and gas well projects prevent methane emissions by locating, measuring, and permanently plugging leaking orphan wells, abandoned wells with no solvent responsible owner responsible for plugging them. These projects generate carbon credits by sealing wells so that methane which would otherwise escape to the atmosphere is permanently avoided. The premise is, as the plugged well produces no saleable output, the activity depends on carbon finance to proceed. **The framework assesses the integrity of the measured baseline, the additionality of the plugging, the permanence of the plug, and the project's wider impact on communities and the environment.**

This whitepaper contains a **description** of each component used in the assessment, **scoring logic** which breaks down the rules used to derive a quality score for each component, and **data inputs** where these are used in specific tests.

Rating Grade

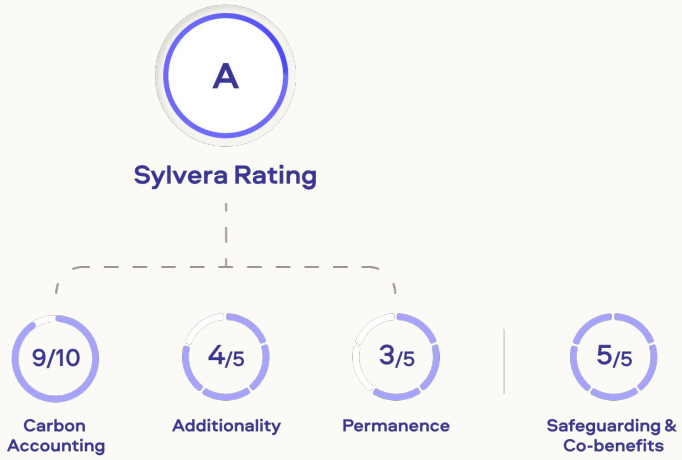
Pt.1

Rating Grade

AAA — D

Description

The eight point **Rating Grade** spans **AAA–D**, reflecting carbon abatement integrity; the likelihood that each credit represents 1 tCO2e avoided. The **Rating Grade** combines the three carbon pillars, **Carbon Accounting**, **Additionality** and **Permanence**, mapping these against the Ratings matrices so that fundamental flaws or underperformance in key areas are reflected in the final rating. **Safeguarding & Co-Benefits** is assessed separately and does not affect the Rating Grade.



Carbon Accounting	Additionality	Permanence	Safeguarding & Co-Benefits
Assesses over-crediting risks considering the conservativeness of carbon accounting choices, such as pre-plugging methane leak approach, and baseline emission calculation approach.	Assesses the likelihood that well plugging would only have been carried out due to project implementation and carbon revenue.	Evaluates the risk that a plugged well begins leaking again, assessing the likelihood that the avoided emissions persist for an atmospherically significant period of time.	Assesses biodiversity and community impact, considering safeguards against negative outcomes, and beyond-carbon benefits.

Notes:

High scores indicate low risk. Pillars are displayed on a 1-5 scale (Carbon Accounting on 1-10) and combined on their underlying unrounded 1-10 scores.
(10 = very low risk; 1 = very high risk).
(5 = very low risk; 1 = very high risk).

Rating Grade

Pt.2

Scoring Logic - Ratings matrices

Step 1: The unrounded (1-10) **Additionality** and **Carbon Accounting** scores are combined to create a **"Carbon Impact"** score. This score represents the maximum impact of a project, or the likelihood that each claimed credit represents an accurately quantified, and additional tCO2e avoided, assuming there is no risk of reversal.

Carbon Impact

Carbon Accounting \ Additionality	1	2	3	4	5	6	7	8	9	10
1	1	1	1	1	1	1	1	1	1	1
2	1	2	2	2	2	2	2	2	2	2
3	1	2	3	3	3	3	3	3	4	4
4	1	2	3	4	4	4	4	4	5	5
5	1	2	3	4	5	5	5	5	5	5
6	1	2	3	4	5	5	6	6	6	6
7	1	2	3	4	5	6	7	7	7	7
8	1	2	4	5	5	6	7	8	8	8
9	1	2	4	5	5	7	8	9	9	9
10	1	2	4	5	5	7	8	9	9	10

Step 2: The **Carbon Impact** and **Permanence** scores are combined to produce the **Rating Grade,** representing the likelihood that one credit represents one tCO2e avoided for an atmospherically significant amount of time.

Rating

Carbon Impact (Carbon Accounting x Additionality) \ Permanence	1	2	3	4	5	6	7	8	9	10
1	D	D	D	D	D	D	D	D	D	D
2	D	D	D	D	D	D	D	D	D	D
3	D	D	C	C	C	C	C	C	C	C
4	D	C	C	B	B	B	B	B	B	B
5	D	B	B	B	BB	BB	BB	BB	BB	BB
6	D	B	B	BB	BB	BBB	BBB	BBB	BBB	BBB
7	D	B	B	BB	BBB	BBB	BBB	BBB	BBB	BBB
8	D	B	B	BB	BBB	A	A	A	A	A
9	D	B	B	BB	BBB	A	A	A	AA	AA
10	D	B	B	BB	BBB	AA	AA	AA	AA	AAA

Carbon Accounting

Description

This component **assesses the over-crediting risks of carbon credits generated by plugging orphaned oil and gas wells**, considering whether the approaches used to measure pre-plugging methane leakage and the carbon accounting choices used to quantify avoided emissions are accurate and conservative.

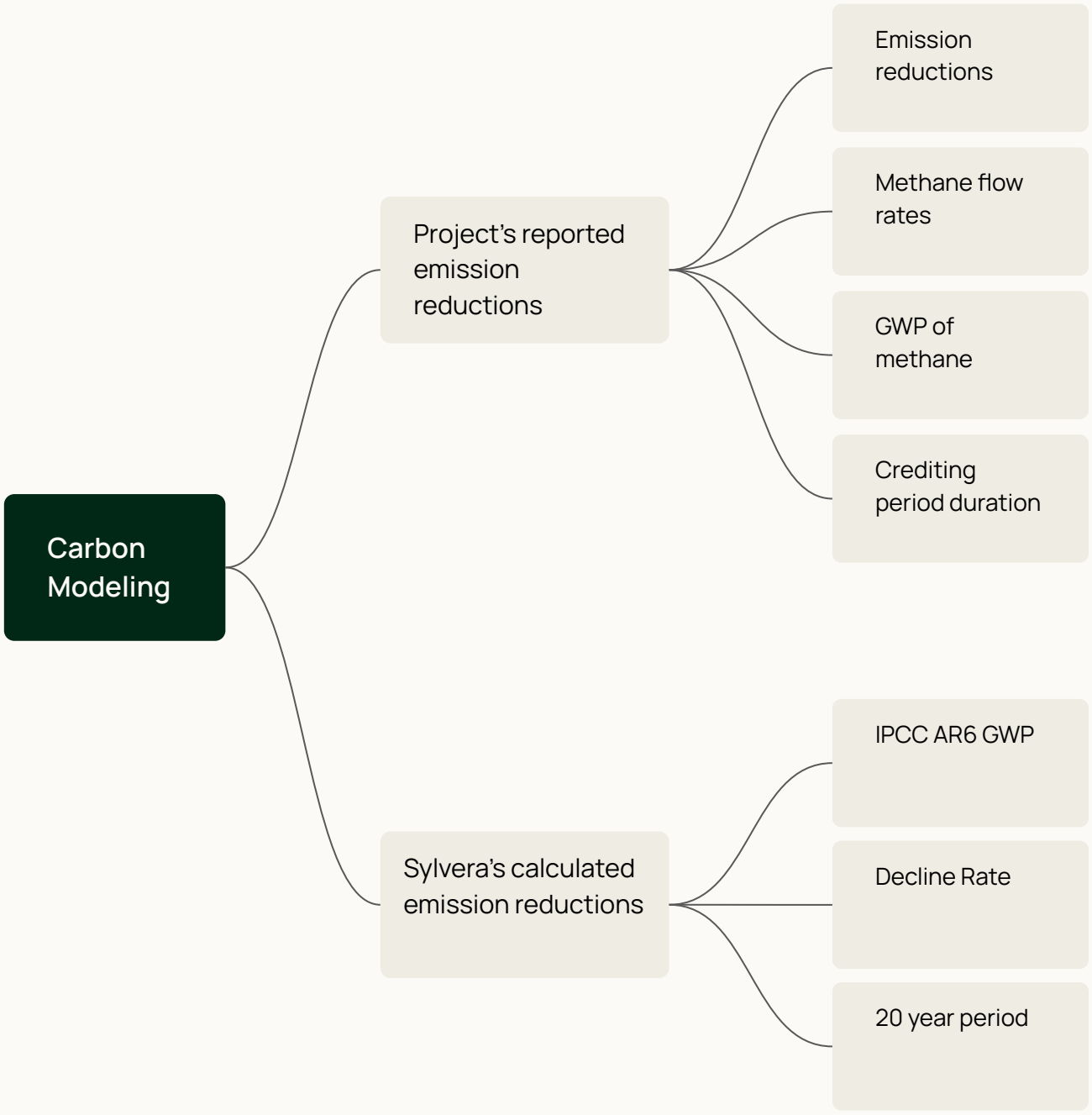
Scoring Logic

The **Carbon Accounting** score is calculated by combining the **Project Reporting** and **Carbon Modeling** components.

Project Reporting assesses the robustness and accuracy of methods used to measure and monitor methane flow rates and resulting emission reductions following project plugging activities, considering the pre-plugging leak test approach, model choices, and the monitoring and issuance approach.

