



Investment
Leadership
Programme

UN-convened Net-Zero
Asset Owner Alliance

Target Setting Protocol

Second edition

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In partnership with:



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Monitoring, Reporting and Verification (MRV).

The Monitoring, Reporting and Verification (MRV) track is responsible for the development of the Protocol, which provides the basis for Alliance members to develop, issue and report decarbonisation targets. Members of the MRV track have reviewed large amounts of known, available scientific guidance, commissioned scientific guidance, and available methodologies.¹ This Protocol is the result of this process and is published on behalf of the Alliance. It sets out the Alliance's approach to target setting and reporting on progress towards real world emissions reductions in line with established science and members' fiduciary duty.

A range of scientific, academic, and technical experts are engaged in and contribute to the Alliance's work. This Protocol was produced by the technical leads within the Alliance membership with input from global networks, climate scientists, strategic advisors, NGOs, and the public.

¹ SBTi, PCAF, IIGCC PAII, CREEM, 2dii were explored

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Antitrust and Regulatory Disclaimer

The Alliance and its members are committed to comply with all laws and regulations that apply to them. This includes, amongst others, antitrust and other regulatory laws and regulations and the restrictions on information exchange and other collaborative engagement they impose.

Alliance members



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Acronyms

AFOLU	Agriculture, Forestry and Other Land Use
AM	Asset Manager
AO	Asset Owner
AOA	Asset Owner Alliance
BECCS	Bioenergy with carbon capture and storage
BICS	Bloomberg Industry Classification System
CA100+	Climate Action 100+
CDR	Carbon Dioxide Removal
CO₂e	Carbon Dioxide Equivalent
COP26	26 th United Nations Climate Change Conference of the Parties
CRREM	Carbon Risk Real Estate Monitor
DFI	Development Finance Institution
EA	Electric Arc Furnace
EBA	European Banking Authority
EDFI	Association of European Development Finance Institutions
EIOPA	European Insurance and Occupational Pensions Authority
ESG	Environmental, Social and Corporate Governance
ESMA	European Securities and Markets Authority
ETC	Energy Transition Commission
EV/EVIC	Enterprise Value/ Enterprise Value Including Cash
FI	Financial Institution
GHG	Greenhouse Gas
GICS	Global Industry Classification System
IEA	International Energy Agency
IGCC	Investor Group on Climate Change
IIASA	International Institute of Applied Systems Analysis
IIGCC	Institutional Investors Group on Climate Change
IPCC	Intergovernmental Panel on Climate Change
ISF	Institute for Sustainable Futures
MRV	Monitoring Reporting and Verification
NACE	Statistical Classification of Economic Activities in the European Community
NDC	Nationally Determined Contribution
NDPE	No deforestation, no peat, no exploitation policies

NOC	National Oil Companies
OECD	One Earth Climate Model
OGCI	Oil and Gas Climate Initiative
PACTA	Paris Agreement Capital Transition Assessment
PAII	Paris Aligned Investing Initiative
PCAF	Platform for Carbon Accounting Financials
PIK	Potsdam Institute for Climate Impact Research
PRI	Principles for Responsible Investment
RMI	Rocky Mountain Institute
RTS	Regulatory Technical Standards
sbt	Science-based Target (not associated with a validation initiative)
SBTI	Science Based Targets Initiative
SEI	Stockholm Environment Institute
SRC	Stockholm Resilience Centre
SAA	Strategic Asset Allocation
TPI	Transitions Pathway Initiative
ULCOS	Ultra-Low CO ₂ Steelmaking
UNEP	United Nations Environment Programme
UNEP FI	United Nations Environment Programme Finance Initiative
UTS	University of Technology Sydney
WEF	World Economic Forum
WEF MPP	World Economic Forum Mission Possible Platform
WRI	World Resources Institute
WWF	World Wildlife Fund

The second Alliance Target Setting Protocol

The Alliance is pleased to launch the second edition of the Alliance Target Setting Protocol in January 2022. Building on the previous edition, Alliance members of the MRV track developed the content throughout 2021, and on 11 October 2021, released the new edition for public consultation. The Alliance sincerely appreciates the input it received during the consultation and has since revised this Protocol based on the input received. The Alliance aims to continue to enhance the depth and coverage of this Protocol. The public may expect an updated edition to be released on a regular basis.

