

THE SBTi FOSSIL FUEL FINANCE POSITION PAPER

Consultation Draft

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Background

It is an imperative of climate stabilization that financial institutions (FIs) do not support the expansion of new or existing unabated fossil fuel production capacity.

This SBTi Fossil Fuel Finance Position Paper presents criteria to address financial institutions’ activities with fossil fuel companies. These criteria focus on fossil fuel activities at the company level (i.e., financial flows towards known and unknown use of proceeds such as an equity interest or bond of an existing oil and gas company), the project level (i.e., financing or facilitation provided for a specific project such as a new oil pipeline), and the portfolio level (i.e., total greenhouse gas (GHG) emissions and financial exposure from all fossil fuel activities). These criteria address near term and net-zero science-based targets (SBTs) set by financial institutions; the SBTi is developing separate, forthcoming methods and criteria for fossil fuel companies to set science-based targets (SBTs).

The SBTi Fossil Fuel Finance Position Paper establishes four broad requirements related to the disclosure, arrest, transition, and phase-out of fossil fuel-related assets and activities which are elaborated in Table 1 below.

Table 1: Four steps for implementation of the SBTi fossil fuel finance criteria

Disclosure	FIs shall publicly disclose their exposure to fossil fuels across all the financial services they provide, including facilitation, asset management, and trading
Arrest	FIs shall establish a policy to immediately cease new financial support to companies and projects that add to the unabated capacity of fossil fuel assets
Transition	FIs shall engage existing fossil fuel company counterparties to achieve 1.5° transition using quantitative and qualitative criteria and public transition plans
Phase-out	FIs shall set clear goals to phase out financial support to any projects and/or companies that are unable or unwilling to follow a 1.5°C transition within a pre-defined timeframe

The SBTi theory of change holds that FIs are essential for providing capital and engaging fossil fuel companies to transition to a 1.5°C pathway. Credible net-zero targets require both the immediate cessation of financial support of the expansion of unabated fossil fuel production capacity (from the time of target publication) and FIs using their influence to align companies with a 1.5°C transition. The SBTi recognizes that the emissions impact of divestment from fossil fuel assets are not always clear or consistent (Braungardt, et al., 2019; Malek, et al., 2022). Real economy companies, policymakers, and other stakeholders will play a central role in determining fossil fuel demand. As such, the SBTi is focused on client and investee engagement as the “first-best” option for FIs to support climate stabilization. However, if FI fossil fuel company counterparties do not align with 1.5°C transition pathways within a set amount of time, then the proposed criteria require phase out and divestment.

Scope of Fossil Fuel Finance Position Paper

The proposed criteria cover several aspects of the fossil fuel value chain. Table 2 provides definitions of the key components in the position paper and should be used by FIs to determine the scope of coverage.

Table 2. Definitions

Topic	Description
Fossil fuel	Carbon-based fuels from fossil hydrocarbon deposits, including coal, oil, and natural gas.
Fossil fuel activities	The boundaries of covered fossil fuel activities are defined in the fossil fuel value chains described in Annex 2 below.
Fossil fuel company	Fossil fuel company includes both specific projects dedicated to fossil fuel activities plus established companies who derive at least 5% revenue share from the projects or activities as defined in the value chains outlined in Annex 2 . This applies to a group where any of its subsidiaries exceed this threshold, and/or to a specific company.
Fossil fuel project	Any project or private infrastructure investment which is being financed/facilitated with proceeds ring-fenced for a specific project (e.g., construction of a gas pipeline) and where financial recourse for the FI is likely to be limited to the assets of the project. This includes financial flows provided in support of special purpose vehicles established for specific project purposes.
Fossil Fuel Exposures	Financial activities that finance or facilitate any part of the SBTi Fossil Fuel value chain.
Fossil fuel value chain	See Annex 2 for an outline of the upstream, midstream, and downstream activities that are considered in-scope.
Financial flows in scope	FI exposures can arise across the entire financial value chain, including (but not limited to) debt and equity investment, insurance underwriting, asset management, and securities underwriting.
Final Investment Decisions (FIDs)	Decisions where the Board has affirmatively voted or consented to undertake construction of the Project and the Company has given full notice to proceed under an engineering, procurement, and construction (EPC) contract.
GHG emissions	The seven gases covered by the United Nations Framework Convention on Climate Change (UNFCCC)—carbon dioxide (CO ₂), methane (CH ₄), nitrous oxide (N ₂ O), hydrofluorocarbons (HFCs), perfluorocarbons (PFCs), sulfur hexafluoride (SF ₆), and nitrogen trifluoride (NF ₃).
New financial flow	Any new services that an FI provides to a company, project, or activity (e.g., a new loan for a coal mining project), as committed to from 2022 onwards (based on published scenarios).