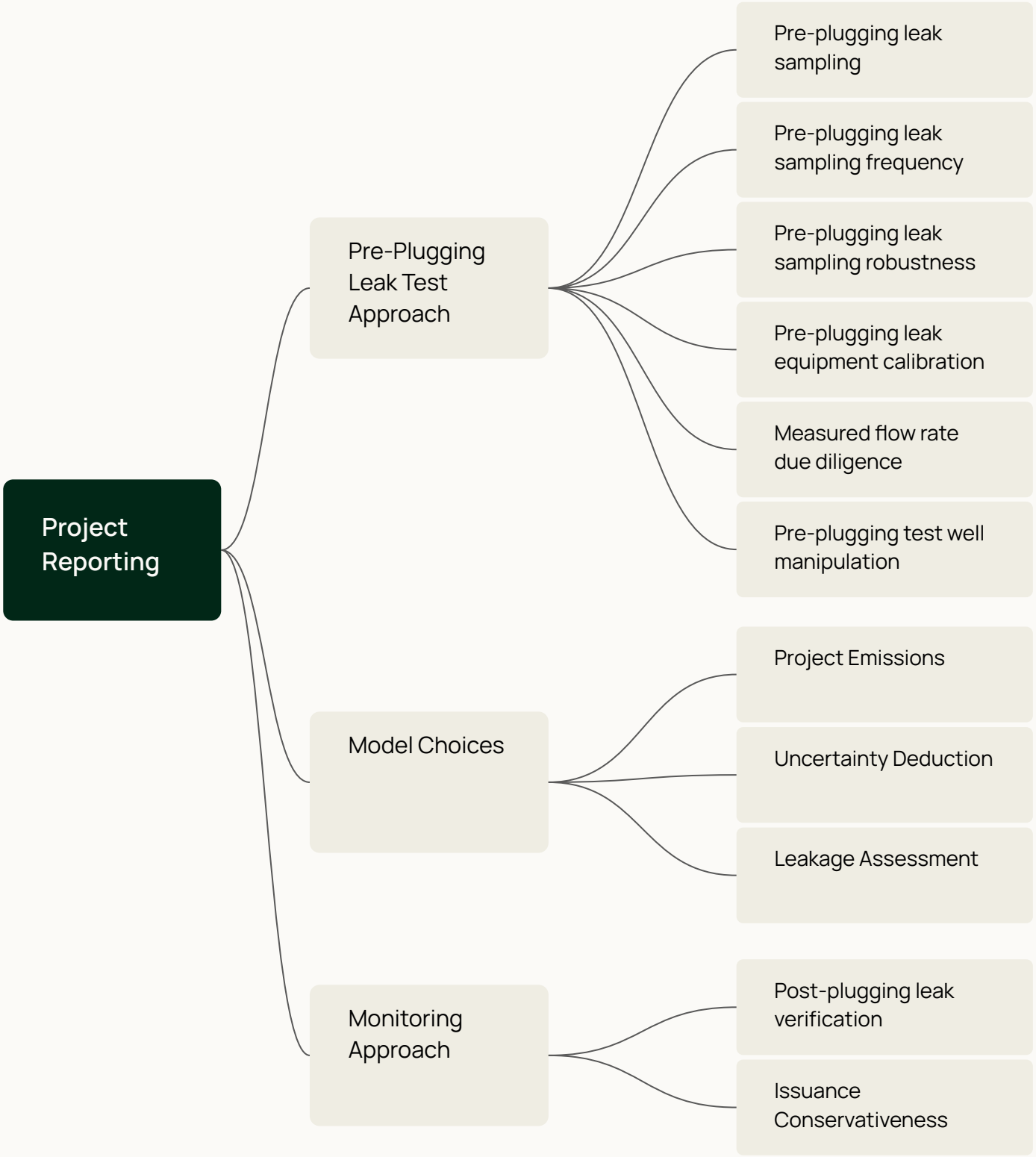
Carbon Modeling evaluates whether a project's baseline emissions reduction calculation approach is accurate, valid, and transparently reported across the crediting period by benchmarking project calculations against Sylvera's independently recreated equations and reference data, including consensus scientific values for fossil methane GWP and terminal decline rates.

Carbon Accounting



Carbon Accounting

Pt.2



Carbon Modeling

Pt.1

CARBON ACCOUNTING

Description

Sylvera's Carbon Modeling assessment **evaluates the conservativeness of a project's baseline emission** estimates by benchmarking project-reported methane flow rates, annual emission reductions, and GWP assumptions against an independent reference approach incorporating best-available assumptions on terminal decline rates and the current scientific consensus for the GWP of fossil methane under the IPCC AR6 guidelines.

Scoring Logic

Orphaned and abandoned wells do not leak at a constant rate. Methane flow **declines over time** as reservoir pressure falls, so a credible baseline must reflect this natural decline rather than assume emissions continue indefinitely at the initial measured rate.

Sylvera assesses Carbon Modeling by **benchmarking** a project's claimed emission reductions against an **independent terminal-decline model**, **built on peer-reviewed research,** into how quickly oil and gas wells decline[1]. Sylvera's model projects each well's emissions over a 20-year horizon using a median decline rate from Payne institute's research, and a global warming potential (GWP) of fossil methane following the latest research consensus[2] value as the upper bound.

The score reflects the share of the project's claimed reductions that Sylvera's conservative model supports; the closer the alignment, the lower the risk of over-crediting from optimistic baseline assumptions.

[1]Payne Institute for Public Policy, A Study of Terminal Decline Rates of Oil & Gas Wells (2025)
[2]IPCC AR6 (GWP100, fossil methane = 29.8)

Carbon Modeling

Pt.2

CARBON ACCOUNTING

Scoring Logic

Terminal decline rate: Sylvera's reference model applies median decline rate drawn from a study of terminal decline across thousands of oil and gas wells. Three scenarios bracket the outcome for a period group (across 10–30 years): an **upper bound** (slow decline, ~2.9% per year), a **median** (~6.4% per year), and a **lower bound** (fast decline, ~9.4% per year). In addition, projects that use wells' historical decline rates are given fair consideration, and are benchmarked against Sylvera's reference model.

Global warming potential (GWP) value: Emission reductions are valued in CO2-equivalent terms using a **GWP of 29.8** for fossil methane, consistent with the IPCC Sixth Assessment Report GWP value over a 100-year timescale (GWP100) to capture the long-term climate benefit that carbon credits are generally intended to represent. While methane's potency as a near-term super-pollutant could be captured by GWP20, carbon credits are denominated in tonnes of CO2-equivalent over the long term, making GWP100 the more appropriate measure of the durable climate benefit each credit represents.

Crediting period length: Baseline emission estimates for OOG projects are inherently uncertain, as they rely on future projections rather than continuous direct measurements. To promote a more conservative approach to carbon accounting, Sylvera caps the crediting period at 20 years, recognising that confidence in projected emissions decreases over time. Longer crediting periods introduce progressively greater uncertainty regarding the persistence of methane emissions, particularly as reservoir depletion and terminal decline are expected to reduce emissions over time.

Where a project does not provide both the emissions data and methane flow rates needed to model decline, Carbon Modeling cannot be assessed and the score is withheld.

Projects that rely on a higher GWP or GWP20, or assume little to no decline, introduce high risks of overstating their baseline emissions and are, thus, scored less favourably.

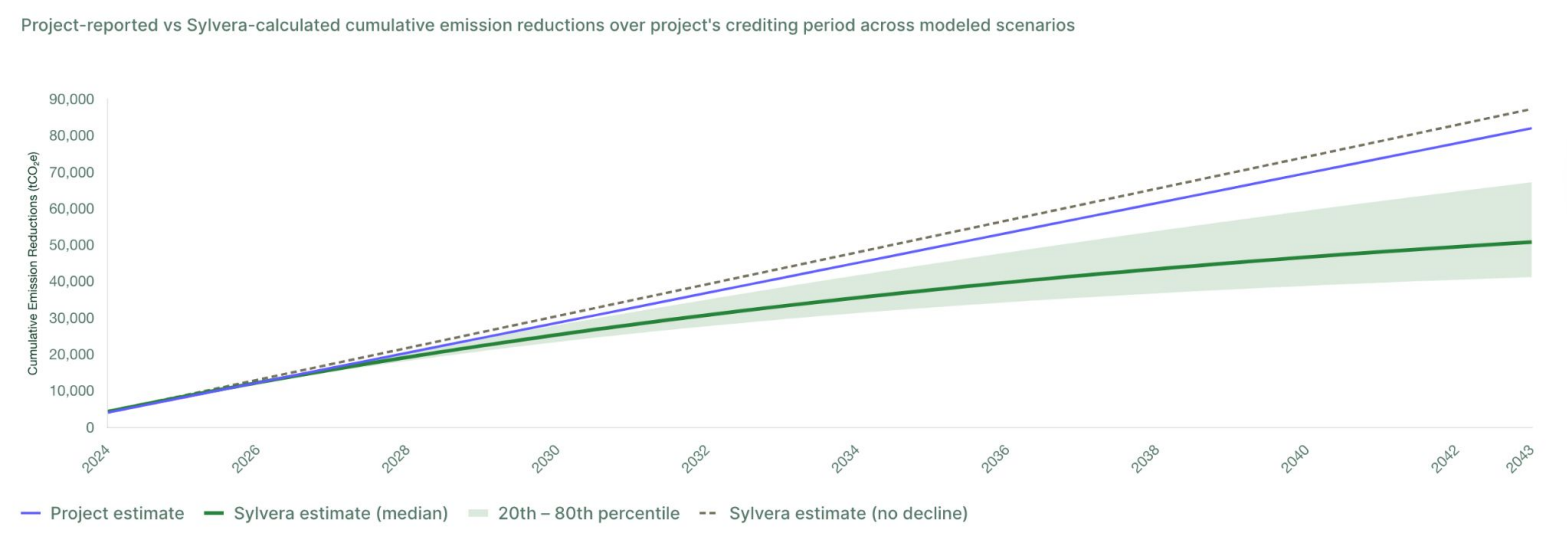
Source: Payne Institute for Public Policy, A Study of Terminal Decline Rates of Oil & Gas Wells (2025); IPCC AR6 (GWP100, fossil methane = 29.8).