As one of the earliest and cross-cutting outputs of the Alliance, the Inaugural Protocol covered a range of content such as governance, collaborations with partners, and background research. To support our members, we have focused the second edition of the Protocol on content that is of direct relevance to the target setting process. Accompanying documents on governance and collaborations can be found on the Alliance website.

This Protocol is intended to be used in tandem with [the Annex](#). The Annex describes relevant metrics, scenario comparisons and sector classifications which are essential in target setting.

The previous edition of the Protocol can be found [here](#).

Foreword

Our world must decarbonize with extreme speed to avert unprecedented disruption to our lives, livelihoods, businesses and economies. This urgency is mirrored in the accelerated development of the Target Setting Protocol of the UN-convened Net-Zero Asset Owner Alliance.

Last year, the inaugural Target Setting Protocol (the Protocol) reflected the gathering commitments from Alliance members to set Paris Agreement-aligned portfolio targets. Such promises were like a coiled spring, signalling that finance leaders across the planet were poised for drastic action.

Yet, commitments alone do not guarantee real-world change. This is why the 2022 Protocol is more direct on the actions members must undertake to enable a real-economy transition towards a 1.5°C pathway in line with the “no or limited” overshoot scenarios of the IPCC.

The 2022 protocol provides further clarity on targets. Ambitions are backed by more detailed analysis of climate change scenarios to help guide members. There are three significant areas:

- First, the protocol has grown: infrastructure is a newly covered asset class and first steps towards sovereign debt are now included. The target setting scheme for infrastructure is based on the carbon accounting framework for project finance laid out by PCAF (Partnership for Carbon Accounting Financials). This is evidence of the will to advance the Protocol annually by adding additional asset classes.
- Second, ambitions to reduce portfolio emissions have been enhanced and are now aligned with the scenarios underlying the latest IPCC report. Paths to 2030 have to be defined within a reduction range of -49% to -65% compared to the base year 2020.
- Third, the Protocol describes more granular metrics and directions of approach to the asset classes already in scope. In addition, the Protocol contains a list of our key asks of companies and asset managers to be used in climate-related engagements.

Beyond the Protocol, substantial developments have occurred around the Alliance. At the beginning of 2021, the Alliance comprised 34 institutional investors representing USD5.1 trillion assets under management.

Today memberships and asset under management have doubled to 69 (as at 25 Jan 2022) and USD10.4 trillion. Investors increasingly recognize that strong economies and fighting climate change are intertwined and that collaboration is most effective driving jointly the agenda across the globe via various projects, initiatives and positioning.

Alliance members are not asking companies to undertake what they do not ask of themselves. However, much work lies ahead to unleash the pent-up energy within the commitments of our members—and these efforts by themselves will not be anywhere near enough to confront the existential risk posed by the climate emergency.

Every company, bank, insurer and investor is challenged to follow the lead of the Alliance and adjust business models, develop plans for the transition to a low-carbon, climate-resilient future and then implement those plans. This is not the time for complacency. It is certainly not the time to discuss whether 1.5 degrees must be achieved and interim steps need to be defined. We—every company—needs to act powerfully, credibly and quickly and, not least, together to support governments to achieve a net-zero emissions world.



A handwritten signature in black ink, consisting of stylized initials 'G. Th.' followed by a large, sweeping flourish.

Günther Thallinger

Board Member Allianz SE & Chair UN-convened
Net-Zero Asset Owner Alliance

Executive summary

The Alliance Target Setting Protocol (Protocol) sets out the Alliance’s approach to target setting and reporting. The first edition of this Protocol focused on the period 2020–2025. This second edition also outlines the ambition towards 2030. To ensure transparency and robustness, this document has been circulated for public comment prior to final publication.

The authors acknowledge that asset owners have fiduciary duties that require them to act in the interests of beneficiaries, clients, and members, to act prudently, and to exercise care, skill, and caution in pursuing an overall investment strategy. Fiduciary duty requires asset owners to invest on the basis of credible information, analysis, scenarios, and models, and to retain the flexibility to adapt in response to changing circumstances.²

The Alliance recommends members to use science-based ranges, targets, and methodologies in their strategic planning to meet their net-zero commitments, noting that data and methodological constraints persist. The Alliance supports its members to develop a deep and practical knowledge of scenarios derived by the Intergovernmental Panel on Climate Change (IPCC). Members are responsible for employing the recommended science-based criteria outlined herein or explaining to the Alliance the rationale for an alternative target or methodology from the range of options discussed below. The Alliance uses the following terminology:

- **Shall** means that a process is binding for the purpose of the Alliance but remains subject to the unilateral decision of the member concerned. If the member concerned does not follow the guidance, an explanation to the Alliance is required;
- **Should** means that a process is strongly recommended.