Existing financial flow	Any existing financial service provided, as committed to from any time prior to 2022 (e.g., equity or bond holder in a fossil fuel company, or renewal of a credit facility).
Clean Energy	In power, clean energy includes generation from renewable sources and nuclear, battery storage, and electricity grids. In efficiency, clean energy includes energy efficiency in buildings, industry, and transport, excluding aviation bunkers and domestic navigation. In end-use applications, clean energy includes direct use of renewables, electric vehicles, electrification of buildings, industry and international marine transport, carbon capture, utilization and storage (CCUS) in industry, and direct air capture.
Renewable energy	In line with RE100 definitions wind, solar, geothermal, sustainably sourced biomass (including biogas), and sustainable hydropower. FIs should ensure the sustainability of biomass and hydropower is verified with a third-party certification (e.g., ISO 13065:2015, the Green-e® Renewable Energy Standard for Canada and the United States, the Low Impact Hydropower Institute (LIHI) or the Hydropower Sustainability Council's Hydropower Sustainability Standard).
Abatement	Measures taken by fossil fuel companies to prevent, reduce, or eliminate sources of GHG emissions within their value chains. Applicability of abatement for the purpose of this policy paper is considered to be at least 90% reduction of direct (i.e., from combustion) and indirect emissions (i.e., fugitive methane emissions related to energy supply) from the associated fossil fuel asset of the holding company, project, or activity (IPCC, 2022, p. 28). For carbon capture to be considered part of the 90%, it must be, (i) utilized for mitigation products that have century-scale (or greater) lifetimes (i.e., geological CCS); and (ii) must not support enhanced oil recovery (EOR) or other processes that enable continued fossil fuel extraction and production development. To evaluate abatement, methods should be independently assessed on an annual basis.

Please note that this consultation draft document, including the draft recommendations, is not intended to constitute legal advice and as such does not establish compliance with any legal or regulatory requirements. Users should seek independent legal advice on applicable national laws and regulations.

Criteria

The SBTi Fossil Fuel Finance Position Paper establishes a **four-step set of requirements that an FI shall follow in addressing their fossil fuel related activities.**

Table 3. Criteria Implementation Process

Criteria Summary	
Disclose	<p>The financial institution shall publicly disclose information on an annual basis to provide a sufficient level of transparency to aid stakeholders' understanding of (i) the GHG impact of the financial services provided; and (ii) action being taken to reduce/eliminate emissions from fossil fuel activities at a group level and with subsidiary level granularity. The following datapoints shall be disclosed annually for all fossil fuel activities covered:</p> <ul style="list-style-type: none"> • Absolute emissions (scope 1+2+3) per GHG from fossil fuel exposures across all financial flows • Aggregated financial exposures (monetary amounts and FIDs) across all financing and facilitation activities¹ • Forward-looking transition plans of fossil fuel portfolio companies (compliant with "Arrest" criteria below) <p>The first public disclosure shall be included in the target submission, i.e., for the base year of the target.</p>
Arrest	<p>Financial institutions shall implement the immediate cessation of new financial flows via a public commitment according to</p> <p>Table 4 below. This includes the cessation of all:</p> <ul style="list-style-type: none"> • New financial flows to the coal value chain (see Annex 2) for both companies and projects, with the exception of new financing for permanent decommissioning of production activities and capacity. • New financial flows to all unabated oil and gas value chain-associated activities at the project level; plus, new financial flows provided to companies that are involved in expanding production and/or adding capacity to any applicable oil and gas value chain associated activities. <p>The cessation shall go into effect immediately upon publication of the FI SBT.</p>
Transition	<p>FIs shall establish targets for all financial flows to existing fossil fuel activities at the company level and shall also establish targets at the portfolio level:</p> <ul style="list-style-type: none"> • Company level: to engage fossil fuel counterparty companies to transition along 1.5°C pathways by establishing 2030 quantitative public targets, including absolute, intensity, and capex metrics that cover the scope 1, 2, and 3 emissions of the fossil fuel companies²; also set clear