Carbon Modeling

Pt.3

CARBON ACCOUNTING

Scoring Logic - illustrative example



Carbon Modeling

CARBON ACCOUNTING

Data Inputs

Input name	Description
Measured methane flow rate	The pre-plugging annual methane leak rate measured at each well, forming the baseline.
Decline rate assumption	The terminal-decline rate the project applies when projecting future emissions, if applicable.
Methane GWP value	Project's reported GWP value used to convert methane to CO2e.
Projection horizon	The period over which baseline emissions are projected.
Claimed emission reductions	The project's reported avoided annual emissions.

Project Reporting

CARBON ACCOUNTING

Description

Assesses the **robustness and accuracy of methods used to measure and monitor methane flow rates** and resulting emission reductions following project plugging activities.

Scoring Logic

The **Project Reporting** score combines the **Pre-Plugging Leak Test Approach**, **Model Choices**, and **Monitoring Approach** components in a weighted average.

The highest weighted component is the Pre-Plugging Leak Test Approach, reflecting how robustly methane flow rates are measured before a well is plugged, including sampling coverage, sampling frequency, equipment calibration, alignment of measured flow rates with reported values, and evidence that measurements reflect undisturbed baseline conditions.

The score includes a capping mechanism, capping the overall **Project Reporting** score to:

- "High Risk", where there is clear evidence suggesting the project manipulated/altered the well's physical state during pre-plugging testing
- "Moderate Risk", where the project sells and retires its issuance upfront, with no supporting monitoring and verification evidence. However, this risk will decrease over time as the higher portion of emission reductions is realized as the project progresses.

Pre-Plugging Leak Test Approach

Description

Assesses the **methods used to directly measure or model the rate at which methane is leaking** from a well before it is plugged, **which forms the basis of the project's baseline** emissions estimate.

Scoring Logic

The **Pre-Plugging Leak Test Approach is the highest-weighted component of Project Reporting**. It is assessed across the sampling method, sampling frequency, sampling robustness, equipment calibration, the alignment of measured emissions with the well's historic production, and evidence that measurements reflect undisturbed baseline conditions.

Direct measurement methods, such as the chamber method or a Hi-Flow sampler, score highest when they capture the full methane flow rate at the wellhead at the time of plugging and align with the well's historical production data.

Indirect approaches can also score highly, provided they are built on extensive historical production data and decline curves combined with conservative future projections. Less robust indirect approaches, such as aerial or satellite sensing or volumetric estimates, score lower because they can't capture the true present-day leak rate and instead assume it matches historical production rates.

A **capping mechanism** limits the score to "**High Risk**" in two cases:

- The well's physical state appears to have been manipulated during testing in a way that could inflate the measured baseline.
- The project relies on less conservative indirect approaches, specifically volumetric analysis, or historical-production modeling with less conservative future projections. This is distinct from the conservative decline-curve approach above with conservative extrapolation of the results to future years, as it effectively assumes the methane leak still matches production-era rates years after production ceased, introducing high uncertainty into the credibility of the estimated emission reductions.

Pre-Plugging Leak Test Approach

Additional information

The current version of **the OOG well plugging framework does not cover projects that use the in-line (direct-connect) measurement method** to assess leak rates prior to plugging. As this method requires opening a well's valve to take measurements (well manipulation), it raises questions about whether the approach is applicable to carbon projects from an over-crediting perspective, and currently prevents Sylvera from delivering a high-accuracy, high-integrity assessment. This is subject to change in future versions of the framework, as we gather more technical information through our engagement with industry and technical experts.

Pre-Plugging Leak Sampling Method Pt.1

Description

The **technique used to measure the rate at which methane is leaking from a well before it is plugged**. Direct measurement at the wellhead provides the most reliable basis for the initial baseline emissions; indirect and modeled approaches carry greater over-crediting risk, as they rely on the well's potential-to-emit rather than real-case scenario (i.e., assuming current emissions will be equivalent to historical production rates).

Scoring Logic

Sampling methods are scored according to how directly and completely they capture the well's methane flow rate.

The highest scores are reserved for **direct measurement** at the wellhead, the **chamber method** or a **Hi-Flow sampler**, which capture the full flow rate in the well's unaltered state.

Decline-curve modeling based on the well's historical production data can also score in this range, provided it applies conservative extrapolation, using low- and high-probability scenarios to project production forward conservatively rather than assuming the leak continues at historical rates.

Trace-gas analysers, **laser absorption spectrometers, sniffers and optical gas imaging provide moderate confidence**, while **aerial or satellite sensing and volumetric or decline-curve modeling that is not conservatively extrapolated receive the lowest scores**, as they are least able to capture the true leak rate at an individual well or rely on potential-to-emit rather than real gas flow rates.

The current version of this framework does not cover in-line (direct-connect) measurement methods. Sylvera is in active engagement with industry and technical experts to better understand implications of this approach for carbon accounting, and will update the framework accordingly.

Pre-Plugging Leak Sampling Method Pt.2

Data Inputs

Input name	Description
Pre-plugging leak sampling method	The technique used to measure the methane leak rate at a well prior to plugging, as reported in project documentation; for example direct wellhead measurement, remote sensing, or volumetric modeling.

Pre-Plugging Sampling Frequency

Description

For projects using direct measurement, **assesses how many times, and over what period, methane leakage is measured at a well before plugging**. Repeated, well-spaced measurements give greater confidence that the recorded rate reflects the well's true ongoing emissions.

Scoring Logic

Sampling frequency is scored on the number of independent measurements and the time between them.
The highest scores require at least **two independent measurements taken more than 30 days apart**, capturing variation in the well's flow rate over time. Two or more measurements **less than 30 days apart** score slightly lower as the short interval between measurements may limit how appropriately temporal variation is captured in the baseline; whereas a **single measurement** scores in the mid-range.

Data Inputs

Input name	Description
Pre-plugging sampling frequency	The number of independent pre-plugging methane measurements taken at a well and the period over which they are spaced, as reported in project documentation.

Pre-plugging leak sampling robustness

Description

Assesses the **reliability of sampling records**, including flow rate stability and the duration of stable readings; looking at whether the methane flow rate is measured under stable, representative conditions, so that the test reflects the well's true ongoing leak rate.

Scoring Logic

Sampling robustness rewards measurements taken over a sustained period, at least two hours per measurement, or above (3h or 4h) if wells are large or super emitters, so that a stable, representative flow rate is recorded. Short or visibly declining measurements that may not reflect steady-state leakage introduce higher risks that the measured flow rates are not representative of real scenario, and, thus, score lower.

Data Inputs

Input name	Description
Pre-plugging sampling robustness	The duration of flow rate readings, scaled to the well's emitter classification.

Pre-plugging leak equipment calibration

Description

Assesses **whether measurement equipment has been appropriately calibrated for the well conditions**; so that the test reflects the well's true ongoing leak rate.

Scoring Logic

Equipment calibration rewards instruments calibrated to the specific conditions of the well under test. Where no calibration information is provided, the component receives the lowest score, reflecting reduced confidence in the reported leak rate.

Data Inputs

Input name	Description
Pre-plugging leak equipment calibration	The evidence on whether the equipment has been calibrated to a well's conditions, as reported in project documentation.

Measured flow rate alignment

Description

Assesses whether **measured methane emissions are consistent** with the well's historical production data and reservoir characteristics.

Scoring Logic

Looking for evidence that measured methane emissions are aligned with historic production data and reservoir characteristics. The projects that evidently verify their measured emission will score the highest, whereas the projects that don't conduct this due diligence check or the information is unclear will score lowest, due to the high uncertainties this approach introduces, as measured rates could be unrepresentative of actual methane emissions.

Data Inputs

Input name	Description
Measured methane flow rate	The evidence on whether the measured emissions have been verified and aligned with the well's historic production data and reservoir characteristics.

Pre-plugging test well manipulation

Description

Assesses **whether pre-plugging leak measurements reflect the well's natural, undisturbed baseline emissions**, or whether the physical state of the well may have been altered during testing in a way that could inflate the measured flow rate.

Scoring Logic

This check protects against artificially inflated baselines.
Where there is evidence that a well was manipulated during testing, for example by opening valve opening to temporarily increase flow, the **Pre-plugging test well manipulation** has the lowest score. In addition, the **Pre-Plugging Leak Test Approach** score is **capped**, regardless of how robust the measurement method otherwise appears. Projects that demonstrate the well's natural state was preserved throughout testing are not penalised.

Data Inputs

Input name	Description
Pre-plugging test well manipulation	Evidence from project documentation on whether the well's physical condition was altered during leak testing in a way that could overstate the measured leak rate.

Model Choices

Description

The **accounting decisions** a project makes **when converting measured leak rates into issued credits**, which project emissions are included, how uncertainty is treated, and whether leakage is assessed.

