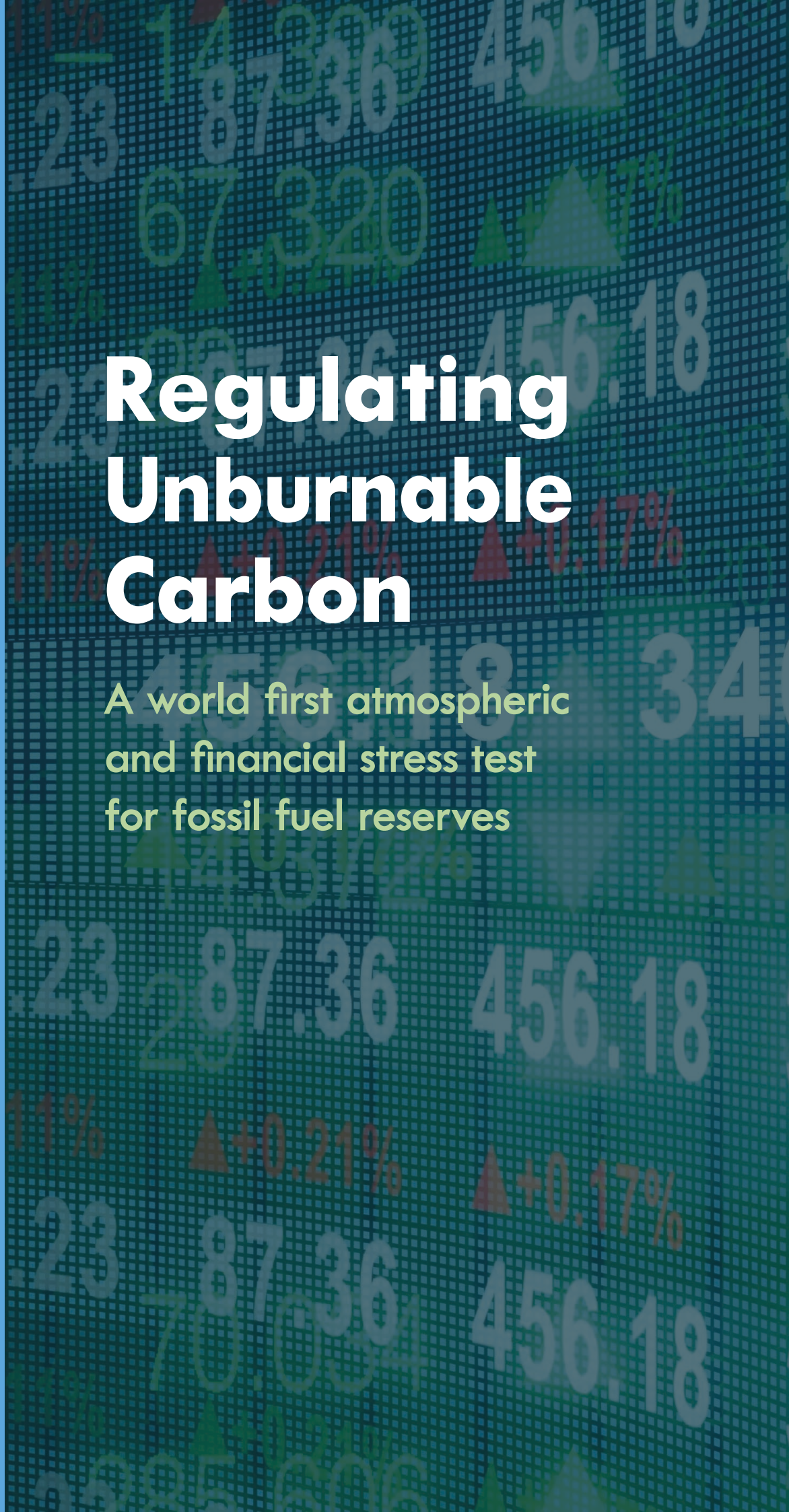
Carbon Tracker Initiative

# Regulating Unburnable Carbon

## A world first atmospheric and financial stress test for fossil fuel reserves



In partnership with

UCL THE BARTLETT ENERGY INSTITUTE

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# Foreword

In 2011, Carbon Tracker's **Unburnable Carbon** report highlighted that proven fossil fuel reserves significantly exceed the remaining global carbon budget for limiting global temperature rise to 2°C by 2050. 15 years later, there is still no requirement for fossil fuel companies (referred to as 'minerals companies' in FCA regulations) to explain how the exploitation of new reserves aligns with the remaining carbon budget, consistent with the Paris goals. In 2026, the 1.5°C carbon budget is nearly exhausted, and we have only two decades to limit warming to 2°C.

If fully exploited, remaining fossil fuel reserves would exceed these carbon budgets many times over. The science is clear: to meet global climate goals, the overwhelming majority of coal, oil and gas must remain unburned.

Recent legal developments in the UK (notably the 2024 Finch Judgement), Norway, the EU and internationally have established requirements for fossil fuel producing companies to assess and disclose the climate impacts of their projects' Scope 3 emissions within environmental impact assessments (EIA). These rules highlight the growing recognition that climate-related risks are material to financial and operational decision-making.

In this context, fossil fuel-related companies face material financial risks, as unused reserves and the trillions of dollars' worth of fossil fuel infrastructure such as pipelines and refineries become stranded. Meanwhile, clean, renewable energy and associated technologies are increasingly displacing fossil fuel systems, challenging the old energy system and the economy's dependence on fossil fuels.

**To preserve market stability, integrity and transparency, policymakers and regulators must adopt (and enforce) standards that adequately address the evolving risks facing businesses. UK regulation, in particular, must provide investors with the information they need to make informed decisions at the point of listing.**

In the UK, an opportunity to address this directly has emerged. Following Brexit, the FCA is updating the UK's listings and prospectus rules to replace the current EU-derived regulation. This update will align more closely with the Government's green growth ambitions and its aspirations to lead the world in green finance. It also represents a chance to modernise our listings' rules in order to better protect investors when compared to our European peers.

As early as December 2022, the **FCA referred** to our Unburnable Carbon: Ten Years On report and acknowledged concerns surrounding the potential impacts of transition risk on companies' business models. Since then, the regulator has partially addressed these issues by introducing climate disclosures and transition plan summaries at the point of listing. However, these requirements do not go far enough for 'mineral companies'. We therefore welcome the FCA's decision in July 2025, to launch a programme of work focusing specifically on mineral company disclosures.

Despite this progress, the listings regime remains misaligned with the Paris Agreement's goal of "**making finance flows consistent with a pathway towards low greenhouse gas emissions and climate-resilient development**". In its own rules, the FCA defers to external standard setters to decide what disclosures are material for investors at the point of listing, with the US-

headquartered Society for Petroleum Engineers (SPE) setting the main framework for oil and gas reserves estimation.

There are serious reasons to be concerned by this approach:

1. The SPE's **standards do not incorporate the science of carbon budgets**, and its admission that it "***does not have technical expertise or mandate for assessing climate science or guiding policy***" confirms that it does not consider climate-related factors when assessing the viability of reserves.
2. Such climate-blind standards risk investor misinformation through misrepresenting financial risks.
3. It is unclear how third-party standard setters like the SPE are accountable to the FCA or policymakers, for the adequacy of their frameworks.

In short, this is a systems failure and requires a solution. Carbon Tracker has therefore partnered with UCL to introduce a climate stress test to the listing process, called an "Atmospheric Viability Test" (AVT).

Our AVT concept stress tests the viability of fossil fuel reserves under various authoritative climate scenarios (e.g., IEA Net Zero by 2050). Incorporating this assessment into listing prospectuses would align with the principle of "caveat emptor". Investors would, for the first time, have sufficient information to weigh the full set of climate-related and financial risks associated with our legally binding climate targets; which already make the development of new oil, gas and coal reserves obsolete. Investors could also use the AVT against their own climate commitments to independently judge whether to finance projects that exceed the carbon budget.

The AVT is, at its heart, a financial stress test. It is intended to support the investment community whilst also safeguarding the long-term integrity and financial stability of the London Stock Exchange and other key institutions. It is also designed to enable integration into the most commonly used resources evaluation framework for UK prospectus disclosures: the Petroleum Resources Management System (PRMS).