¹ This builds on existing practices such as the [Principles for Responsible Investment \(PRI\) Public Signatory Reports](#).

² FIs are responsible for publishing fossil fuel company-level absolute, intensity, and capex targets that are demonstrably aligned with a specific published 1.5° pathway as part of their SBT. As with the SBTi's sector-based [Pathways to Net-Zero](#) analysis, the IEA Net-Zero scenario provides a minimum ambition threshold. As target-setting methods and practices evolve, SBTi will provide additional guidance. At this point the requirement is for FIs to publish the targets to demonstrate emerging practices. For reference, FIs are recommended to consult the [CA100+ Oil and Gas Company Assessment data](#).

For FIs' fossil fuel related capex targets, it is recommended that FIs consider increasing their ratio of financial support for clean energy assets every year at the portfolio level, aiming for a ratio of 9:1 (clean energy supply and end use efficiency to transitioning fossil) by 2030 at the latest (IEA, 2022). The 9:1 combines end use and efficiency at 4:1 as well as supply at 5:1 investment ratios. For the fossil fuel denominator, activities should be in line with the criteria set out in Table 4 below.

commitments for no new expansion and the phasing down/out of production along approved 1.5°C pathways with low/no overshoot.³

- Portfolio level: for no new or increased portfolio exposure in terms of financed and facilitated emissions from fossil fuel activities that are not clearly aligned with a 1.5°C transition.

Additionally, a transition of activities to reduce methane scope 1, 2, and 3 emissions from all fossil fuels by at least 75% by 2030⁴ is required as a milestone for near-term targets.

These transition targets shall be included in the FI SBT for immediate implementation.

Phase-out	<p>FIs shall commit to phasing out all financial activities linked to unaligned companies and projects according to the timeframe and regional criteria disclosed in</p> <p>Table 4 below.</p> <p>For the engagement of fossil fuel companies receiving existing financial flows, FIs shall phase out at the latest after two years if the engagement efforts fail to bring the project/company into alignment (or at the next roll-over date after this two-year period, if applicable). The FI engagement period should begin as soon as the SBT is published.</p>
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Overall, FIs shall commit to not support any fossil fuel projects that are expanding production or to make any new investment in companies/projects still involved in new up, mid, and downstream oil and gas production activities per the SBTi Fossil Fuel Value Chain shown in [Annex 2](#) below. This includes enabling and supporting companies such as specialized equipment and service providers for refineries. To ensure credible and robust transition, FIs shall also adopt time-bound restrictions on all financial flows to oil and gas companies/projects whereby financial support is withdrawn if engagement is unsuccessful.

These proposed criteria are built on the recommendations from the United Nation's High Level Expert Group (HLEG) on the net zero emissions commitments of non-state entities for the transition and phase-out of coal, oil and gas companies/projects. As in the HLEG report, the company and project level criteria listed below are differentiated across low-, middle-, and high-income countries. The intention is to support just transition and energy access imperatives while clearly linking FI targets with the Paris Agreement. The arrest and phase out criteria presented in [Table 4](#) below present a science-based approach for FIs to address their fossil fuel activities transparently and robustly.

³ The SBTi specifies approved 1.5° pathways in the [Pathways to Net-Zero](#) publication.

⁴ Cutting oil and gas methane by 75% is one of the most impactful measures to reduce GHG emissions to 2030 in line with 1.5° stabilization (International Energy Agency [IEA], 2023, pp. 16-18).