Scoring Logic

The **Model Choices** score combines three components, that have a different weight on the overall score: **Project Emissions Inclusion** (50% contribution to the Model Choices score), **Uncertainty Deduction** (30% contribution) and **Leakage Assessment** (20% contribution).

Together they capture whether a project's accounting is **conservative**, accounting for the emissions it causes, introducing uncertainty deduction for what cannot be measured precisely, and confirming that reductions are not simply displaced elsewhere.

Project Emissions Inclusion

CARBON ACCOUNTING – PROJECT REPORTING – MODEL CHOICES

Description

Whether the project accounts for the greenhouse gas emissions it generates while plugging wells, which must be deducted from the gross emission reductions.

Scoring Logic

The two most material sources are **fossil fuel use** during plugging operations and the emissions embodied in the **cement** used to seal the well. Secondary sources include fuel for **equipment and transport** and any **methane vented** during baseline measurement.
Higher scores reward projects that identify and include their main sources of project emissions. Projects that state emissions are negligible without evidence, or provide no information, receive the lowest score.

Data Inputs

Input name	Description
Project Emissions Inclusion Assessment	This test confirms whether the project includes all relevant project emission sources and provides clear justification or evidence for their treatment.Typical project emission sources include: • Fossil fuel use (e.g., machinery, transport) • Emissions from fossil fuel use for plugging activities • Emissions from concrete/cement used for plugging • Life-cycle emissions (e.g., upstream energy or material inputs for installed technology) • Emissions from methane vented during baseline measurements

Uncertainty Deduction

Description

Whether the project applies a deduction to its credited emission reductions **to reflect the uncertainty inherent in measuring and projecting a well's methane emissions.** OOG project baseline emission calculation approach carries some inherent uncertainties as it is based on the limited measurements and future projections. In addition, there is a possibility that physical gas leakage might occur if gases migrate to other nearby wells that are hydraulically connected to the same reservoir(s) as the project well.

Scoring Logic

Higher scores reward an explicit **uncertainty analysis** paired with a deduction of **at least 5%**. A flat 5% deduction applied without analysis scores in the mid-range; an unspecified or absent deduction scores lowest.

The score is raised where the project specifically accounts for two OOG-specific sources of uncertainty: the possibility of **gas migrating and leaking through nearby wells**, and the **inherent uncertainty** of projecting a well's future emissions from limited measurements.

Data Inputs

Input name	Description
Uncertainty deduction inclusion	A check to determine whether the project introduces uncertainty deduction to mitigate the inherent uncertainties, as per project documentation.
Uncertainty deduction modifier	A check to look at whether the project specifically accounts for inherent uncertainties arising from the baseline emission calculation approach and a possibility of lateral gas migration.

Leakage Assessment

Description

Whether the project conducted a leakage assessment to ensure that reported reductions reflect the project's true climate impact. **Orphan wells generally present limited leakage risks from a market and activity-shifting perspective**, as they have no solvent operator and have been inactive for an extended period, indicating they are no longer part of active production systems, and thus, this component has the lowest impact on the score. **Nevertheless, a project-specific leakage assessment remains best practice** before concluding that activities will result in no leakage by default.

Scoring Logic

Higher scores reward projects that apply deduction factors based on potential leakage, or conduct leakage assessment before deeming leakage negligible.
The absence of both a leakage assessment and a corresponding deduction introduces moderate risks, as it reduces confidence in the conservativeness of the project's accounting approach.

Data Inputs

Input name	Description
Leakage assessment conducted	Whether the project has assessed potential leakage and the evidence base for its conclusion.

Monitoring Approach

CARBON ACCOUNTING – PROJECT REPORTING

Description

How a project confirms, after plugging, that a well remains permanently sealed and that the claimed emission reductions are real and sustained.

The most robust estimates come from direct parameter value measurements, which provide ground-truth data for further model calibration. Continuous monitoring and measurement of key parameters will ensure that the most accurate and up-to-date information is used in the project's emission reduction calculations.

Scoring Logic

The **Monitoring Approach** combines **Post-Plugging Leak Verification** and **Issuance Conservativeness**.

Stronger projects re-measure wells after plugging to confirm methane flow has stopped, and issue credits **ex-post**, only once reductions have been demonstrated and realized, rather than ahead of delivery without monitoring and verification.

Post-Plugging Leak Verification

Description

Assesses **whether the project conducts post-plugging tests to confirm successful well plugging and the absence of physical leakage**, including the number and timing of independent verification tests.

Scoring Logic

Higher scores reward direct re-measurement of the well after plugging, using the same high-accuracy methods applied before plugging. Projects that confirm a sealed well through repeated post-plugging measurement provide the strongest evidence that the reduction is real and sustained.

Reliance on assumption, or a single visual check, scores lower.

Data Inputs

Input name	Description
Post-plugging leak verification	Evidence that methane flow has ceased following plugging, and the method and frequency used to confirm it.

Issuance Conservativeness

Description

Assesses whether the project issues all of its credits upfront, or the credits are issued only after emission reductions have been realized, delivered and verified.

Scoring Logic

Higher scores reward **ex-post** issuance, where credits are issued only once a well has been plugged, emission reductions realized, and post-plugging verification confirms the reduction.

Upfront (ex-ante) issuance, crediting based on future reductions before they occur, carries significant over-crediting risk, as the well may not perform as projected, and is inconsistent with the methodologies used for other project types. t thus introduces higher risk where projects apply front-loaded crediting, negatively impacting the overall Carbon Accounting score and capping it below investment grade. However, this risk and uncertainty is expected to decrease over time, as the higher proportion of claimed reductions is realized as the crediting period progresses.

Data Inputs

Input name	Description
Issuance conservativeness	A check to assess whether the project conducts leak monitoring and issues credits only after emission reductions have been realized and independently verified, as per project documentation.

Additionality

Description

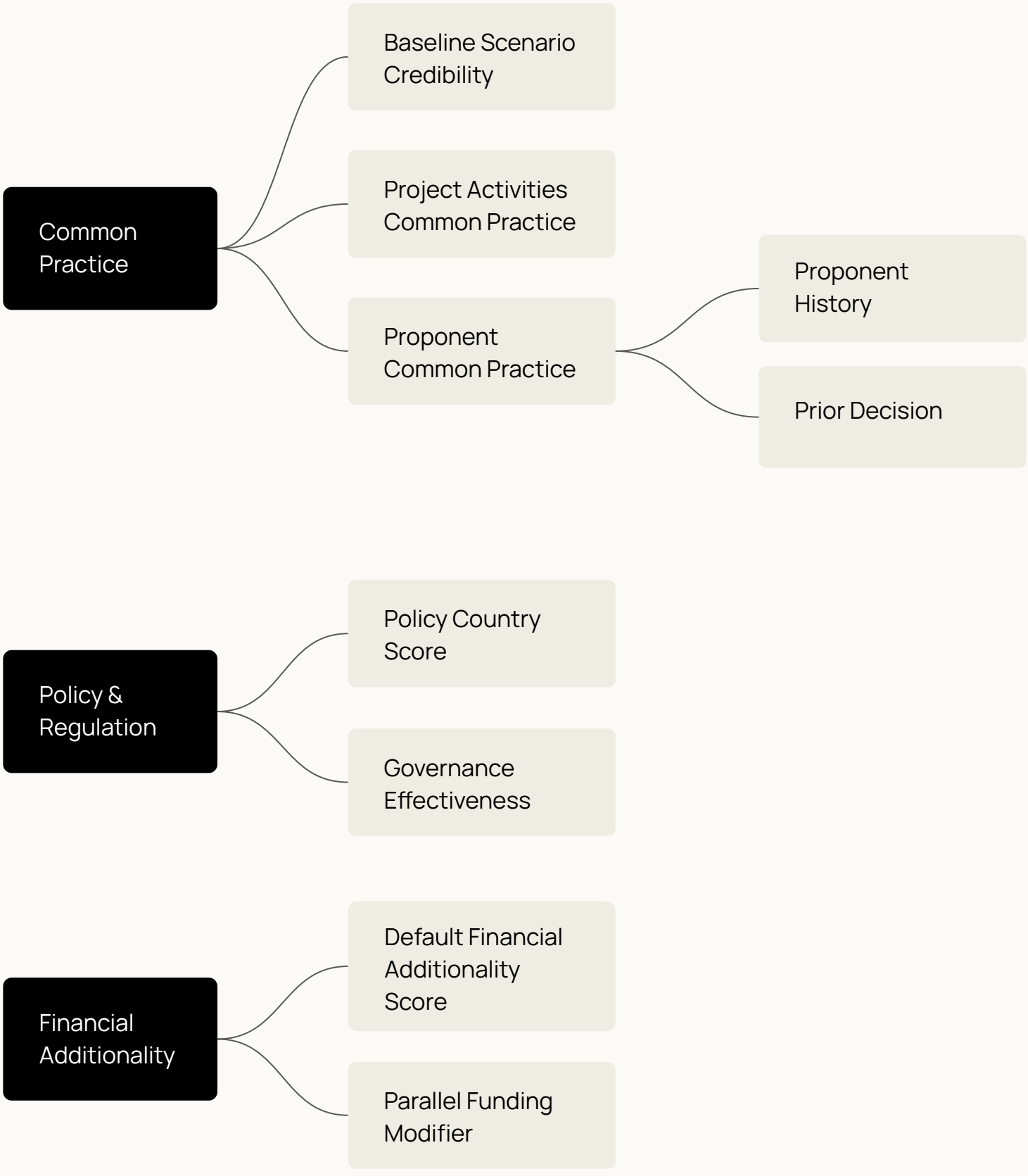
Additionality assesses whether plugging an orphan well, and the resulting methane reductions, are a genuine consequence of carbon finance, that is, whether the wells would have remained unplugged and leaking in the absence of the carbon market.
For orphaned and abandoned oil and gas wells this is a meaningful question: many jurisdictions run public plugging programs or impose legal obligations to plug wells, and some operators plug wells as part of routine decommissioning. A credible project must show that its wells are genuinely orphaned or abandoned, that no party was already obligated or funded to plug them, and that carbon revenue is what genuinely makes the activity happen.
The assessment combines three subcomponents:

- **Common practice**, whether plugging activities are commonly conducted in the region, and whether the project's proposed baseline scenario is credible
- Whether **policy and regulation** already exist in the state and fund these activities,
- And whether the project is **financially additional**, depends on carbon revenue to implement plugging activities.