In summary, adopting this policy solution would have the following benefits:

**1 Alignment with the Climate Science**

**2 Alignment with Climate Goals**

**3 Enhanced Disclosure**

**4 Enhanced Investor Protection**

**5 Enhanced Market Integrity**

We urge the FCA to seize this opportunity to align prospectus regulation fully with the UK Government's climate policies and low-carbon economy goals, supporting the UK's aspirations of global climate leadership.

We view the AVT as a major contribution towards policymaking, at a time when constructive ways forward on climate, the transition and financial materiality are needed more than ever.

**Mark Campanale** Founder and CEO, Carbon Tracker

**Richard Folland** Head of Capital Markets Policy, Carbon Tracker

# 1 Introduction

The starting point of this paper is the global carbon budget. There is established expert consensus that a significant portion of fossil fuel reserves must remain unextracted and unburned to meet the goals of the Paris Agreement.[1] Further extraction and combustion of latent fossil fuels already contained in proved reserves will use up the remaining carbon budget, a budget that measures the cumulative $CO_2$ emissions (from today) before Paris-aligned targets are exceeded. As of the start of 2025, approximately 130 $GtCO_2$ remains in the global carbon budget for a 50% chance of limiting warming to 1.5°C, which is around 3 years of current emissions. For a 2.0°C warming limit (67% probability), the budget is 870 $GtCO_2$.[2] This scientifically established idea provides the framing and ambition for climate policy, requiring large and rapid reductions in fossil fuel consumption.

Current policies to cut $CO_2$ emissions, the observed accelerated adoption of clean technologies, and projected structural decline in fossil fuel demand risk eroding the value of fossil fuel assets, accelerating depreciation, and shortening asset lifetimes. Despite these risks, planned global production of fossil fuels continues to grow, leading to a strong misalignment with Paris Agreement climate targets, as starkly set out in the latest Production Gap Report.[3] This increases risks to financial stability as fossil fuel companies continue to raise capital through Initial Public Offerings (IPOs). A key part of the Paris Agreement is Article 2.1.c, which refers to the need for financial flows to support low-emissions pathways, in other words for investment to shift from high to low-carbon energy sources.

The success of Paris, which the British Government played a major role in drafting and agreeing, is therefore predicated on aligning financial policy and regulation with climate science, which is grounded in the need to manage the carbon budget. In addition, climate-misaligned actions expose companies to growing economic risks and investors to increasing financial risk and value erosion. By 2040, an estimated $19 billion (£15.2 billion) of UK pension fund assets are at risk due to fossil fuel asset stranding even if only current policies and announced pledges are fulfilled. This represents roughly 17% of the £88 billion in UK pensions directly invested in fossil fuel assets.[4]

To address growing concerns over these climate-related financial risks, the UK Financial Conduct Authority (FCA) has sought input on reforms to the IPO prospectus disclosure regime for oil and gas companies, most notably through Question 40 in its consultation on new public offers and admissions to trading regime (CP24-12).[5] This question asked whether and how additional climate disclosure guidance should be provided for 'mineral companies'. This followed submissions by Carbon Tracker, ClientEarth, investor networks, NGOs and academics, calling

1 Welsby, D., Price, J., Pye, S., & Ekins, P. (2021). Unextractable fossil fuels in a 1.5 C world. Nature, 597(7875), 230-234.

2 Forster, P. M., Smith, C., Walsh, T., Lamb, W. F., Lamboll, R., Cassou, C., ... & Zhai, P. (2025). Indicators of Global Climate Change 2024: annual update of key indicators of the state of the climate system and human influence. Earth System Science Data Discussions, 2025, 1-72.

3 SEI, Climate Analytics, & IISD. (2025). The Production Gap Report 2025. Stockholm Environment Institute, Climate Analytics, and International Institute for Sustainable Development.

4 Hartley, L., Alexander, J. & TREX Contributors (2025). Stranded Assets Report. UK Sustainable Investment and Finance Association (UKSIF). March 2025.

5 FCA (2024). Consultation Paper CP24/12: Sustainability Disclosure Requirements. Financial Conduct Authority. London, UK. July 2024

on the FCA to retain existing prospectus requirements while strengthening reserves disclosures through a new climate stress test, the Atmospheric Viability Test (AVT). [6][7]

The FCA's subsequent Policy Statement (PS25-9)[8] noted that over half of the 39 responses to this question "argued strongly" for an AVT to be included in the disclosure requirements for relevant issuers. It further recorded the FCA's acknowledgement of the rationale behind the proposal, but nevertheless set out the FCA's decision not to ***"implement expectations in guidance on issuers to facilitate a competent person or a climate expert to perform the "Atmospheric Viability" test"***. However, PS25-9 also records the FCA's commitment to undertake further work in this area to ***"analyse whether alternative amendments to current guidance may support the delivery of improved transparency for investors"***, including an exploration of ***"other ways to amend guidance to ensure an issuer's financial reporting and disclosed climate risk factors within a prospectus are consistent with climate disclosures in a competent persons report."***[9]

In this context, this paper is intended to demonstrate: (a) that developing a methodology for the AVT (or an appropriate analogue) is feasible; and (b) what such a methodology may entail.

The AVT is intended to assess the viability of developing new fossil fuel reserves under various climate scenarios based on carbon budgets associated with different warming levels. This would align with the principle of caveat emptor (buyer beware) where potential investors, through consideration of facts and technical analysis regarding fossil fuel reserves viability versus the remaining carbon budget, in combination with other disclosures in the prospectus would have the necessary information to weigh up the full set of risks associated with the development of new reserves. In this context, the AVT is a financial stress test as well as a climate-related test. It is designed to enable investors to make the full assessment of whether a specific oil, gas or coal capital raise and project will be financially viable if it is to be in line with the best available climate science.

Following the submission of the AVT principles to the Society of Petroleum Engineers (SPE) Oil and Gas Reserves Committee (OGRC),[10] and in alignment with similar proposals from advocacy groups such as Public Citizen,[11] a transparent and operationalised AVT procedure is being developed. To ensure the AVT is effective in practice, it must be integrated into both Petroleum Resources Management System (PRMS) resource estimation and evaluation framework[12] and IPO prospectus disclosures, which typically applies PRMS. This dual integration is essential because the Competent Person's Report (CPR),[13] a key part of the IPO process, assesses reserve holdings and economic viability but currently excludes climate-related risk considerations due to the

6 Carbon Tracker Initiative (2025). Consolidating London's Position as a Leading Centre for Green Finance. March 2025.

7 ClientEarth (2024). CP24/12: Consultation on the new Public Offers and Admission to Trading Regulations regime - Client Earth response. October 2024

8 FCA (2025). PS25/9: New rules for the public offers and admissions to trading regime. Financial Conduct Authority. London, UK. July 2025

9 Ibid, pp.84-85

10 ClientEarth & Carbon Tracker Initiative (2024). Petroleum Resources Management System 2018: Feedback on proposed update. June 2024.

11 Public Citizen (2024). Proposed Update to the PRMS: The Case for a Climate Test. June 2024.

12 Society of Petroleum Engineers (2024). Petroleum Resources Management System (PRMS) Overview.

13 LSEG (2006). AIM Notice 16: Guidance for Mining, Oil & Gas Companies. London Stock Exchange Group. March 2006.

limitations of PRMS, which focuses only on geological, economic, and narrow environmental criteria.

Including the AVT in both the PRMS framework and CPR processes would represent an important step toward embedding  accounting of climate-related risks in financial markets. The operationalisation and integration of the AVT are not only essential for ensuring that fossil fuel reserve assessments accurately reflect climate-related risks, but also critical to safeguarding the long-term financial and reputational stability of institutions such as the London Stock Exchange (LSE).[14]

This paper defines a structured approach for applying the AVT within PRMS and CPR frameworks which includes the following components:

- The principles underpinning the AVT
- A practical approach to incorporating the test into PRMS systems
- A practical approach to incorporating the updated PRMS with AVT into a CPR

14 Carbon Tracker Initiative (2024). Investor Call to Action: FCA Consultation on New Disclosure Rules. August 2024.

# 2 Principles of the AVT

A dedicated test of the 'atmospheric viability' of new fossil fuel reserves would assess:

**a)** Whether the extraction of reserves under evaluation is consistent with credible, science-based climate scenarios to limiting global temperature rise consistent with the Paris Agreement and remaining carbon budget, based on the assumption that the proved reserves will eventually be extracted and combusted.