Table 4. Criteria per fossil fuel and financing type

		Project	Company
Coal	New financial flows	No new financial flow shall be provided to any part of the coal value chain (see Annex 2) with the exception of new financing for permanent decommissioning	No new (or increased) financial flows shall be provided to coal companies involved in any part of the coal value chain (see Annex 2), with the exception of new financing for permanent decommissioning
	Existing financial flows	Phase-out all existing financial flows for coal projects: for projects in high- and high-middle income countries ⁵ , exit by the end of 2030 at the latest; all others, reduce exposure by 50% by 2030 and exit by the end of 2040 at the latest.	For companies who are active in high- and high-middle income countries, exit by the end of 2030; all others, exit by the end of 2040.
Oil	New financial flows	No financial flows to support new unabated upstream, midstream, and downstream oil projects (see Annex 2).	No new (or increased) financial flows if the company is planning new unabated capacity additions across the oil value chain ⁶
	Existing financial flows	For projects located in the wealthiest group of ‘producer nations’ (Group 1; Calverley & Anderson, 2022, Appendix 2), output of oil and gas needs to be cut by 74% by 2030, with complete phase out by 2034. For the middle-income group with medium capacity (Groups 2, 3, & 4; Calverley & Anderson, 2022, Appendix 2) for a just transition, a 28% cut by 2030 is required, and a zero-production year of 2043. For	For companies operating in the wealthiest group of ‘producer nations’ (Group 1; Calverley & Anderson, 2022, Appendix 2), output of oil and gas needs to be cut by 74% by 2030, with complete phase out by 2034. For the middle-income group with medium capacity (Groups 2, 3, & 4; Calverley & Anderson, 2022, Appendix 2) for a just transition, a 28% cut by 2030 is required, and a zero-production year of 2043. For the poorest group with lowest capacity

⁵ High and high-middle countries are defined as per the [World Bank’s guidelines on income](#)

⁶ Inclusive of vertically integrated companies who are planning any new capacity additions to any part of the oil value chain deemed as applicable in Annex 2.

Gas		the poorest group with lowest capacity (Group 5; Calverey & Anderson, 2022, Appendix 2), a 14% cut is required by 2030, with all production ending by 2050.	(Group 5; Calverey & Anderson, 2022, Appendix 2), a 14% cut is required by 2030, with all production ending by 2050.
	New financial flows	No new financial flows to new unabated upstream, midstream, and downstream gas projects (see Annex 2). This includes no financial flows to new unabated baseload natural gas-fired power generation or in infrastructure using natural gas as a fuel to produce hydrogen.	No new (or increased) financial flows if the company is planning new unabated capacity additions across the gas value chain ⁷
	Existing financial flows	For projects located in the wealthiest group of 'producer nations' (Group 1; Calverley & Anderson, 2022, Appendix 2), output of oil and gas needs to be cut by 74% by 2030, with complete phase out by 2034. For the middle-income group with medium capacity (Groups 2, 3, & 4; Calverey & Anderson, 2022, Appendix 2) for a just transition, a 28% cut by 2030 is required, and a zero-production year of 2043. For the poorest group with lowest capacity (Group 5; Calverey & Anderson, 2022, Appendix 2), a 14% cut is required by 2030, with all production ending by 2050.	For companies operating in the wealthiest group of 'producer nations' (Group 1; Calverey & Anderson, 2022, Appendix 2), output of oil and gas needs to be cut by 74% by 2030, with complete phase out by 2034. For the middle-income group with medium capacity (Groups 2, 3, & 4; Calverey & Anderson, 2022, Appendix 2) for a just transition, a 28% cut by 2030 is required, and a zero-production year of 2043. For the poorest group with lowest capacity (Group 5; Calverey & Anderson, 2022, Appendix 2), a 14% cut is required by 2030, with all production ending by 2050.

⁷ Inclusive of vertically integrated companies who are planning any new capacity additions to any part of the gas value chain deemed as applicable in Annex 2.