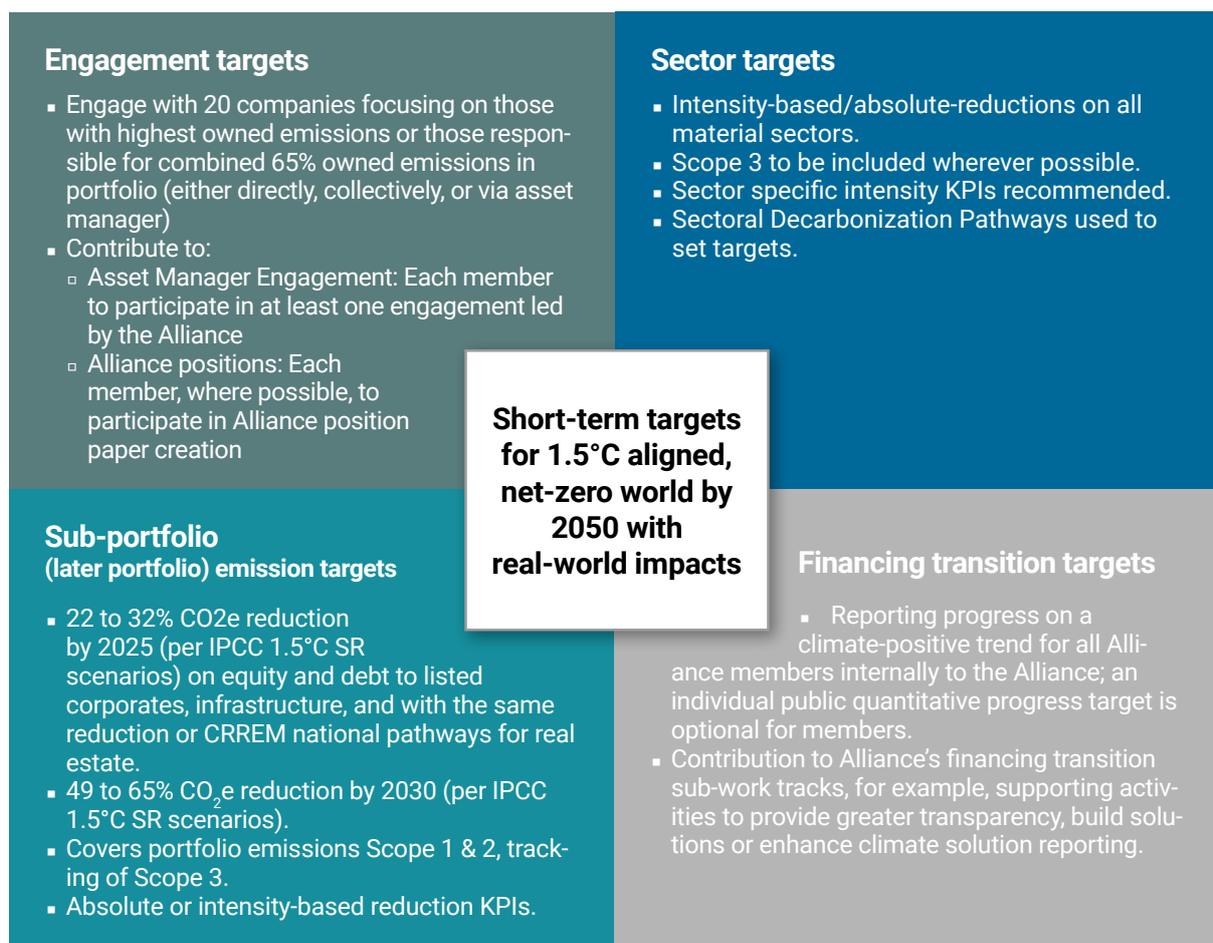
The Alliance is committed to accelerating decarbonisation in line with 1.5°C no or low overshoot pathways, primarily through engagement with corporates and policymakers as well as providing the capital required to finance the transition. Given the complex nature of leveraging ownership and financial strategies to drive real world change, and tracking the impacts of these actions, a four-part target setting structure is recommended (Engagement targets, Sub-portfolio targets, Sector targets, and Financing transition targets).