**b)** The difference in risks to commerciality of reserves under different temperature-aligned scenarios.

The design and implementation of this test requires the 'atmospheric viability' of new reserves (including assessment of a viable breakeven price) to be assessed against a range of authoritative science-based climate scenarios. The AVT applies a least-cost supply curve approach[15], ranking the projects under evaluation against all existing oil projects and all existing gas projects by breakeven price.[16] This supply curve is then intersected with projected demand from climate scenarios to determine the position of a given reserve within different temperature-aligned constraints, as well as the relevant marginal climate-aligned price of reserves (the breakeven price cut-off). Climate-related risk, which increases for projects not climate policy aligned, is indicated by the temperature labels assigned to the new reserves associated with the project under evaluation.

Specifically, the operationalisation of AVT is underpinned by the following principles:

## Principle 1: Alignment with best available climate science

The AVT assesses whether there is space in the remaining carbon budget for new fossil fuel reserves, once combusted, taking into account the best and most credible scientific estimates of that budget as published by the IPCC.[17] Carbon budgets define the total cumulative $CO_2$ emissions[18] that can be released while maintaining a likely chance of meeting temperature targets, as outlined in the latest reports from the Intergovernmental Panel on Climate Change (IPCC)[19] and the International Energy Agency (IEA).[20]

15 Carbon Tracker Initiative (2024). Oil and Gas Least-cost analysis. September 2024.

16 Note that while the AVT could in principal apply to coal, the focus of this paper is its application to oil and gas reserves.

17 IPCC (2023). Climate Change 2023: Synthesis Report. Contribution of Working Groups I, II and III to the Sixth Assessment Report of the Intergovernmental Panel on Climate Change [Core Writing Team, H. Lee and J. Romero (eds.)]. Intergovernmental Panel on Climate Change, Geneva, Switzerland.

18 For carbon budgets, the concept considers cumulative CO2 emissions, which is the primary greenhouse gas that is long-lived in the atmosphere. The AVT, underpinned by the carbon budget concept, is aligned given that it also focuses on CO2 emissions arising from downstream combustion (scope 3). Other non-CO2 GHGs under scope 1, such as methane from oil and gas extraction and supply, are of course important to mitigate to reduce temperature increase, but are not included under the AVT approach.

19 IPCC (2023). Working Group III Contribution to the Sixth Assessment Report of the Intergovernmental Panel on Climate Change. Intergovernmental Panel on Climate Change, Geneva, Switzerland.

20 IEA (2024). World Energy Outlook 2024. International Energy Agency, Paris. October 2024.

Crucially, the remaining carbon budget is not static. It is reduced each year by current global emissions, which amount to around 40 $GtCO_2$ annually.[21] As a result, the carbon budget for limiting warming to Paris-aligned goals is rapidly diminishing. The fossil fuel share of global GHG emissions was approximately 70% in 2023, contributing around 90% of global $CO_2$ emissions,[22] [23] and therefore dominates the rate at which the remaining carbon budget is being depleted.

This urgency is further compounded by scientific uncertainties in budget estimates, which are influenced by factors such as climate sensitivity, non-$CO_2$ greenhouse gas emissions, and assumptions regarding the future deployment of carbon removal technologies.[24] [25]

Testing the viability of emission-causing activities can help elucidate how an activity contributes to the depletion of the carbon budget – that is, how viable the activity is in terms of the amount of emissions released into the atmosphere and its contribution to reducing the available carbon budget.

Another key consideration in applying the best available climate science is the treatment of committed emissions[26] from existing and Final Investment Decision (FID)-approved projects, which already consume part of the remaining carbon budget, as incorporated in Trout et al.[27] and the UNEP Emissions Gap reports.[28] The supply curve constructed for the AVT ranks all existing and FID-approved projects alongside the project under evaluation, thereby accounting for emissions already "locked in" from operational and approved projects and ensuring that the position of new projects is assessed against the available carbon budget.

21 Allan, R. P., Arias, P. A., Armour, K., et al. (2021). FAQ Chapter 5 (Atmosphere and related feedbacks), in IPCC AR6 Working Group I Frequently Asked Questions.

22 Ibid

23 Friedlingstein, P., O'sullivan, M., Jones, M. W., Andrew, R. M., Hauck, J., Landschützer, P., ... & Zeng, J. (2024). Global carbon budget 2024. Earth System Science Data, 2024, 1-133.

24 Lamboll, R. D., Nicholls, Z. R., Smith, C. J., Kikstra, J. S., Byers, E., & Rogelj, J. (2023). Assessing the size and uncertainty of remaining carbon budgets. Nature Climate Change, 13(12), 1360-1367.

25 Rogelj, J., Shindell, D., Jiang, K., et al. (2018). Mitigation pathways compatible with 1.5 °C in the context of sustainable development, in IPCC Special Report on Global Warming of 1.5 °C — Chapter 2. Intergovernmental Panel on Climate Change, Geneva, Switzerland.

26 The term "committed emissions" is widely used to refer to the lifetime emissions associated with existing (currently operating or under-construction/development) fossil fuel infrastructure. See Davis, S. J., Caldeira, K., & Matthews, H. D. (2010). Future CO2 emissions and climate change from existing energy infrastructure. Science, 329(5997), 1330-1333.

27 Trout, K., Muttitt, G., Lafleur, D., Van de Graaf, T., Mendelevitch, R., Mei, L., & Meinshausen, M. (2022). Existing fossil fuel extraction would warm the world beyond 1.5 C. Environmental Research Letters, 17(6), 064010.

28 Muttitt, G., Green, F., Pye, S. (2025). The Climate Implications of New Oil and Gas Fields in the UK– An overview of the evidence. UCL Policy Lab. June 2025.

## Principle 2: Emissions coverage

The AVT primarily covers downstream Scope 3 emissions (Category 11 - Use of sold products) of the GHG Protocol (GHG Protocol, 2001).[29] The focus on Scope 3 is important because on a life cycle basis, it accounts for the vast majority of emissions associated with each unit of fossil fuel extracted. For example, this scope accounts for 85% of total GHG emissions from a barrel of oil.[30] Scope 1 and 2 emissions are also important but are not considered within the AVT approach, primarily because the cost-supply curves used to assess commerciality typically only represent embedded emissions that are combusted once products are consumed.

Multiple domestic legal systems, including the UK,[31] Norway,[32] and the EU,[33] require fossil fuel producing companies, in their environmental impact assessments (EIA) accompanying an application for development/production consent, to disclose and assess the climate impacts of their project's Scope 3 emissions. Such disclosure and assessment must then inform the ministerial decision about whether to consent to such development/production or refuse consent on climate grounds. The European Court of Human Rights has recently affirmed this principle for the purposes for the purposes of the European Convention of Human Rights, holding that the right to life and the right to private and family life in the Convention apply to climate harm caused by oil and gas exploration and require comprehensive and publicly available environmental impact assessments based on best available science of all greenhouse gas emissions from combustion before any production can be lawfully approved.[34] The recent International Court of Justice Advisory Opinion confirms that states have a duty under international law to incorporate Scope 3 (category 11) emissions into EIAs,[35] meaning that similar risks are likely to arise with respect to production in other jurisdictions as they comply with international law.

Incorporating Scope 3 emissions into the assessment of a project's 'atmospheric viability' at the listing stage would complement that principle, by informing investors of the policy/legal risks that lie ahead should the reserves be otherwise suitable for commercial exploitation at the development/production stage.

The AVT labelling approach proceeds on the basis that a fossil fuel project will always result in combustion emissions. This approach aligns with the Finch decision[36] and the requirement to conduct an EIA based on the worst-case scenario, as set out in the UK's 2025 EIA Guidance.[37]

29 Here Scope 3 emissions, Category 11 – "Use of sold products", refers to the greenhouse gas emissions generated from the end use of sold fossil fuel products (i.e., combustion of oil and gas by consumers). See The Greenhouse Gas Protocol (2021). A Corporate Accounting and Reporting Standard: Revised Edition.

30 IEA (2023). Emissions from Oil and Gas Operations in Net Zero Transitions. International Energy Agency, Paris. May 2023.

31 Supreme Court (2024). R (Finch) v Surrey County Council [2024] UKSC 20 (Finch); DESNZ (2025). Environmental Impact Assessment (EIA) – Assessing effects of downstream scope 3 emissions on climate. Department of Energy Security & Net Zero, London, UK.