Example Target Wording

Bank A commits to the following targets covering its fossil fuel financial activities:

- Bank A commits to annually disclose the total exposure, absolute emissions and portion of its fossil fuel portfolio aligned to 1.5°C transition pathways. These annual disclosures build on the base year disclosure included in the published SBT.
- Bank A commits to end all new company- and project-level financing for non-compliant upstream, midstream, and downstream oil and gas and coal included in the SBTi Fossil Fuel Value Chain (see [Annex 2](#)), effective immediately upon publication of the SBT.
- Bank A commits to transition its fossil fuel portfolio using the following company/project and portfolio level metrics:
 - Company level: targets for company and project level alignment using scope 1, 2, and 3 absolute and intensity metrics as well as capex targets that are demonstrably in line with 1.5° pathways approved by the SBTi.
 - Portfolio level: target on the reduction of aggregated fossil fuel counterparty scope 1, 2, and 3 emissions and absolute exposure in monetary terms; target for increasing overall financing ratio of clean energy to abated fossil fuels to a level of 9:1 by 2030.
- Bank A commits to phase-out all financial flows to unaligned companies and unabated projects following the regional and timeframe breakdowns provided in Table 4 above [to be specified per exposure and geography of FI activities].

Annex 1. Transition Metrics for Fossil Fuel Companies

The criteria and transition metrics presented here only apply to financial institutions' target setting regarding their fossil fuel related activities. The SBTi is developing separate fossil fuel target-setting methods and criteria for use by fossil fuel companies. These forthcoming fossil fuel sector methods will also be an option for financial institutions that are using the Sectoral Decarbonization Approach (SDA) or SBTi Portfolio Coverage methods to cover their fossil fuel related activities.

The following table presents an overview of recommended transition metrics for inclusion in 1.5°C transition plans for coal, oil and gas companies. Other public resources such as UN HLEG report Integrity Matters: Net Zero Commitments by Businesses, Financial Institutions, Cities and Regions, Institutional Investors Group on Climate Change's (IIGCC) Net-Zero Standard for Oil & Gas, the ACT Initiative's Oil & Gas assessment methodology, the TNFD Nature-Related Risk & Opportunity Management and Disclosure Framework, ClimateAction100+ Net Zero Company Benchmark, the Transition Plan Taskforce's publications, and the Glasgow Financial Alliance for Net Zero's (GFANZ) Real-economy Transition Plans guidance should be consulted while developing an assessment approach for the credibility of transition plans.

Table 5. Example transition metrics that may be used for fossil fuel companies (non-exhaustive)

	Company level	Portfolio level
Coal	<ul style="list-style-type: none"> Commitment to not expand production across the value chain including mines, power plants, and other coal infrastructure⁸. A commitment to close all coal facilities by 2030 in high- and high-middle income countries and 2040 globally. This commitment should be transparent and include facility-by-facility closure dates and plans for production reduction by 2030 in low-middle- and low-income countries. Just and sustainable transition⁹ plans with facility-by-facility phase out dates, including commitments to provide the capacity to fund and implement all best-practice worker and environmental obligations 	<ul style="list-style-type: none"> Portfolio financing trend Energy financing mix Absolute emissions contraction

⁸ Resources such as the [Global Coal Exit List](#) should be consulted to identify portfolio companies with exposure to coal projects

⁹ Generally, guidelines as defined by the United Nations International Labour Organization should be followed. For FIs operating in developing economies, guidance from UNDESA's [Committee for Development Policy](#) should also be consulted.