Scoring Logic

The **Additionality** score is the average of the **Common Practice**, **Policy & Regulation** and **Financial Additionality** components, capped where the project's baseline scenario lacks credibility.

Additionality



Common Practice

ADDITIONALITY

Description

Whether the project activities go above-and-beyond what is commonly practiced, either for operators in the region or for the project proponent, in which case carbon finance may not be what drives the activity.
In addition, this component assesses the baseline scenario credibility: whether the project developer disclosed measured emissions to the relevant regulatory bodies and whether the regulator confirmed awareness of the issue and an inability or unwillingness to act, in order to support the credibility of the baseline scenario assumptions regarding limited public intervention.

Scoring Logic

The **Common Practice** score combines three key aspects: **Baseline scenario credibility**, whether the **Project activities** are common practice, and the proponent's or other project stakeholders track records, through **Proponent common practice**.

For orphaned wells, the central test assesses the proposed **baseline scenario credibility**, namely, that prior to the project, the wells would have been left unplugged. This component acts as a cap to the Common practice score if there are risks or uncertainties that the project's wells would be prioritized for plugging.

Baseline Scenario Credibility

Pt.1

ADDITIONALITY – COMMON PRACTICE

Description

This section stress-test the credibility of the project's claim that the well would have continued to leak, rather than being plugged by another party. Specifically, **it evaluates whether the project developer disclosed measured emissions to the relevant regulatory body** and **whether the regulator confirmed awareness of the issue** and an inability or unwillingness to act. This is expected to support the credibility of the baseline scenario assumptions regarding limited public intervention.

Scoring Logic

The **baseline scenario is the foundation of the additionality case**. A credible baseline shows that, absent the project, the well would have remained unplugged and continued leaking methane.

Sylvera tests this against the well's class and regulatory response: a higher emitting well is more likely to be prioritized by the state for plugging or other remediation activities. Sylvera further assesses the country/state prioritization system and looks at additional evidence of whether the well is/is not being prioritized.

This component acts as a cap on the overall Additionality score. For example, if a well is a super emitter (>100 MCF/day), and the project did not obtain attestation of inaction from relevant regulatory bodies or any other evidence that the super emitters would not be prioritized for plugging, the score will be capped at high risk, as this scenario introduces the highest risks and uncertainties to project's reported baseline scenario credibility. Where the baseline scenario is not credible, Additionality score cannot score highly regardless of the other components.

Baseline Scenario Credibility

Pt.2

ADDITIONALITY – COMMON PRACTICE

Data Inputs

Input name	Description
Well class	Well's classification category, based on its emission rate (minor/small/large/super emitter).
Regional plugging response	Whether the wells included in the project emit at the level that would trigger state action.
Regulatory response availability	Whether the project secured a regulatory response and/or attestation of inaction from the relevant regulatory bodies confirming that the project's wells would not have been prioritized for plugging or other remediation activities.
Emission rate of the highest emitting well	A numeric value representing the highest-emitting well (in kg CH4/year). This is a supporting check that flags wells emitting above 100 MCF/day (1,261,440 kg CH4/year), separating out super emitters with very high emission rates, and capping the Additionality score where there is no evidence as to whether the state would have prioritized these wells.

Project Activity Common Practice

Description

Whether the project's core activities (plugging of orphan wells) are already commonly carried out in the region without carbon finance, which could reduce the case for additionality.

Scoring Logic

The **Project Activity Common Practice** component assesses whether the claimed baseline scenario is plausible by researching the national/regional prevalence of those activities at the project's start. **These are assumed to represent the background conditions of adoption.**

The analyst desk research is focused on understanding regional common practice by examining **whether other companies, NGOs, or organizations engage in orphan well plugging activities without reliance on carbon finance**; whether their efforts have had, or are likely to have, a significant **impact on plugging activity in the region**; and whether there is any **evidence of voluntary plugging prior to the expansion of the carbon market** into orphan well plugging, in order to establish whether carbon finance acted as an enabling factor in kicking off plugging activities in the region.

Proponent Common Practice

Description

Proponent Common Practice assesses **whether the project developer has an established track record of implementing comparable activities without reliance on carbon market revenues**. This component evaluates the extent to which the proponent's prior experience and behaviour indicate that the project activities would not be routinely undertaken in the absence of carbon finance. A proponent with limited or recent experience, or with a history of reliance on carbon revenues, is less likely to implement similar activities without the project, supporting additionality.

Scoring Logic

The **Proponent Common Practice** score looks at the proponent rather than the wider market, across two dimensions: the proponent's history of plugging wells and the decision that led it to undertake the project.

This component is **calculated as the minimum of the Proponent History** and **Prior Implementation components where available**.

A proponent whose core business is already decommissioning wells, or that had committed to plugging the project's wells before carbon finance was considered, presents a weaker additionality case. A proponent for whom carbon revenue is the reason the wells are plugged presents a stronger one.
The strongest cases show that the wells would have stayed unplugged indefinitely without the project, and that the proponent took on the activity specifically because carbon finance made it viable.

Proponent History

Description

Proponent History **evaluates the extent and nature of the proponent's past experience** with activities comparable to those implemented by the project. The assessment distinguishes between exact versus similar activities, recent versus established implementation, and whether past activities were undertaken independently or have been consistently reliant on carbon finance. **Lower scores reflect a stronger history of independently delivering similar activities**, while **higher scores reflect limited, unclear, or carbon-dependent experience.**

Scoring Logic

The score is determined based on qualitative categories describing the proponent's historical involvement in comparable activities, including the type of activities undertaken, the duration of experience, and the extent of reliance on carbon finance.

Data Inputs

Input name	Description
Proponent plugging history	Evidence of wells the proponent has previously plugged orphan wells, and whether those activities were financed by carbon revenue or by other means.

Prior Implementation Decision

ADDITIONALITY – COMMON PRACTICE – PROPONENT COMMON PRACTICE

Description

Whether the decision to implement project activities was made prior to, and independent of, any consideration of carbon revenue.

Scoring Logic

Carbon finance must be a decisive factor in the decision to plug the wells.

Where there is evidence that the proponent had already committed to plugging the wells, for example through a board decision, regulatory filing, or signed obligation, before considering carbon credits, the additionality case is weak. **The strongest cases demonstrate that carbon revenue was integral to the decision to proceed with the implementation.**

Data Inputs

Input name	Description
Timing of the implementation decision	Evidence on when the decision to plug the wells was made relative to the decision to seek carbon finance.

Policy & Regulation

ADDITIONALITY

Description

Examining the policy and regulatory landscape to **identify the regulations or policies that could mandate or incentivize project activities** (plugging of orphan wells). This component evaluates whether the policy environment reduces the need for carbon market **incentives by making similar activities economically attractive or legally required**. Strong policy and regulatory support can weaken the case for additionality, while limited or unclear policy support strengthens it.

Scoring Logic

The **Policy & Regulation** score is determined using the **Policy Country Score** and the **Governance Effectiveness Score**. Where the policy country score indicates fully supportive conditions or the governance effectiveness score is not applicable, the final score is equal to the policy country score only. In all other cases, the final score is based on the policy country score and modified by the governance effectiveness score.

Policy Country Score

ADDITIONALITY – POLICY & REGULATION

Description

All relevant policies that could apply to the project or baseline activities in the project's country are taken into account, as their extensiveness and effectiveness (or lack thereof) can undermine/support the project's additionality.

Scoring Logic

This components filters a database of policies that we have assessed while rating Orphan oil and gas well plugging projects. The test filters policies on applicability, based on whether they are in the same jurisdiction and are relevant to the project activities, taking the maximum (highest risk) applicable policy.

Individual policies may be manually overridden and removed from the assessment if deemed irrelevant to the specific project context.

Data Inputs

Input name	Description
Country	Country the project operates in. Used to filter relevant policies.
Project start date	Date the project started. Used to filter relevant policies.
Policies	List of all relevant policies extracted.
Policy override	Manual override of filtered policies deemed irrelevant to the project's specific context, based on analyst desk research.

Governance Effectiveness

ADDITIONALITY – POLICY & REGULATION

Description

A modifier applied to the **Policy Country Score** in contexts with weak governance. Governance effectiveness can affect whether policies or regulations are effectively implemented or enforced. In national contexts with weak governance any identified policies or regulations may not be effective enough to have a such a significant impact on additionality.

Scoring Logic

The **Governance Effectiveness score** is applied where national governance metrics are weak enough to undermine project and regulatory implementation. **This score ensures that only policies and regulations likely to be effectively implemented negatively affect** the **Policy & Regulation** score.