32 Greenpeace Nordic v The Norwegian Government represented by the Ministry of Energy (Oslo District Court, No. 23-099330TVI-TOSL/05, 18 January 2024).

33 The Norwegian State, represented by the Ministry of Energy v Greenpeace Nordic (EFTA Court, Case E-18/24, 21 May 2025)

34 Greenpeace Nordic and Others v Norway (ECtHR, Application no. 34068/21).

35 Obligations of States in Respect of Climate Change (Advisory Opinion), 23 July 2025 (International Court of Justice) (ICJ Advisory Opinion on Climate Change), [298] (main opinion), [11]–[17] (Joint declaration of Judges Bhandari and Cleveland).

36 See footnote 31

37 Ibid

### Principle 3: Fossil fuels coverage

The AVT can apply across the entire spectrum of fossil fuels, including coal, oil, and natural gas, covering both conventional and unconventional resources. This ensures consistent treatment of climate risks across all asset classes and avoids selective disclosure or omission of carbon-intensive assets. This analysis must be applied to coal, oil, and gas separately. It should be noted the focus of this paper is on oil and gas, based on embedding guidance in PRMS. This reflects that most new public offers related to fossil fuels concern oil and gas reserves. A similar focus on integrating guidance into the PERC reporting standard to cover coal would ensure similar coverage as that proposed for oil and gas in this paper.

# 3 Integration into existing industry standards and regulatory structures

## 3.1 Petroleum Resources Management System (PRMS)

The PRMS is a methodology for the consistent definition and estimation of hydrocarbon resources developed by an industry body called the Society of Petroleum Engineers (SPE).[38] The current version of PRMS was approved by the SPE Board in June 2018, and the SPE issued a call for public comments on reform of PRMS 2018 in 2024.[39] PRMS is effectively endorsed for use in the UK listing / prospectus regime. It is one of three international frameworks which oil and gas companies may use when providing information on their resources and reserves to prospective investors in their prospectuses under UK rules.[40]

For the purposes of this paper, integration of the AVT has therefore been designed to maintain PRMS technical discipline and workflow continuity, serving solely as an additional disclosure lens that highlights climate-related commercial risk without altering the existing resource-uncertainty framework. As a result, the changes proposed could be implemented without requiring significant amendments to the framework for reporting fossil reserves in UK prospectuses. We note however, that while we have integrated the AVT in the PRMS methodology in this paper, corresponding changes would be appropriate in the other international standards which customarily govern 'mineral company' reserves disclosures in other jurisdictions.[41]

38 Society of Petroleum Engineers. Petroleum Reserves and Resources Definitions.

39 ClientEarth and Carbon Tracker (2024). Petroleum Resources Management System 2018 - Feedback on proposed update. June 2024.

40 See para. 133(i)(c) and Appendix I of FCA (2022). Primary Market Technical Note 619.1: Guidelines on disclosure requirements under the Prospectus Regulation and Guidance on specialist issuers. Financial Conduct Authority. London, UK.

41 Including the standards which are typically used in relation to coal, rather than oil and gas, reserves.

As the AVT's objective is to evaluate a project's chance of remaining commercial under carbon budget constraints, and sits alongside the established tests of technical feasibility, economic viability, and maturity rather than within the statistical categorisation of volumes. Accordingly, the proposed AVT integration targets the three PRMS chapters that underpin resource classification and economic evaluation:

- Section 1: adds references to 'atmospheric viability' alongside existing technical, economic, and environmental factors, ensuring the principle is embedded at the definition level.
- Section 2: retains the core Prospective/Contingent/Reserves structure but allows for an AV label (AV-1.5 °C, AV-1.75 °C, AV-2 °C) to flag climate compatibility once reserves status is achieved.
- Section 3: introduces a new section *3.1.4 Atmospheric Viability Test* under *3.1 Assessment of Commerciality*. The AVT uses a least-cost supply curve approach to check each project against the global carbon budget; inputs, reference points, and breakeven prices remain identical to those already used for the net cash-flow test. The AVT is therefore an additional disclosure lens without replacing or overriding the existing economic criteria.

The clause-by-clause text that follows indicates precisely where each reference to AVT fits, maintaining PRMS terminology and numbering while providing investors and regulators with a clear view of how to assess climate-related commercial risk. All new language is confined to clauses supporting resource classification and economic evaluation; no changes are proposed to volumetric uncertainty methods, probabilistic conventions, or data-documentation standards.

### 3.1.1 Integration into Section 1. Basic Principles and Definitions

In its opening chapter, PRMS highlights that its classification framework is designed to be systematic, generalizable, consistent, and transparent. Therefore, integrating a climate test into PRMS must preserve these foundational principles. We propose the following expansions to Section 1.0 (in **bold** text):

1.0.0.2 "...The commercial aspects considered will relate the project's maturity status (e.g., technical, economic, regulatory, legal, **and climate risk**) to the chance of project implementation."

1.1.0.6.A.3. "New Reserves are further categorized in accordance with the range of uncertainty and should be subclassified based on project maturity and/or characterized by development and production status, **and atmospheric viability**."

1.2.0.10 "Not all technically feasible development projects will be commercial. The commercial viability of a development project within a field's development plan is dependent on a forecast of the conditions that will exist during the time period encompassed by the project (see Section 3.1, Assessment of Commerciality). Conditions include technical, economic (e.g., hurdle rates, commodity prices), operating and capital costs, marketing, sales route(s), and legal, environmental, social, and governmental factors forecast to exist and impact the project during the time period being evaluated. While economic factors can be summarized as forecast costs and product prices, the underlying influences include, but are not limited to, market conditions (e.g., inflation, market factors, and contingencies), exchange rates, transportation

and processing infrastructure, fiscal terms, and taxes. **Environmental considerations in commerciality assessment may also reflect additional factors relevant to the Atmospheric Viability Test, including structural demand changes driven by decarbonisation scenarios, compatibility with Paris-aligned carbon budgets, and regulatory developments linked to climate policy and legislation. These climate-related risks may materially affect long-term project commerciality and should be incorporated where relevant.**"

1.2.0.12 "The supporting data, analytical processes, and assumptions describing the technical and commercial basis used in an evaluation must be documented in sufficient detail to allow, as needed, a qualified reserves evaluator or qualified reserves auditor to clearly understand each project's basis for the estimation, categorization, and classification of recoverable resources quantities and, if appropriate, associated commercial assessment. **Documentation should also include emissions estimation (for Scope 3) and an assessment of atmospheric viability to stress test against future climate-related risks (Section 3.1.4).**"

### 3.1.2 Integration into Section 2. Classification and Categorization Guidelines

Section 2 of the PRMS sets out the classification and categorisation guidelines that underpin a resource evaluation. Projects are classified along the vertical axis by their chance of commerciality (Pc), while the associated recoverable and marketable quantities are categorised along the horizontal axis to reflect uncertainty (See Figure 1.1 in PRMS). The AVT introduces a complementary climate-aligned test without altering this hierarchy.

After a project has satisfied all technical and commercial requirements and has been classified as reserves, its quantities may carry an Atmospheric Viable (AV) label, for example, AV-1.5 °C, AV-1.75 °C, or AV-2 °C. This additional layer of classification enables the identification of reserves that are likely to remain economically viable under **credible science-based climate scenarios** and those reserves deemed non-viable based on being above the threshold breakeven price, and therefore contingent resources.

We therefore propose the inclusion of a new clause (2.1.2.5) to Section 2 to incorporate AV labels:

**2.1.2.5 "Once a project's recoverable quantities have been classified as Reserves in accordance with Section 2.1.2.1, the reporting entity shall assign an Atmospheric Viability (AV) label to those Reserves whose forecast emissions profile is demonstrably compatible with credible science-based climate scenarios. Assignment of the label shall be supported by an atmospheric viability assessment, including documented emissions estimates, a clear statement of the range of scenarios selected from a credible, science-based climate scenario group, and the source of the climate scenarios."** [additional subsection in section 2.1.2]

### 3.1.3 Integration into 3.1. Assessment of Commerciality

Section 3.1 of the PRMS details the commerciality assessment that underpin the resource classifications defined in Section 2. Key elements include:

3.1.1 Net Cash-Flow Evaluation: discounted cash-flow metrics and hurdle rate tests.

3.1.2 Economic Criteria: price, cost, fiscal, and market assumptions that establish positive economics for Reserves.

3.1.3 Economic Limit: the production cut-off where net operating cash flow becomes negative.

These elements provide the quantitative basis for determining when quantities can move from Contingent Resources to Reserves. However, a project that passes the standard net-cash-flow screening may still experience material value erosion if future demand reduces under Paris-aligned scenarios. To capture this risk transparently, we propose adding a *new Section 3.1.4 Atmospheric Viability Test (AVT)* to the existing commerciality guidelines. All preceding sub-clauses remain unchanged; the AVT serves as an additional complementary lens, not a replacement for the established economic tests.