	(holistic remediation, retraining, infrastructure decommissioning, etc.).	
Oil + Gas	<ul style="list-style-type: none"> • Credible near-term 1.5°C targets covering absolute and intensity reductions, capex, and production related targets. These targets should be accompanied by a comprehensive climate transition plan that allows investors to assess its alignment with a 1.5°C with low or no overshoot and a limited volume of negative GHG emissions¹⁰. This plan should be transparent and include facility-by-facility closure dates and plans for production reduction by 2030 in low-middle and low-income countries. • End of new upstream, midstream, and downstream oil and gas projects/activities involved in the increase of production capacity <u>per the SBTi Fossil Fuel Value Chain</u> (see Annex 2), FIs should commit to an increasing ratio of financial flows in clean energy supply every year at the portfolio level, ensuring a minimum ratio of 9:1¹¹ (clean to fossil) by 2030 at the latest. For the fossil fuel denominator, investments should be in line with criteria requirements set out in Table 4 above. 	<ul style="list-style-type: none"> • Portfolio financing trend • Energy financing mix • Absolute emissions contraction

¹⁰ Resources such as the [Global Oil and Gas Exit List](#) should be consulted to identify portfolio companies with exposure to oil and gas projects.

¹¹ This combines end use and efficiency at 4:1 as well as supply at 5:1 investment ratio. (International Energy Agency [IEA], 2022b, p. 188)