Data Inputs

Input name	Description
Governance effectiveness	An indicator derived from a combination of Worldwide Governance Indicators reflecting the quality of public institutions, regulatory effectiveness, and government capacity in the project's host country.
Country	Country the project operates in.

Financial Additionality

Description

Whether voluntary carbon market (VCM) financing is essential for implementing the project activities. If there is a significant financial incentive to proceed without carbon market support, it may indicate that the activities would have been carried out regardless.

Scoring Logic

Plugging orphaned wells generates no commercial return on its own, as there is no secondary revenue or economic/financial incentive to carry out project activities. As such, **orphan well plugging is, by default, considered financially additional**.

However, Sylvera further assesses whether the project's economics genuinely depend on carbon finance, and applies a modifier where the project also receives **grants or subsidies**, through NGO or other well-plugging funds, that reduce its reliance on carbon revenue and can weaken the additionality case

Data Inputs

Input name	Description
Default Financial Additionality Score	Plugging of orphan wells is by default considered financially additional, as there is no secondary revenue or economic incentive to carry out project activities.
Parallel Funding Modifier	Modifier to assess whether projects received material funding outside of carbon revenue, such as grants, subsidies, or other NGO or funding programs, that may indicate they do not require additional VCM-related financing.

Permanence

Description

Permanence assesses the likelihood that a plugged well stays sealed and does not re-release or allow methane gas to escape by another route.

Unlike biological carbon stores, a plugged well cannot 'reverse' by releasing stored carbon. The abatement can still be undermined, however, if the seal fails, if gas migrates laterally and escapes through neighbouring wells. **Permanence** therefore **focuses on the physical integrity of the plug**, **the project's mitigation activities in the case of a plug failure**, and the **team expertise to conduct these activities**.

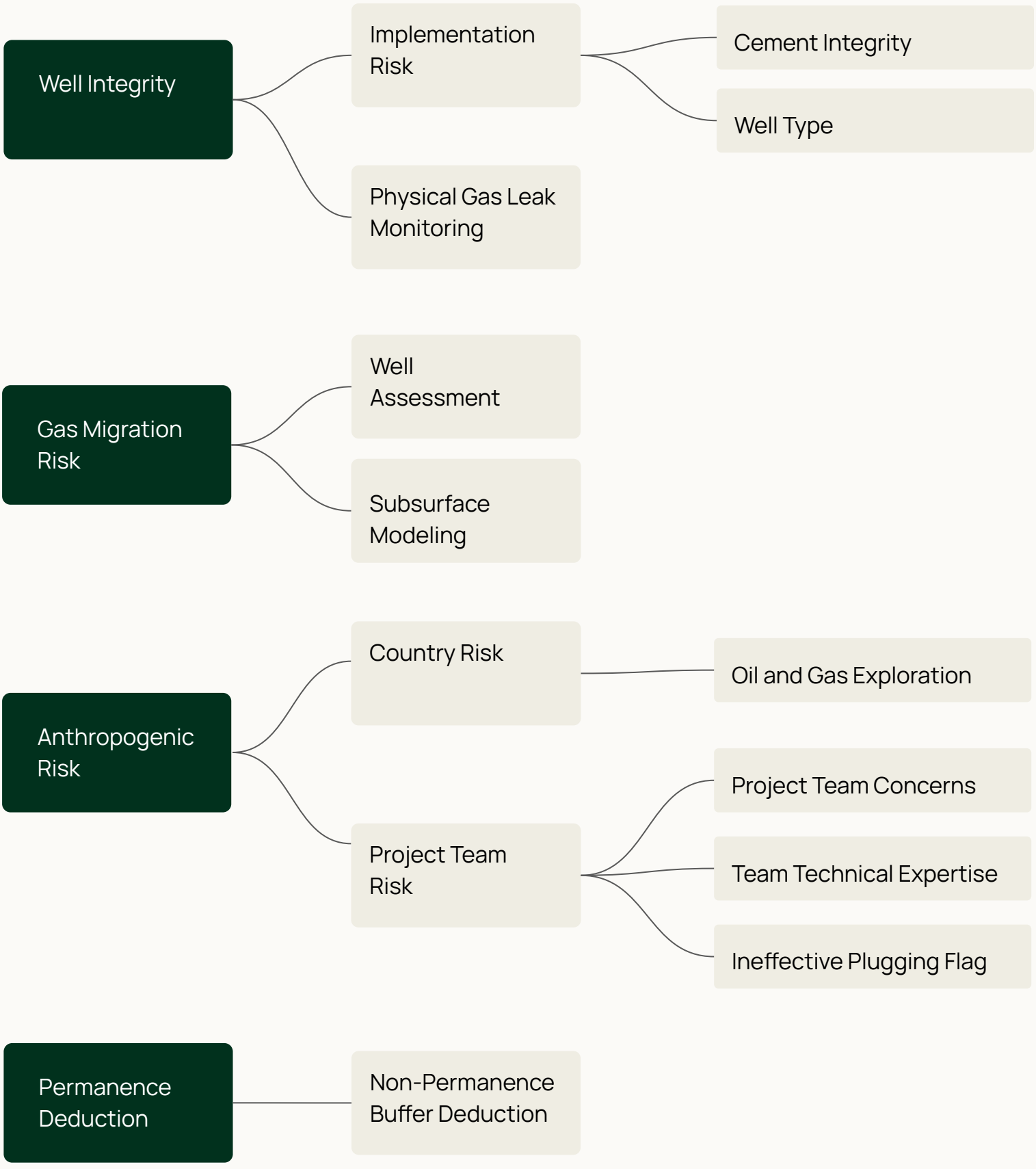
The assessment combines three risk dimensions: **Well integrity**, **Gas migration**, and **Anthropogenic risk**, and assesses whether the project applied a non-permanence buffer deduction for residual permanence uncertainty.

Scoring Logic

The **Permanence** score is a weighted combination of **Well Integrity Risk**, **Gas Migration Risk** and **Anthropogenic Risk**, with a further non-permanence buffer deduction reflecting residual uncertainty.

Well integrity and gas migration carry the greatest weight, as they most directly determine whether the sealed methane stays underground. A strong score requires durable plugging, low migration exposure, and a credible, well-resourced project team.

Permanence


Well Integrity
Implementation Risk
Cement Integrity
Well Type
Physical Gas Leak Monitoring
Gas Migration Risk
Well Assessment
Subsurface Modeling
Anthropogenic Risk
Country Risk
Oil and Gas Exploration
Project Team Risk
Project Team Concerns
Team Technical Expertise
Ineffective Plugging Flag
Permanence Deduction
Non-Permanence Buffer Deduction

Well Integrity Risk

PERMANENCE

Description

Assesses the l**ikelihood of methane migration through the plugged wells** by **enquiring the quality of plugging, the type of wells, and ongoing physical gas leakage monitoring.**

Scoring Logic

Well Integrity Risk combines the **implementation** of the plugging, the quality of the cement seal and the type of well being plugged, with the strength of **post-plugging leak monitoring** used to detect any failure of the seal.

Implementation Risk

PERMANENCE – WELL INTEGRITY RISK

Description

Whether the well has been plugged to a durable standard, considering the quality of the cement seal and the characteristics of the well itself.

Scoring Logic

Two factors drive implementation risk: **Cement integrity** and **Well type**.

Cement integrity rewards plugging that follows recognised standards, adequate plug length, placement across all leak pathways, and verification of the set cement.

Well type captures the risks associated with the well type, considering how well design can influence plugging complexity and long-term leakage risk. Deviated or horizontal wells have complex architecture and greater potential for methane to migrate laterally than conventional vertical wells.

Stronger implementation, on a well that is inherently easier to seal, supports a higher permanence score.

Data Inputs

Input name	Description
Cement integrity	Whether the cement plug meets recognised standards for depth, placement, and cement type.
Well type	Assesses the type of wells plugged, whether they are conventional (vertical) or unconventional (deviated, horizontal).

Physical Gas Leak Monitoring

Description

Whether, and how often, a well is monitored after plugging to detect any failure of the seal and resumption of methane leakage.

Scoring Logic

Physical Gas Leak Monitoring component determines whether the project includes any ongoing monitoring for well leaks over the project's crediting period. Ongoing monitoring is the safeguard that detects a failed seal before significant methane re-enters the atmosphere.

The score reflects both the **Monitoring approach** throughout the project's crediting period, and the **Post-plugging monitoring frequency** as part of the post-plugging verification, in cases where the project does not conduct monitoring over its crediting period. Best practice would exceed the post-plugging tests mandated over, and implies monitoring over a project's entire crediting period to ensure plugging integrity continues.

Data Inputs

Input name	Description
Monitoring approach	Assesses the project's monitoring approach if present; how frequently post-plugging gas leak monitoring is conducted over the crediting period, reflecting the level of ongoing surveillance for potential leakage.
Post-plugging monitoring	Assesses whether the project carries out any monitoring as part of post-plugging verification, to detect potential well leaks after plugging, and how soon after plugging monitoring is conducted. This check is applied only to slightly adjust the score where the project does not conduct monitoring throughout its crediting period.

Gas Migration

PERMANENCE

Description

The risk that methane, blocked from leaking through the plugged well, instead migrates through the sub-surface and escapes via neighbouring wells or other pathways.

Scoring Logic

Gas Migration component assesses the likelihood of methane migrating through subsurface pathways beyond the plugged well. Evidence or modeling demonstrating that the reservoir is effectively enclosed can reduce the associated permanence risk.