**3.1.4 Atmospheric Viability Test (AVT)** [additional subsection in section 3.1]

**3.1.4.1 Atmospheric viability is determined based on cumulative fossil fuel demand under the most up- to-date credible science-based climate scenarios. In a given scenario, the level of fossil fuel demand will be constrained by the remaining carbon budget associated with the climate policy ambition. Viability is assessed for a given project by assessing whether its breakeven price lies above or below the marginal price determined by that scenario. Where the breakeven price lies below marginal price, it would be considered viable, and not if above.**

**It is important that viability is assessed relative to the latest published scenarios. Every year new projects contribute to additional production, reducing the amount of new production under a given climate policy ambition, and therefore needs to be accounted by using the latest available scenarios.**

**3.1.4.2 Credible, science-based climate scenarios, reflective of specific carbon budget assumptions, must provide a time-dependent profile of oil and gas demand. Assessing the cumulative demand of oil and gas against a supply-cost curve enables the evaluator to determine (i) whether the project's cumulative emissions remain within the remaining carbon budget (as reflected by cumulative demand) and (ii) whether its breakeven price is competitive under the market conditions implied by that pathway.**

**3.1.4.3 An AV label is complementary to the broader assessment of commerciality and gives a supplementary value of existing commerciality tests (see Section 3.1.1-3.1.3); It does not modify or replace the project's net cash flow, economic criteria, and economic limit, but demonstrates that each of them depends on a price assumption which is valid in some climate scenarios but not others. The AVT should be carried out using the same reference point and entitlement basis applied in the net-cash-flow analysis (see Section 3.1.1 (1)– (6)). The designation provides additional disclosure of climate-related commercial risk.**

**3.1.4.4 In practice, the AVT is expected to be conducted using a least-cost supply curve, as illustrated in Figure 3.1:**

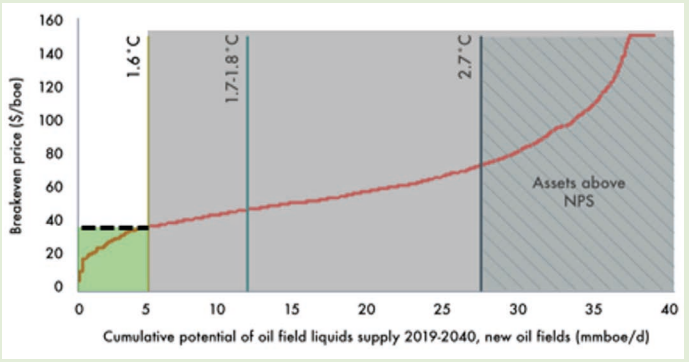
**a) Supply cost curve construction: The reserves under evaluation are ranked, together with all producing projects and projects approved for development across all companies, by breakeven price (expressed in USD per unit of product). Cumulative volumes are plotted on the X-axis; corresponding breakeven prices are plotted on the Y-axis.**

**b) Scenario demand constraint: Projected fossil fuel demands shall be selected from a minimum of three credible science-based climate scenarios that represent different levels of climate ambition, in order to position the reserves under evaluation within the overall supply curve (see section 3.1.4.9). At least one of the scenarios that are selected must be aligned with the 1.5°C temperature goal set out in the Paris Agreement.**

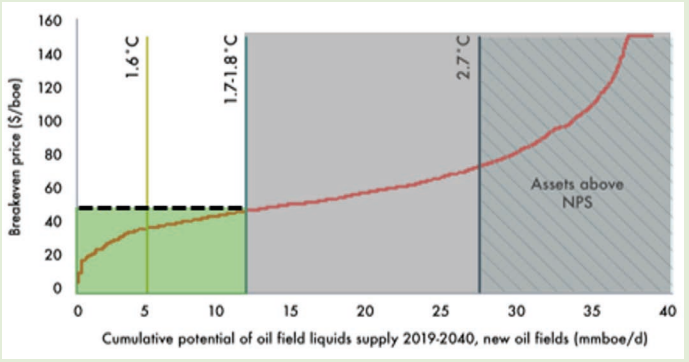
**c) Volume–price intersection: The cumulative demand limit for each pathway shall be applied as a vertical constraint on the supply curve. The breakeven price at this intersection defines the marginal climate-aligned price. Projects to the left of each intersection are considered temperature-aligned reserves for each specific scenario against which they are being evaluated. To the right, they are considered to be above budget, and not viable under that given scenario.**

**d) Temperature labelling and reclassification: Projects can be assigned temperature alignment label, depending on the credible, science-based climate scenarios selected, for example, AV-1.75 °C, or AV-2 °C. Projects identified as above the breakeven price threshold (see C) are considered as contingent resources under this test, on the basis that their development is not viable as implied by the AVT.**

**a) 1.6°C scenario**




**b) 1.8°C scenario**




**c) 2.7°C scenario (not Paris aligned)**

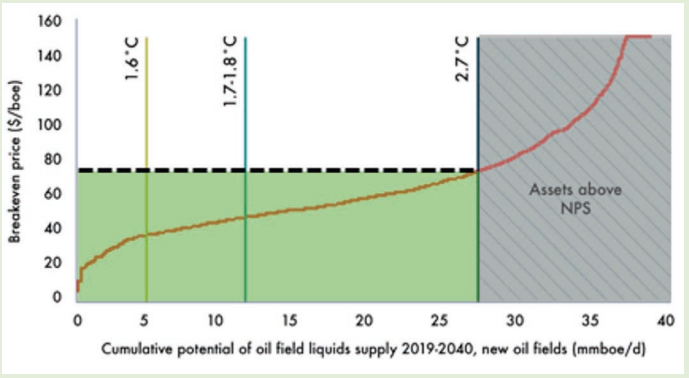



**Figure 3.1.**
**Illustration of Atmospheric Viability Test (AVT) Methodology.** The global oil supply curve (red line) is intersected by scenario-based demand 'limits', to derive the breakeven price (black dashed line). This breakeven price is used to determine the viability of the project (green shaded area) for each scenario. Note that the 2.7°C case is not Paris-aligned – but is included for illustrative purposes. It was based on a previous IEA scenario called 'New Policies Scenario'.

**3.1.4.5 The AVT should be applied as an additional contingency consideration within project maturity and does not alter the boundaries between maturity sub-classes or project decision gates. The AVT shall be conducted with respect to projects at the stage of *Justified for Development* (see Section 2.1.3.5.4), as illustrated in Figure 3.2 in PRMS 2.1.3.5. *Justified for Development* Reserves are reclassified as *Approved for Development* once the Final Investment Decision (FID) has been made (see section 2.1.3.5.5). Accordingly, FID determinations shall incorporate the outcome of the AVT. All existing projects that are *On Production or Approved for Development*, where applicable, shall be ranked together to construct the supply curve, which will then be intersected with the scenario-derived cumulative demand limit.**