² The authors further acknowledge that collaborative engagement of shareholders may, depending on the facts of the individual case, be subject to regulatory requirements or restrictions in certain jurisdictions. It is up to the individual Alliance members to determine whether a specific course of action is possible or feasible in this regard. The Alliance does not expect its members to act in a certain way where this would not be possible or feasible with a view to regulatory requirements.

Scope and coverage of the Protocol

Targets shall be set on the members' own Scope 3 emissions related to investments (sometimes referred to as 'portfolio emissions' or 'financed emissions'). In addition to setting Scope 3 emissions targets, Alliance members should set net-zero targets on their own Scope 1 and 2 emissions. Members shall set targets on Scope 1 and 2 emissions for their underlying holdings and should do so on Scope 3 of underlying holdings for 'priority sectors'³ as soon as possible, as detailed in the chapter on sector-level targets. At the portfolio level, Alliance members should track portfolio company Scope 3 emissions, but are not yet expected to set targets until data becomes more reliable.⁴

Diagram I: Alliance four-part target setting approach



Source: Net-Zero Asset Owner Alliance Protocol

The Alliance Commitment requires its members to publish interim targets on a five-year cycle. To maintain consistency with the Alliance reporting cycle, public targets issued more than three years prior (i.e., before 2017) should not be considered. This reporting schedule is in line with Article 4.9 of the Paris Agreement which requires signatories

3 Identified from those with high Scope 3 emissions or otherwise large emissions contributions as Oil and Gas, Utilities, Steel, Aviation, Shipping and heavy and light duty road transport.

4 Comparisons of Scope 3 data reported by similar companies indicate the largest degree of divergence in reported emissions. See Busch, T., Johnson, M., Pioch, T. and Kopp, M. (2018) 'Consistency of Corporate Carbon Emission Data' University of Hamburg: ec.europa.eu/jrc/sites/jrcsh/files/paper_timo_busch.pdf.

to submit updated emissions reduction plans every five years.⁵ National governments who have signed up to the Paris Agreement will communicate these updated emissions reduction plans, also known as Nationally Determined Contributions (NDCs), in 2025, 2030, 2035, 2040, 2045 and 2050.

Engagement targets. Engagement targets track activities and progress with individual corporates and asset managers, and the influence of the broader investment sector through position papers. Alliance members shall engage, at a minimum, 20 companies in their portfolio with a focus on those responsible for the most 'owned emissions' or those responsible for a combined 65% of owned emissions in their portfolio. Members shall identify their engagement targets from the engagement KPI framework (see Annex) and support the common 'asks' towards companies and asset managers. The desired outcome of any engagement type is alignment with 1.5°C no/low overshoot trajectories.

Sector Targets. Sector targets help link portfolio-level reductions to the carbon efficiency requirements of a given sector and therefore, real world outcomes. Intensity-based, sector specific targets for high-emitting sectors reflect the specifics of each sector, their respective energy transition trade-offs with other sectors in the global economy, and the role they are expected to play in the transition to a net-zero economy (e.g., sector specific intensities across utilities or transport, as well as coal and fossil fuel phase-out pathways).

Alliance members who set sector targets shall progressively start implementing sector targets beginning with their most material sectors from an owned-carbon emissions standpoint initially and increasing the sector coverage over time by 2025. Alliance members shall aim to have sector targets in place by 2025 (for 2030 targets) covering at least 70% of total owned emissions. For coal, Alliance members shall set coal phase out policies in line with the Alliance coal position paper. Alliance members should also refer to these targets, amongst other sources, to inform their stewardship, policy, and allocation activities in these sectors. The Alliance will review emerging sector specific pathways for inclusion as reference points in the Protocol, provided that these are compatible with the total global carbon budget required for 1.5°C no/low overshoot alignment and other assumptions derived from scientific assessments.