It combines two components, **Well Assessment** and **Subsurface modeling,** to understand how gas could move underground:

1) **Well Assessment**, based on Sylvera's independent assessment of adjacent wells, and the risk of migration through them. It assesses the distance of assessment at a 1km radius from the wells, with smaller radii at 300m and 50m for wells that may pose higher risks to the project. Risks are assigned based on proximity, and based on well type (orphan, active, plugged).
2) **Sub-surface modeling**, a check that determines whether the project has performed subsurface modeling to assess risks of migration within the project. Evidencing of no geological communication or an isolated gas pool improves confidence in no migration.

Well Assessment

PERMANENCE – GAS MIGRATION

Description

The risk that methane prevented from leaking at the plugged well migrates laterally and escapes through nearby wells, particularly unplugged or poorly sealed ones.

Scoring Logic

Sylvera's independent assessment of adjacent wells and the risk of migration through them. It examines a **1000m radius** around each well, narrowing to **300m** and **50m** for wells that may pose a higher risk to the project, with risk assigned based on proximity and well type (orphan, active, plugged).

The assessment considers the **number**, **proximity**, and **condition** of other wells surrounding the project well. A project well surrounded by many unplugged or poorly sealed wells carries higher migration risk, as pressure relieved at the plugged well can find an alternative escape route. Isolated wells, or areas where neighbouring wells are also sealed, present lower risk.

Data Inputs

Input name	Description
Well assessment	Sylvera's independent assessment, based on the external geospatial well datasets. It looks at the number and status of the neighbouring wells in the 50m, 300m, and 1000m radii.

Subsurface modeling

PERMANENCE – GAS MIGRATION

Description

The quality of geological and reservoir information available to understand how methane could move through the sub-surface after plugging.

Scoring Logic

Assesses the use of reservoir modeling to identify potential migration pathways and evaluate subsurface connectivity. Stronger reservoir modeling, drawing on geological data, pressure information, and an understanding of the formation, gives greater confidence that gas will not migrate to an unintended escape route. Where little or no reservoir information is available, migration risk is harder to rule out and the score is lower.

Data Inputs

Input name	Description
Subsurface modeling	Assesses the use of reservoir modeling to identify potential migration pathways and evaluate subsurface connectivity. Looks for evidence that indicates limited communication or a low likelihood of leakage, which could increase confidence in the migration risk assessment.

Anthropogenic Risk

PERMANENCE

Description

The risk that human activity, rather than physical failure of the seal, could undermine the permanence of the methane abatement, whether through renewed drilling in the area or weaknesses in the project team.

Scoring Logic

Anthropogenic Risk combines the **country-level risk** of renewed oil and gas exploration near the project with the **capability and integrity of the project team** responsible for plugging the wells and keeping them sealed.

Data Inputs

Input name	Description
Country oil and gas exploration risk	The trend of oil and gas exploration and drilling activities in the project's region that could disturb plugged wells.
Project team risks	Flags internal issues within the project team that could hinder project outcomes.

Country Risk

PERMANENCE – ANTHROPOGENIC RISK

Description

The risk that future oil and gas exploration or production in the project's region disturbs plugged wells or the surrounding formation.

Scoring Logic

Where a country or region remains an **active exploration frontier**, there is a greater chance that drilling, re-entry, or new production disturbs a plugged well or alters sub-surface pressures. Jurisdictions with declining or dormant oil and gas activity present lower anthropogenic risk.

Data Inputs

Input name	Description
Country oil and gas exploration risk	The trend of oil and gas exploration and drilling activities in the project's region that could disturb plugged wells.

Project Team Risk

PERMANENCE – ANTHROPOGENIC RISK

Description

Team Risk assesses the likelihood of anthropogenic risks arising from the capacity, experience, and reliability of the project team. This component evaluates whether the project team has the expertise, and organisational strength required to plug the wells effectively and ensure they remain sealed.

Scoring Logic

A capable, reputable team is central to durable plugging. The assessment considers the team's **technical expertise**, any **adverse media or legal concerns**, and whether there is any **history of ineffective plugging** in the team's past work. Weaknesses in any of these areas raise the risk that wells are not sealed to a lasting standard.

Data Inputs

Input name	Description
Team technical expertise	Determining whether the plugging team has sufficient technical expertise for confidence in high-quality plugging practices.
Project team concerns	Any adverse media concerns identified during diligence, with an extra focus on any evidence of ineffective plugging of wells.
History of ineffective plugging	A history of ineffective plugging could indicate potential issues for the project.

Team Technical Expertise

PERMANENCE – ANTHROPOGENIC RISK

Description

The project's team experience (or lack thereof) could affect the way in which the project activities are implemented. This could potentially limit or ensure the long-term effectiveness of the activities, affecting the project's permanence.

Scoring Logic

Projects are scored on the proponent's track record, determining whether the plugging team has sufficient technical expertise to give confidence in high-quality plugging practices.

Data Inputs

Input name	Description
Team technical expertise	Determining whether the plugging team has sufficient technical expertise for confidence in high-quality plugging practices.

Project Team Concerns

PERMANENCE – ANTHROPOGENIC RISK

Description

The project's team reputation could point to potential mismanagement risks, which could limit the long-term effectiveness of the project activities or interrupt their implementation.

Scoring Logic

The **Project Team Concerns** score evaluates potential risks associated with the project team using compliance checks (e.g., ComplyAdvantage). It assumes that links with nefarious activities could undermine the effectiveness of project operations.

- If there are no ComplyAdvantage results of concern → very low risk.
- If there is one ComplyAdvantage result of concern → moderate risk.
- If there are multiple ComplyAdvantage results of concern → very high risk.

Data Inputs

Input name	Description
Known proponent legal flags	Whether there any ComplyAdvantage hits of concern related to the project proponents.

History of ineffective plugging

PERMANENCE – ANTHROPOGENIC RISK

Description

Whether there is any evidence that the project team has previously delivered plugging work that failed to seal wells effectively.

Scoring Logic

This flag captures direct evidence of delivery risk. Where a team's previous plugging work has been shown to be **ineffective or incomplete**, for example wells that resumed leaking after treatment, confidence in the durability of the current project's plugging falls.
The flag acts as a targeted downward adjustment within the project team assessment, distinct from the broader screening of media and legal concerns.

Data Inputs

Input name	Description
History of ineffective plugging	A history of ineffective plugging could indicate potential issues for the project.

Non-Permanence Buffer Deduction

PERMANENCE

Description

An additional adjustment that reflects residual permanence uncertainty the project itself recognises and discounts for.

Scoring Logic

Beyond the assessed risk components, projects can apply their own **permanence uncertainty deduction** to buffer against the chance that some abatement does not endure.

A deduction of **5% or more** earns the largest uplift to the permanence score; a deduction of **1-5%** earns a partial uplift; **below 1%**, no uplift is given. This rewards projects that proactively discount for residual risk.

Data Inputs

Input name	Description
Non-permanence buffer deduction	The size of any buffer or discount the project applies to account for residual permanence risk.

Safeguarding & Co-Benefits

Description

Ensuring that appropriate community and environmental safeguards are in place is critical for the project's continued successful operation, its reputation, and adherence to the No Net Harm principle.

The extent to which a project goes beyond carbon outcomes to benefit local communities and biodiversity is assessed as **Safeguarding and Co-benefits**. This considers the nature of project activities and the presence of benefit-sharing mechanisms, and can serve as a quality differentiator depending on user priorities.

Scoring Logic

The **Safeguarding and Co-Benefits** score provides a blended view of a project's overall beyond-carbon impact, combining safeguarding and co-benefits to evaluate the likelihood and extent that a project delivers a net benefit for communities and biodiversity by confirming if the requirement of No Net Harm is met, and quantifying Sustainable Development Goal (SDG) contributions.
The score assumes that significant risk of net harm to the community or biodiversity prevents any net positive co-benefits.