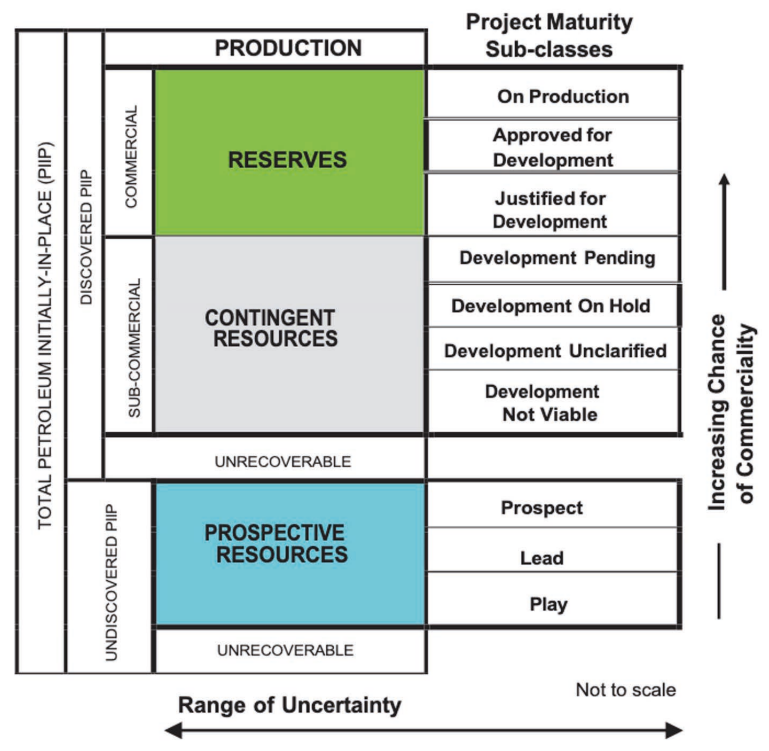



**Figure 3.2. Sub-classes based on project maturity (from PRMS section 2.1.3.5)**

**3.1.4.6 For consistency with reserve determination in Section 2.1.2.2, the AVT for reserves shall be applied to the best-estimate (P50) forecast quantities, which upon qualifying all commercial and technical maturity criteria, applicable constraints, and atmospheric viability become climate-aligned 2P Reserves. Stricter cases [e.g., low estimate (P90)] may be used for decision purposes or to investigate the range of commerciality (see Section 3.1.2, Economic Criteria). Typically, the low- and high-case project scenarios may be evaluated for sensitivities when considering project risk and upside opportunity.**

**3.1.4.7 Where the AVT demonstrates that a project is not atmospherically viable under the selected credible, science-based climate scenarios, the project shall be reclassified (under this test) from Reserves to Contingent Resources (See Figure 3.3). For a given project tested under a 1.5 °C scenario, non-viability would result in classification as a Contingent Resource for this given scenario; however, such a project if tested under a 1.75 °C scenario could be assigned an AV -1.75 °C label, if it proved viable under this alternative scenario. Each reserve subject to AV testing shall be assigned one AV label, determined by the most stringent applicable scenario, since a reserve labelled, for example AV-1.75°C necessarily implies AV-2.0°C alignment. This is consistent with Section 2.1.3.5.7 of the PRMS, which requires reclassification when commercial or external factors create a significant risk that a project classified as Reserves will not proceed.**

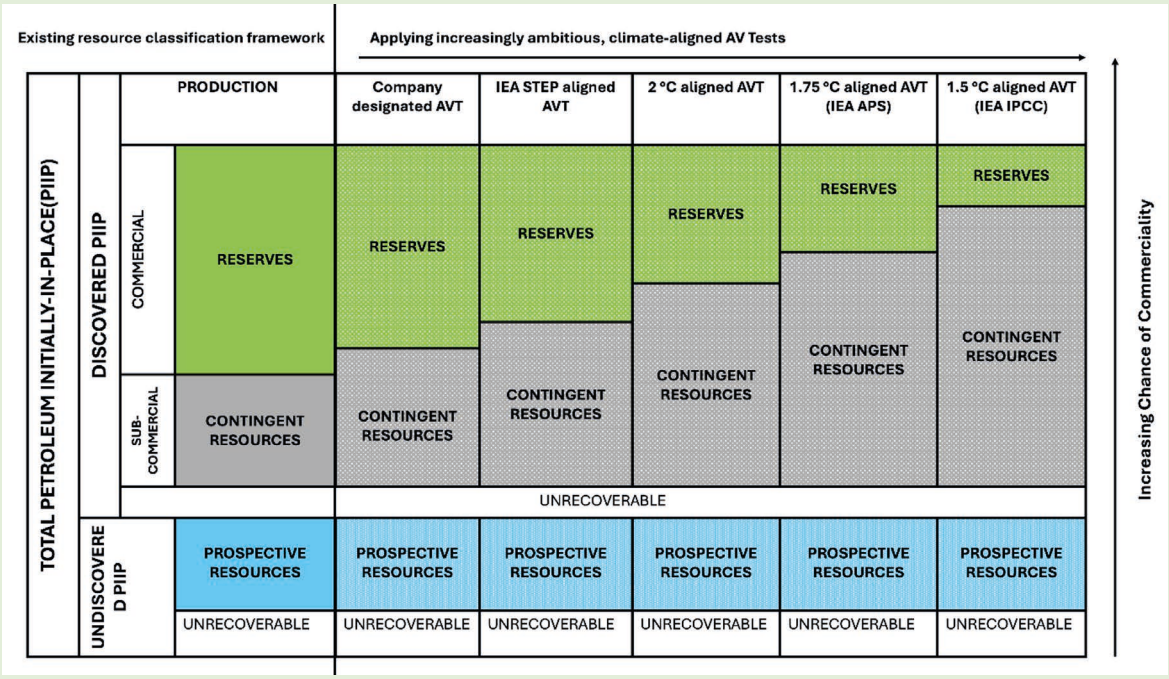



Figure 3.3. Integration of AVT labelling within the resource classification framework

**3.1.4.8 The reporting entity shall evaluate project atmospheric viability under at least three credible, science-based climate scenario projected demands representing different levels of climate ambition. An AV Test is intended to provide an additional contingency consideration of climate risk within the assessment of reserve commerciality. AV labelling based on three credible, science-based climate scenarios further serves to classify and scale the climate-related risks associated with reserves. For example, a reserve labelled AV-1.5 °C is considered more climate-compatible and associated with lower climate risk compared to a reserve labelled AV-1.75 °C.**

**3.1.4.9 Credible, science-based climate scenarios are defined as authoritative, internationally recognized scenarios that represent distinct temperature outcomes (e.g., 1.5 °C, 1.75 °C, 2 °C or above 2.0C). These scenarios are typically derived from integrated energy system modelling under global carbon budget constraints and provide a reliable benchmark for assessing climate-aligned fossil fuel demand futures.**

**The minimum required three scenarios shall meet all the following conditions:**

**(1) Derived from authoritative and internationally recognized modelling frameworks (e.g., IPCC, IEA).**

**(2) Represent temperature outcomes, with at least two explicitly aligned with the Paris Agreement.**

**(3) For at least one scenario, demonstrate limited or no overshoot of the temperature goal (e.g., IEA NZE, IEA APS, IPCC AR6 Category C1(1.5 °C), C3(2 °C)).**

**(4) Provide transparency in underlying assumptions and shall not rely on levels of bioenergy with carbon capture and storage (BECCS), fossil fuel-based CCS, or afforestation/reforestation that exceed the maximum sustainable potential thresholds identified in the IPCC AR6 WGIII Annex III, Table II.1, and the IPCC Special Report on 1.5 °C. As reference, the maximum thresholds for carbon sequestration deployment by 2050 are provided in Table 5.**

**(5) Capture energy-system dynamics in the modelling approach to reflect demand futures for all fossil fuels (coal, oil, and gas).**

**(6) Be published regularly and updated at intervals appropriate for ongoing disclosure and assessment.**

**3.1.4.10 For disclosure purposes, the entity shall indicate the distribution of AV-labelled Reserves across breakeven-price intervals, for example: < USD 5 per barrel of oil equivalent (boe); USD 5–10 / boe; USD 10–20 / boe; USD 20–30 / boe; and > USD 30 / boe. The percentages of total AV-qualified volumes falling within each interval should be reported together with their corresponding AV designations (AV-1.5 °C, AV-1.75 °C, AV-2 °C).**