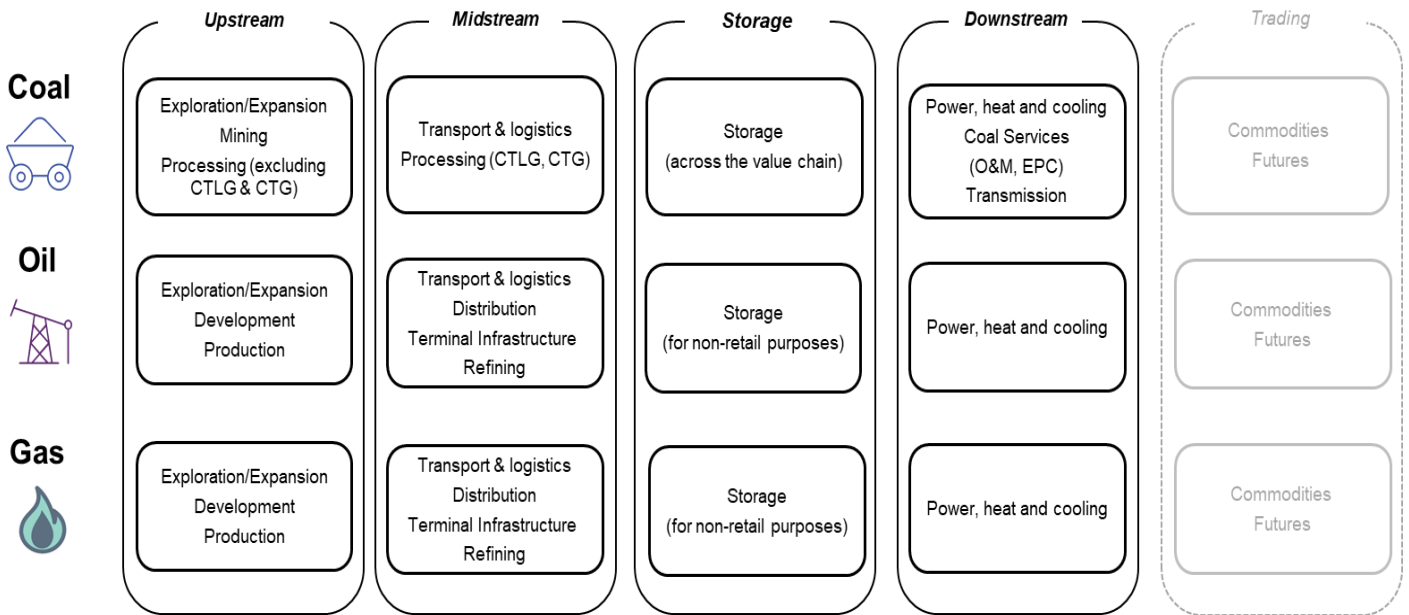
Annex 2. Fossil Fuel Value Chain

Table 6. Applicable fossil fuel value chain per fossil fuel type

	Projects/Activities
Coal ¹²	<p>Upstream: coal mining including existing extraction plus exploration, drilling, processing, and development of new or expansion of existing mines</p> <p>Midstream: any transport and logistics, processing of coal to liquid gas (CtLG) and coal to gas (CtG), storage, and services dedicated to supporting the coal value chain</p> <p>Downstream: new, existing (including retrofitting) coal power, operations and maintenance (O&M) & engineering, procurement and construction (EPC) services to any part of the coal value chain, heat, or cooling production plants and any transmission infrastructure of coal-fired electricity</p>
Oil + Gas	<p>Upstream: new or existing oil and gas upstream projects: exploration, extraction, development/redevelopment/expansion of fields (including enhancing the rate of production, e.g., EOR projects)</p> <p>Mid-stream: oil and/or gas refining, storage, transportation and distribution infrastructure or logistics</p> <p>Downstream: oil and/or gas power, heat or cooling generation facilities</p>

¹² Coal phase out policies from financial institutions must include a commitment to end all financial and advisory services and phase out exposure, including passive funds, to the entire coal value chain. The supply chain for coal should be considered as non-exhaustive for phase-out targets.

Figure 1. Applicable fossil fuel value chain per fossil fuel type



Value chain items in grey are not included within this policy

This paper does not cover FI trading activities such as commodities and futures trading undertaken by FIs, or other aspects of downstream oil and gas value chains such as filling stations in terms of targets, but the disclosure of such activities would still be required. The SBTi recognizes the importance of financing these activities to the liquidity and operation of fossil fuel markets. At this stage, however, we believe further research and consultation is required on this aspect of the fossil fuel value chain before specific targets can be set on these activities. For example, is it feasible to distinguish between abated and unabated when trading in oil futures and, if so, how can it be monitored effectively? Also, should FI financing of activities such as fuel stations and gas transportation be phased out if one accepts that oil and gas will be part of global energy systems beyond 2030 and 2040 respectively, even if exploration and development of oil and gas has ended? We have included a consultation question on this aspect of the position paper to solicit feedback.

Annex 3. The Role of Fossil fuels in 1.5°C and Net-Zero Scenarios¹³

This section provides a brief summary of several key climate scenarios that are aligned to 1.5°C and net-zero, up to date as of September 2022. It is not intended to be an exhaustive analysis of these scenarios. Instead, they have been reviewed to identify key characteristics and implications for fossil fuels and, hence, to inform the SBTi Fossil Fuel Finance criteria set out above. Each of the scenarios recognize that a managed decline of fossil fuels is necessary and there is a high degree of commonality across the scenarios, although there are some differing characteristics on the specific actions required of the fossil fuel industry across some technologies.

Overview

The 1.5°C and net zero scenarios outlined in Table 7 at the end of this section were identified as key sources against which to base the analysis. In many instances, the sources listed below publish multiple climate scenarios, not all of which were included in the review. Given that the purpose of this research is to help inform actionable SBTi criteria, the most credible yet ambitious scenarios were selected for review. Noting that additional 1.5°C and net-zero scenarios are available and are continually emerging, this research is not intended to be exhaustive, but presents a range of perspectives from a variety of robust sources.

Although the most up to date scenarios were reviewed at the time of research (in Q4 2022), 1.5°C scenarios are continually being iterated and updated and therefore the information presented may not reflect the most recent view at the time of reading. While all the scenarios present 1.5°C and net-zero pathways, it should be noted that there are underlying differences within them, such as associated assumptions on carbon removal technologies and regional variations. While the scope of this research has primarily focused on fossil fuel implications, the scenarios also explore what is required for clean energy supply.

Synthesis of 1.5°C and net-zero scenarios

A high-level summary of the implications for fossil fuels emerging from the scenarios reviewed is provided in Table 7. The figure is presented to inform a simplified comparison between scenarios to identify key features as well as areas of divergence and convergence.