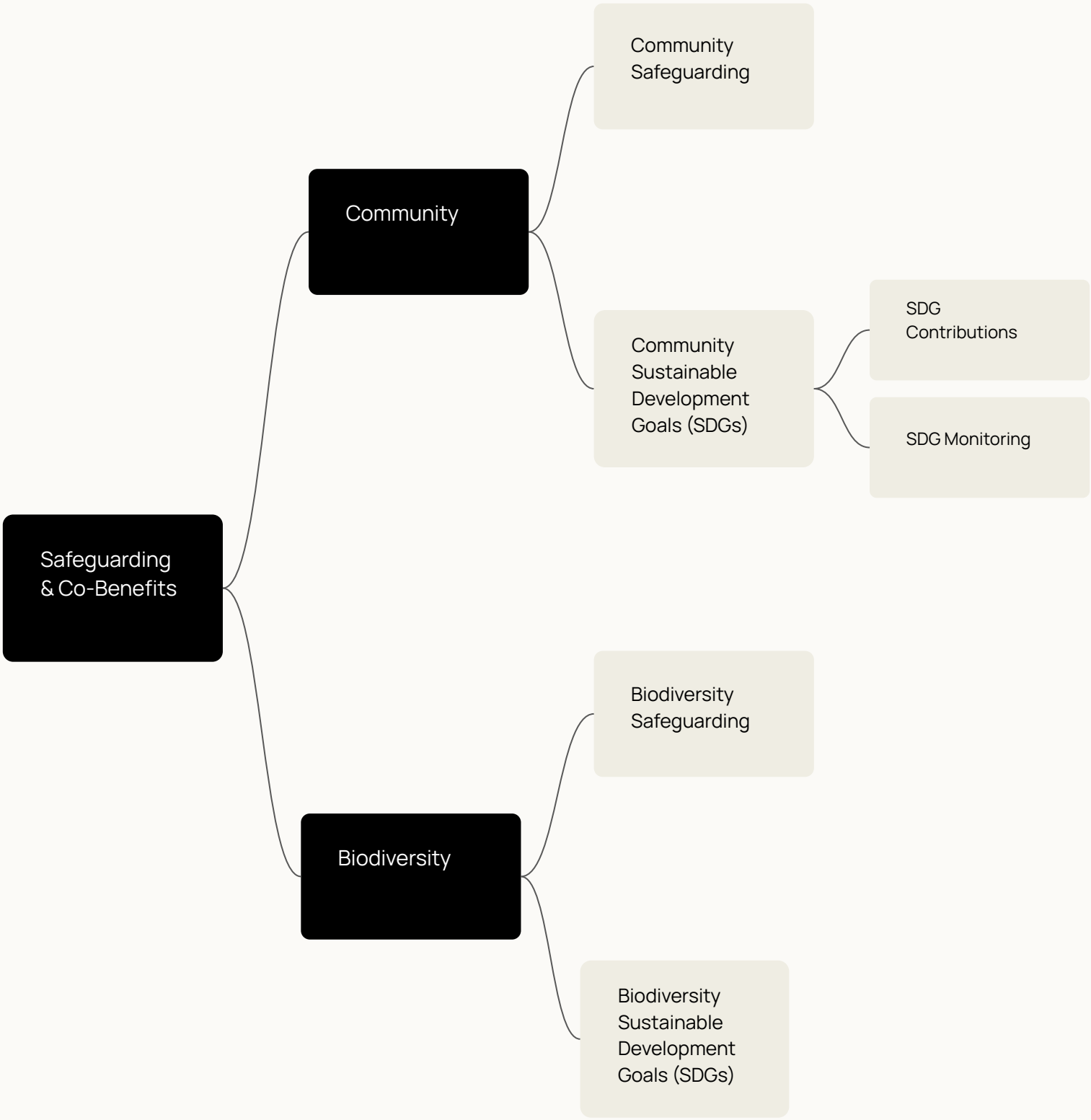
If significant safeguarding risks are present:

- **The score is the minimum of the Biodiversity and Community scores**; this ensures positive outcomes in one sub-component cannot override evidence of severe harm in the other. A net benefit in both **Biodiversity** and **Community** are required for a positive score.

If significant safeguarding risks are not present:

- **The score is the average of the Biodiversity and Community scores.**

Safeguarding & Co-Benefits



Community

SAFEGUARDING & CO-BENEFITS

Description

The project's effect on local communities near the well sites, holistically evaluating both the measures taken to prevent harm and the impact / benefits delivered to those communities and stakeholders.

Specifically, **it evaluates whether the project meets the principle of do no harm to surrounding communities**, with safeguards against operational risks specific to plugging activities, while also assessing the scale of positive impact mapped to the UN Sustainable Development Goals (SDGs).

Scoring Logic

The **Community** score combines **Community Safeguarding** and **Community Impact**.

Community Safeguarding is assessed across the factors most relevant to well plugging near populated areas, including community **engagement and transparency**; **air-quality monitoring** where settlements lie close to the wells; a functioning **grievance redress mechanism**; worker **health and safety**; **land access and surface permissions**; and, where relevant, **Indigenous rights and Free, Prior and Informed Consent**.

Community Impact component rewards measurable positive contributions, mapped to relevant SDGs and supported by appropriate monitoring.

Community Safeguarding

Pt.1

SAFEGUARDING & CO-BENEFITS - COMMUNITY

Description

Community safeguarding evaluates the risk of potential adverse impacts on local communities from plugging activities. It assesses **the measures a project takes to avoid harming the people who live and work near the well sites**.

Scoring Logic

Considers whether the project has adequate mechanisms to prevent harm, including grievance redress mechanism, disclosed agreements (contracts) covering land access, plugging access, and reclamation, worker health and safety, ambient air quality and relevant community engagement, relative to the project's proximity to settlements and operational characteristics, which acts as a modifier and adjust the score accordingly. Proximity within 1km elevates the risk and tightens requirements for ambient air quality and relevant community engagement.

Community Safeguarding

Data Inputs

Input name	Description
Air quality monitoring	Assesses the extent to which the project includes a structured air quality monitoring plan (VOC/H_2S), including key elements such as monitoring methods, locations, timing, exceedance thresholds, and data reporting procedures. Only triggered if there are communities in the 1km radius.
Community engagement and transparency	Looks at how the project involves local communities in decision-making and implementation. Only triggered if there are communities in the 1km radius.
Grievance Redress Mechanism	Whether a formal grievance channel is described in project documentation. Checks whether there are clear and accessible processes for communities to raise concerns and resolve disputes.
Worker and health safety	Assesses whether the project implements measures to protect workers' health and safety, particularly given the potential hazards that could emerge during plugging activities.
Land access and surface permission	Assesses the extent to which the project has secured formal rights or permissions for land access, plugging, and site reclamation, based on the level and transparency of documented authorisation.
Human rights and Indigenous Peoples and local communities	Evaluates whether the project respects and protects legal or customary rights to land. Only relevant if there are indigenous communities in the project region.
Community harm	Assesses whether there is evidence that the project caused harm to local communities during implementation.

Community Impact

Description

Assesses the scale and quality of the project's positive contributions to the community beyond basic requirements, through Sustainable Development Goals (SDG)-aligned activities.

Scoring Logic

Co-benefits are assessed through the lens of UN SDGs. Orphan well plugging projects can best contribute to SDG 3, SDG 6, SDG 8, and SDG 5 through hazard removal, air-quality and groundwater protection, local employment, and women's workforce participation. Scoring identifies projects with the most tangible benefits, and is further assessed in the combination with the ongoing **SDG monitoring**.

Data Inputs

Input name	Description
SDG Mapping	Community-focused outcomes mapped to SDG targets, wellbore hazard removal, air-quality and groundwater protection, local employment, and women's workforce participation.
Country-progress weighting	Individual SDG scores weighted by country progress. Contributions in countries further from the SDG carry greater impact.
SDG Monitoring	Assessing whether the project has implemented credible monitoring plan with metrics aligned to SDG targets.

Biodiversity

SAFEGUARDING & CO-BENEFITS

Description

A holistic assessment of the likelihood that plugging activities produce a net benefit to biodiversity and the surrounding environment. **Evaluates whether the project prevents ecological harm through pollution controls and environmental management, and delivers positive co-benefits such as habitat enhancement or measurable pollution reduction.**

Scoring Logic

The **Biodiversity** score combines **Biodiversity Safeguarding** and **Biodiversity Impact** sub-component scores. The Safeguarding and Impact scores are combined through the weighted average to produce a final Biodiversity Score (1–5 scale).

Biodiversity Safeguarding

Description

This subcomponent examines the **systems and measures in place to prevent biodiversity loss or degradation due to project activities**. Assessment of environmental safeguards implemented by orphan oil and gas well plugging projects to prevent adverse biodiversity impacts. Evaluates pre-project risk identification through Environmental Impact Assessments, sensitive habitat and species safeguarding, operational footprint minimization, pollution control, as well as the presence of formal environmental management plans.

Scoring Logic

The Biodiversity Safeguarding score is produced by averaging its sub-components (**Environmental impact assessment**, **Operational footprint minimization**, **Operational pollution control**, and **Sensitive habitat and species safeguarding**), then combining this with **post-plugging environmental monitoring**, which acts as a modifier to the overall score.

Biodiversity Safeguarding

Data Inputs

Input name	Description
Environmental impact assessment	Assesses whether an environmental impact assessment (EIA) was conducted prior to implementation, taking into account applicable legal requirements and the availability of supporting documentation.
Sensitive habitat and species safeguarding	Assesses the extent to which the project identifies and addresses potential impacts on sensitive habitats and species, including the presence and robustness of biodiversity screening, mitigation measures, and regulatory compliance.
Operational footprint minimization	Assesses whether project activities are confined to the existing disturbed footprint, supported by evidence such as pre- and post-plugging imagery and GIS analysis, and evaluates any expansion or new ground disturbance.
Operational pollution control	Assesses whether the project has defined and implemented site-specific measures to prevent and manage spills, leaks, and hazardous waste, including the level of documentation and evidence of operational controls.
Post-plugging environmental monitoring	A modifier assessing the presence and robustness of post-plugging groundwater and soil monitoring, including sampling frequency, disclosure of results, and whether an anomaly response plan is in place.

Biodiversity Impact

Description

Assesses the scale and quality of the project's **positive contributions to the biodiversity** beyond basic requirements, **through Sustainable Development Goals (SDG)-aligned activities**.

Scoring Logic

Sylvera assesses biodiversity co-benefits through the lens of UN SDGs. Orphan well plugging projects can contribute to **SDG 15 (Life on Land)** through post-plugging land restoration, native vegetation re-establishment beyond regulatory minimum, legacy contamination remediation, and active habitat or species enhancement. Scoring identifies projects with the most tangible benefits, and is further assessed in the combination with the ongoing **SDG monitoring**.

Data Inputs

Input name	Description
SDG 15 contributions	Identifying a presence of beneficial post-restoration land use, ecological restoration with native species, legacy contamination remediation, sensitive-habitat enhancement, or third-party biodiversity certification.
Country-progress weighting	Individual SDG scores weighted by country progress. Contributions in countries further from the SDG carry greater impact.
SDG Monitoring	Identifying whether a credible monitoring plan tracking SDG 15 outcomes is implemented

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