*Supplementary information relevant to 3.1.4*

| Table 4. Filtered Scenarios within the Credible, Science-Based Climate Scenarios Group[42] | | |
|---|---|---|
| **Scenario group** | **Scenario** | **Model** |
| 26 IPCC 1.5°C scenarios limiting CDR and CCS deployment | LowEnergyDemand_1.3_IPCC | MESSAGEix-GLOBIOM 1.0 |
| | EN_NPi2020_450 | MESSAGEix-GLOBIOM_1.1 |
| | EN_NPi2020_500 | MESSAGEix-GLOBIOM_1.1 |
| | EN_NPi2020_600_COV | MESSAGEix-GLOBIOM_1.1 |
| | EN_NPi2020_600_DR1p | MESSAGEix-GLOBIOM_1.1 |
| | EN_NPi2020_600_DR2p | MESSAGEix-GLOBIOM_1.1 |
| | EN_NPi2020_600_DR3p | MESSAGEix-GLOBIOM_1.1 |
| | EN_NPi2020_600_DR4p | MESSAGEix-GLOBIOM_1.1 |
| | NGFS2_Divergent Net Zero Policies | MESSAGEix-GLOBIOM_1.1 |
| | NGFS2_Net-Zero 2050 | MESSAGEix-GLOBIOM_1.1 |
| | COV_GreenPush_550 | MESSAGEix-GLOBIOM_1.2 |
| | COV_NoPolicyNoCOVID_550 | MESSAGEix-GLOBIOM_1.2 |
| | COV_Restore_550 | MESSAGEix-GLOBIOM_1.2 |
| | COV_SelfReliance_550 | MESSAGEix-GLOBIOM_1.2 |
| | COV_SmartUse_550 | MESSAGEix-GLOBIOM_1.2 |
| | LeastTotalCost_LTC_brkLR15_SSP1_P50 | REMIND 2.1 |
| | CEMICS_SSP1-1p5C-minCDR | REMIND-MAgPIE 2.1-4.2 |
| | CEMICS_SSP2-1p5C-minCDR | REMIND-MAgPIE 2.1-4.2 |
| | EN_NPi2020_600f_COV | REMIND-MAgPIE 2.1-4.2 |
| | SusDev_SDP-PkBudg1000 | REMIND-MAgPIE 2.1-4.2 |
| | DeepElec_SSP2_ HighRE_Budg900 | REMIND-MAgPIE 2.1-4.3 |
| | EN_NPi2020_400f | WITCH 5.0 |
| | EN_NPi2020_450 | WITCH 5.0 |
| | EN_NPi2020_450f | WITCH 5.0 |
| | EN_NPi2020_500 | WITCH 5.0 |
| | EN_NPi2020_500f | WITCH 5.0 |
| IEA scenarios | IEA Net Zero Emissions by 2050 Scenario (NZE)— 1.5°C | Global Energy and Climate Model |
| | IEA Announced Pledges Scenario (APS)—1.75°C | |
| Company designated scenario | The entity shall provide a detailed description of the modelling logic used for demand estimation. In principle, an energy system model is required, and application of Paris-aligned carbon budget constraints is indispensable. Assumptions that materially influence demand scenarios shall be explicitly disclosed, including:<br>• Economic assumptions (e.g., growth rates, energy intensity, technology costs).<br>• Treatment of carbon sequestration technologies (e.g., BECCS, CCS, CDR).<br>• Policy assumptions (e.g., stated policies, announced pledges, net-zero targets).<br>The scenario shall also include justification of how these assumptions differ from, or align with, IEA and IPCC scenarios. Company-designated scenarios **are recommended** to meet the credibility conditions defined in Section 3.1.4.9 (1) – (6). | |

42 Table 4 adapted from Table S2 in the supplementary document of Green, F., Bois von Kursk, O., Muttitt, G., & Pye, S. (2024). No new fossil fuel projects: The norm we need. Science, 384(6699), 954-957.

| Table 5. Maximum threshold for the deployment of carbon sequestration by 2050[43] | | |
|---|---|---|
| **Carbon sequestration method** | **Feasibility/Sustainability dimension** | **Sequestration thresholds by 2050** |
| Fossil CCS | New technology | 3.8 Gt $CO_2$/year |
| BECCS | New technology | 3 Gt $CO_2$/year |
| Afforestation and reforestation | Sustainable potential | 3.6 Gt $CO_2$/year |

| Appendix A — Glossary of Terms Used in Resources Evaluations (Supplementary Glossary for AVT) | | |
|---|---|---|
| **Term** | **See PRMS Section** | **Definition** |
| Carbon budget | | |
| Atmospheric Viability | | |
| Credible science-based climate scenarios | | |
| Scop 1-3 emissions | | |
| ….. | | |

43 Table 5 adapted from Table S1 in the supplementary document of Green, F., Bois von Kursk, O., Muttitt, G., & Pye, S. (2024). No new fossil fuel projects: The norm we need. Science, 384(6699), 954-957.

## 3.2 Competent Person's Report (CPR)

A Competent Person's Report (CPR) is generally required as part of a prospectus or admission document for an oil and gas or minerals company undertaking an Initial Public Offering (IPO), or to support other relevant public fund-raising initiatives. For oil and gas companies, a CPR provides market participants such as investors and regulators with an authoritative assessment of resource volumes, development plans, and asset value, thereby supporting transparency and informed investment decisions.

Resource estimation and evaluation in the CPRs included in UK oil and gas company prospectuses are typically conducted in accordance with the PRMS. To ensure that the CPR framework remains aligned with AVT-incorporating PRMS, it is necessary to update the CPR framework outlined in the FCA's Primary Market Technical Note 619.1 (TN 619.1). Appendix III of TN 619.1 sets out the recommended content for CPRs for oil and gas companies where no other model content exists. In the following section, we outline how each clause of Appendix III can be updated to incorporate AVT labelling and climate-aligned assessments, while preserving full PRMS compliance and the core disclosure objectives of the FCA's CPR guidelines.

In the following extract from Appendix III, proposed additions are inserted from point v) onwards (in bold blue text).

## APPENDIX III – Oil and Gas Competent Persons Report (CPR) – recommended content (Updated)

Competent persons should provide a competent persons report structured in accordance with either the model content recommended under the code, statute or regulation the company is reporting under (see Appendix I) or, where no such model content is set out in the code, the competent person should address the information set out in this appendix. Where it would be appropriate to adapt these contents for the circumstances of the issuer, we ask the competent person to draw this to the attention of, and discuss with, the FCA before the report is finalised.

**i) Legal and Geological Overview – a description of:**

**1** the nature and extent of the company's rights of exploration and extraction and a description of the properties to which the rights attach, with details of the duration and other principal terms and conditions of these rights including environmental obligations, and any necessary licences and consents including planning permission.

**2** any other material terms and conditions of exploration and extraction including host government rights and arrangements with partner companies.

**ii) Geological Overview** – a description of the geological characteristics of the properties, the type of deposit, its physical characteristics, style of mineralisation, including a discussion of any material geotechnical, hydrogeological/hydrological and geotechnical engineering issues.

### iii) Resources and reserves

**1** A table providing, to the extent applicable, data on exploration results (including commentary on their quantity and quality), inferred, indicated and measured resources, and proved and probable reserves, together with a statement regarding the internationally recognised reporting standard applied.

**2** a description of the process followed by the competent person in arriving at the published statements and a statement indicating whether the competent person has audited and reproduced the statements, what additional modifications have been included, or whether the authors have reverted to a fundamental re-calculation.

**3** a statement as to whether mineral resources are reported inclusive or exclusive of reserves.

**4** supporting assumptions used in ensuring that mineral resource statements are deemed to be 'potentially economically mineable'.

**5** supporting assumptions including commodity prices, operating cost assumptions and other modifying factors used to derive reserve statements.

**6** reconciliations between the proposed and last historic statement.

**7** a statement of when and for how long a competent person last visited the properties (or a statement that no visit has been made if that is the case);

**8** for proved and probable reserves (if any) a discussion of the assumed:

(a) mining method, metallurgical processes and production forecast.

(b) markets for the company's production and commodity price forecasts.

(c) mine life.

(d) capital and operating cost estimates.

**iv) Valuation of reserves** – taking consideration of internationally recognised valuation codes as set out in Appendix I, a valuation of reserves comprising:

**1** an estimate of net present value (or a valuation arrived at on an alternative basis, with an explanation of the basis and of the reasons for adopting it) of reserves.

**2** the principal assumptions on which the valuation of proved and probable reserves is based including those relating to discount factors, commodity prices, exchange rates, realised prices, local fiscal terms and other key economic parameters.

**3** information to demonstrate the sensitivity to changes in the principal assumptions (or a statement that the valuation of reserves is omitted).