The review of climate science and surrounding literature has provided insight into the implications for fossil fuels across industry under various 1.5°C and net zero scenarios. The following findings are

¹³ Prepared in cooperation with Mott MacDonald

extracted from the research and provided key points to inform the SBTi's direction in this position paper:

An immediate halt to new fossil fuel supply is needed to align with 1.5°C scenarios: The Intergovernmental Panel on Climate Change (IPCC) suggests that if left unabated, emissions from existing and planned fossil fuel infrastructure would exceed the remaining carbon budget for a 1.5°C trajectory. The International Energy Agency's (IEA) Net Zero Emissions by 2050 Scenario (NZE) supports this finding by stating there should be no fossil fuel supplies beyond those already committed to as of 2021.

Significant reduction across all fossil fuels is required to be consistent with 1.5°C scenarios: Although there may be nuances within the detail regarding the pace at which different fossil fuel emissions decline between now and 2050, when assessing trends using scenarios that have consistent characteristics (e.g., limited overshoot and limited removals) the science is clear that there is a fundamental need to significantly reduce emissions from fossil fuels by 2050.

Phase out of coal: Aligned to IEA NZE, this would involve phase out of coal power plants by 2030 in advanced economies and 2040 globally.

Phase out of unabated gas: Aligned to IEA NZE, this would imply that energy from unabated gas power plants would fall to below 30% of the energy mix by 2030 and be phased out by 2050. The IEA indicates that natural gas & LNG production will need to peak and decline within this decade for alignment to net-zero.

Phase out of abated fossil fuels: Though noting that assumptions behind CCUS, carbon capture and storage (CCS) and carbon dioxide removal (CDR) technologies vary across scenarios, the IEA NZE scenario expects fossil fuel power with abatement to make up only ~20% of the global energy mix by 2050. This indicates that a) scale-up of CCUS technology is required, b) existing or planned fossil fuel power plant must include CCUS by 2050, and c) there must be a significant decline in existing fossil fuel production, with provision for proper decommissioning and restoration. Alternatively, a staged phase-out of oil and gas production by high-emitting nations by 2034 and the poorest nations by 2050 is suggested by recent research to align to Paris-compliant carbon budgets.

An increase in renewable energy supply is required to be consistent with 1.5°C scenarios: Due to the clear need to reduce energy supply from fossil fuels, energy demand must be met through alternative sources of energy, in addition to efficiency gains. Across all 1.5°C scenarios, it is evident that the majority of energy will need to be supplied by renewable energy by 2050. Therefore, there is a fundamental need for an increase in financing toward supporting renewable energy supply.

Table 7. Summary of key fossil fuel characteristic of 1.5°C and net-zero scenarios

	IPCC	IEA	UN HLEG	OECD	NGFS
COAL	Global drop in primary energy from coal to 0-5% by 2050 .	Phase out of power plants by 2030 for advanced economies and 2040 globally .	For power generation, end expansion, development and extension of coal mines immediately. Complete phase out by 2030 (OECD) and 2040 (non-OECD).	No new investment & phase out of all coal generation by 2030 for advanced economies and 2040 globally .	Coal-fired emissions reduction to 7% in 2030 and close to 0% by 2050 .
OIL	Global drop by 40-75% by 2050 .	No new oil field developments by 2021 & phase out of unabated oil-fired power plants by 2040 .	End financing of (i) exploration; (ii) expansion of reserves; and (iii) production. No timeline set	No new investment in fossil power plants after 2030. Annual reduction rate of 8.5% .	Oil in the primary energy mix to change from 34% in 2020 to 18% in 2050 .
GAS	Global drop by 80% by 2050 in scenarios without CDR.	No new gas field developments by 2021 .	End financing of (i) exploration; (ii) expansion of reserves; and (iii) production. No timeline set.	Existing gas fields will be phased out at average annual reduction rate of at least 3.5% .	Gas reduced to 9% of global energy mix by 2050 .
REMOVAL	No temperature overshoot. Emission reduction included, but LULUCF often sufficient.	No temp overshoot. No reductions from outside the energy sector. Expects coal and natural gas with CCUS.	No temperature overshoot. Align with 1.5°C pathways.	No/low temperature overshoot. No unproven technologies only natural carbon sinks.	Limited temporary temperature overshoot. Low-medium availability of removal technology.

A set of consultation questions for readers to provide input are available through August 14th via the [feedback survey](#).

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