**v) Atmospheric viability assessment of reserves – taking consideration of best available climate science as set out in the internationally recognised valuation code content *PRMS 3.1.4 Atmospheric Viability Test (AVT)*, atmospheric viability assessment of reserves comprising:**

**1 A description of the process followed by the competent person in conducting the Atmospheric Viability Test (AVT) on reserves and the associated economic estimates referred to in (iii) and (iv), including supply curve development, demand scenario selection, reserve positioning, and climate-aligned breakeven price determination.[44]**

**2 A statement that AVT labelling has been applied following reserve determination, with clarification of the relationship between the underlying reserve estimation and any supplementary scenario-based classification (e.g., reserves that do not receive an AV label should be classified as contingent resources within this test).**

**3 A statement that the selected climate-aligned scenarios are consistent with the most recent climate science, together with a description of how any company-designated demand scenarios differ from those referenced in PRMS 3.1.4 Atmospheric Viability Test (AVT).**

**4 Supporting assumptions used in ensuring that demand statements are deemed to be consistent with carbon budgets of the selected credible, science-based climate scenario, including assumptions on offset technologies (negative emissions), modelling approaches, and other modifying factors.**

**5 A cumulative bar chart providing, to the extent applicable, all existing producing projects' cumulative reserves ranked by production breakeven price, together with exogenous demand volumes from at least two scenarios referenced in PRMS 3.1.4 Atmospheric Viability Test (AVT) and, where applicable, company-designated market demand. The chart should demonstrate the relative position and economic viability of the reserves under assessment within the existing supply curve and in relation to scenario-based, carbon budget aligned market demand.**

**6 A table providing, to the extent applicable, both unadjusted and climate-aligned reserve volumes against AVT classifications, indicating the price band corresponding to the climate-aligned cut-off on the cumulative supply curve, together with a statement regarding the internationally recognised reporting standard applied (e.g., *PRMS 3.1.4 Atmospheric Viability Test (AVT)*.**

44 Note that the person undertaking the test does not need to be a climate expert per se. The key steps will be to identify what is a Paris-aligned scenario, based on the guidance in this paper, determine the cumulative fossil fuel demand (by fuel) for that given scenario, and determine the breakeven price under that scenario in order to benchmark the project / reserve under consideration. Determination of the breakeven price can be done using a supply cost curve derived by analysts who use bottom-up field level cost datasets.

*For illustration, the reserve table for oil and condensate in Gaffney Cline's CPR is presented as an example.*

**OLD**

**Table AIV.2; Summary of Reserves[3] as at 31st December 2020**
**(b) Oil and Condensate**

| Assets | Gross Field Reserves (MMBbl) | | | Shell WI (%) | Shell Net Entitlement (MMBbl) | | | 50% Shell Net WI (%) | 50% of Shell Net Entitlement (MMBbl) | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | Proved | Proved+ Probable | Proved + Probable + Possible | | Proved | Proved+ Probable | Proved + Probable + Possible | | Proved | Proved+ Probable | Proved + Probable + Possible |
| Obaiyed | 15.1 | 20.2 | 24.8 | 100.0 | 5.8 | 7.1 | 8.1 | 50.0 | 2.9 | 3.5 | 4.0 |
| NUMB | 0.1 | 0.2 | 0.2 | 100.0 | 0.1 | 0.1 | 0.1 | 50.0 | 0.0 | 0.0 | 0.0 |
| NM | 5.0 | 10.0 | 19.8 | 100.0 | 2.0 | 3.6 | 5.3 | 50.0 | 1.0 | 1.8 | 2.7 |
| BED 2 | 1.0 | 3.8 | 6.0 | 100.0 | 0.4 | 1.7 | 2.4 | 50.0 | 0.2 | 0.8 | 1.2 |
| BED 3 | 7.8 | 12.0 | 16.9 | 100.0 | 3.6 | 5.5 | 6.8 | 50.0 | 1.8 | 2.7 | 3.4 |
| Sitra | 0.0 | 9.9 | 15.2 | 100.0 | 0.0 | 4.6 | 6.5 | 50.0 | 0.0 | 2.3 | 3.2 |
| NAES | 0.0 | 0.0 | 0.1 | 100.0 | 0.0 | 0.0 | 0.0 | 50.0 | 0.0 | 0.0 | 0.0 |
| NEAG Tiba | 5.1 | 7.9 | 11.7 | 52.0 | 1.4 | 1.8 | 2.3 | 26.0 | 0.7 | 0.9 | 1.1 |
| NEAG Ext. | 6.0 | 9.9 | 15.1 | 52.0 | 1.7 | 2.6 | 3.6 | 26.0 | 0.8 | 1.3 | 1.8 |
| AESW | 15.1 | 27.4 | 42.6 | 40.0 | 2.5 | 4.5 | 5.7 | 20.0 | 1.3 | 2.3 | 2.8 |
| **Total** | **55.2** | **101.3** | **152.2** | | **17.4** | **31.3** | **40.7** | | **8.7** | **15.7** | **20.4** |

**NEW**

**Table X. Reserves statement with AVT labelling (illustrative example in CPR)**
Note: Labels and figures in this table are for illustrative purposes only.

| Assets | Gross Field Reserves (MMBbl) | | | AV Label | | | Climate viable Breakeven Price Band ($/bbl) | | Shell WI (%) | ..... |
|---|---|---|---|---|---|---|---|---|---|---|
| | Proved | Proved + Probable | Proved +Probable + Possible | AV-1.5°C | AV- - 2°C | AV-above-budget | 1.5°C aligned | (below)-2°C aligned | | |
| **Obalyed** | **15.1** | **20.2** | **24.8** | **0** | **15.0** | **5.2** | **-** | **25-30** | **100.0** | |
| **NM** | **5.0** | **10.0** | **19.8** | **10** | **0** | **0** | **15-20** | **-** | **100.0** | |
| **BED 3** | **7.8** | **12.0** | **16.9** | **0** | **12** | **0** | **-** | **20-25** | **100.0** | |
| ... | | | | | | | | | | |

**vi) Environmental, Social and Facilities** – an assessment of

**1** environmental closure liabilities inclusive of biophysical and social aspects, including (if appropriate) specific assumptions regarding sale of equipment and/or recovery of commodities on closure, separately identified.

**2** environmental permits and their status including where areas of material non-compliance occur.

**3** commentary on facilities which are of material significance.

**vii) Historic Production/Expenditures** – an appropriate selection of historic production statistics and operating expenditures over a minimum of a three-year period.

**viii) Infrastructure** – a discussion of location and accessibility of the properties, availability of power, water, tailings storage facilities, human resources, occupational health and safety.

**ix) Maps etc.** – maps, plans and diagrams showing material details featured in the text; and

**x) Special factors** – if applicable a statement setting out any additional information required for a proper appraisal of any special factors affecting the exploration or extraction businesses of the company (for example in the polar regions where seasonality is a special factor).

# Disclaimer

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## About Carbon Tracker

Carbon Tracker is an independent financial think tank working to align capital markets with addressing climate change. Through in-depth research and analysis, we assess the financial and economic rationale of the energy transition and the risks associated with continued fossil fuel investment. Our work empowers investors, policymakers, and companies to make informed decisions that support a just and credible shift to a net zero emissions future.

This paper has been produced by UCL in partnership with Amy Owens, Richard Folland and Mark Campanale from Carbon Tracker's Financial Policy team.

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**Mark Campanale, Founder and CEO of Carbon Tracker**

Mark is the founder and CEO of the Carbon Tracker Initiative, a non-profit think tank with offices in the US and UK, having enjoyed a career in sustainable finance for 20 years. Carbon Tracker is best known for its work on 'stranded assets' and the 'carbon bubble' and providing transition analysis for the members of Climate Action 100+ These concepts are also used by the fossil fuel divestment movement; and for investors & regulators, in how to set decarbonisation pathways for the fossil fuel sector.

**Richard Folland, Head of Capital Markets Policy, Carbon Tracker**

Richard has been Carbon Tracker's policy and government affairs adviser since 2014 and in 2023 joined as the Head of Capital Markets Policy. Richard has over 30 years' experience as a diplomat and advocate, operating at the highest level, based in Europe and elsewhere. He has

worked on the climate and energy agenda, as a policymaker and as a private sector advisor, for 15 years. A former head of international energy policy at the UK Foreign Office, Richard has also been JPMorgan's European Advisor on Energy and Climate Change, the Executive Director of the Climate Markets and Investment Association (CMIA), and the Head of Energy and Environment at Inline Policy. He was Co-Founder of the strategic advisory firm, Sustineri, working with institutional investors on climate and sustainability issues.


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