'Sub-portfolio' Targets.⁶ Sub-portfolio targets cover the asset classes where credible methodologies and sufficient data coverage exist as of the date of the target's publication. Later, once full coverage is reached, this target type will be termed simply 'Portfolio targets'. To-date Alliance members shall set targets across their listed equity, publicly traded corporate bonds⁷, real estate, and infrastructure equity as well as infrastructure

5 UNFCCC (2015) Paris Agreement: unfccc.int/files/meetings/paris_nov_2015/application/pdf/paris_agreement_english.pdf

6 The Alliance will not give any recommendations or instructions to their members which precise measures need to be taken to achieve the targets as stated in this document nor will the Alliance members exchange any information on transaction basis.

7 Including private loans to listed companies using the same methodologies as listed equity and publicly traded corporate bonds.

debt portfolios. The Alliance assessed the IPCC no and low overshoot 1.5°C scenarios⁸ and identified a global average absolute emissions reduction requirement in the **range of -22% to -32% by 2025** (see Chapter 3 for further details). Alliance members shall set targets based on this reduction range, considering the impact on the real economy and other member-specific considerations and constraints. Alliance members shall set targets on an absolute or intensity-basis (see sub-portfolio target chapter for details on appropriate metrics).

Financing transition. Financing the transition to a net-zero economy is an important component of the Alliance Commitment, not simply the decarbonisation of the current economy or a specific sector. Tracking how financing is supporting transition encourages Alliance members to use the resources and capabilities available to them to grow the supply side of net-zero investment solutions. Alliance members support the increase of climate solution investments, for example renewable energy in emerging economies, sustainable forestry, and infrastructure supporting green transformation. Members shall report individually to the public on their progress against these targets. The Alliance will focus on enlarging the scale, pace, and geographic reach of net-zero compatible technologies. Alliance members may invest in assets which increase portfolio carbon emissions initially but enable them to encourage or finance low-carbon transition actions in that company/asset over time (this is particularly relevant in emerging markets).

Policy engagement. Policy engagement supports all of the above efforts and addresses factors beyond the direct control of Alliance members. No targets are expected under policy engagement (as members do not have direct influence on outcomes in this area), however Alliance members are expected to actively participate in this track. The Alliance's policy work has three focus areas:

- Supporting the alignment of governments' 2030 emissions reductions targets with net-zero goals and pathways by 2050;
- Promoting sector policies that accelerate the energy transition and decarbonisation; and
- Promoting mandatory climate reporting and business transition plans from investee companies.

Alliance members will identify their policy priorities and strategies for advocating for regulatory and policy measures that will accelerate decarbonisation in line with 1.5°C no/low overshoot trajectories, working closely with existing initiatives such as the Glasgow Financial Alliance for Net Zero (GFANZ).

8 The Alliance has analysed all scenarios and recommends use of scenarios with limited overshoot of global temperature rise of 1.5°C, i.e., with limited necessary removal of atmospheric carbon to bring the temperature back to below 1.5°C. These sets of scenarios are usually described by their representative pathways P1, P2 and P3. This is considered 'best available' science. See Rogeli, J. et al (2018) 'Mitigation Pathways Compatible with 1.5°C in the Context of Sustainable Development'.

Alliance recruitment. The Alliance recruitment target aims to achieve a minimum of 200 Alliance members or USD25 trillion in assets under management across the group by 2025.

Alliance reporting. Alliance members shall submit and publish targets within 12 months of joining (unless the end of the reporting cycle is within three months of joining, then members should submit and publish within a maximum of 15 months). Alliance members shall report on progress on an annual basis, both internally to the Alliance via the reporting template (the Alliance will then aggregate to provide an annual progress report), and publicly.⁹ In addition, Alliance members shall report publicly on quantitative progress every five years in line with Article 4.9. The Alliance will publish a progress report reflecting the Alliance's work and achievements on an annual basis and publish a more detailed report on quantitative achievements every five years.

⁹ Internally to the Alliance for aggregation and publicly as part of the member's annual public reporting activities.

Introduction: How asset owners contribute to GHG emissions reductions

The Alliance Commitment: What we want to achieve

The members of the Alliance have made the following commitment:

“The members of the Alliance commit to transitioning their investment portfolios to net-zero GHG emissions by 2050 consistent with a maximum temperature rise of 1.5°C above pre-industrial temperatures, taking into account the best available scientific knowledge including the findings of the IPCC, and regularly reporting on progress, including establishing intermediate targets every five years in line with Paris Agreement Article 4.9.

In order to enable members to meet their fiduciary duty to manage risks and achieve target returns, this Commitment must be embedded in a holistic ESG approach, incorporating but not limited to, climate change, and must emphasise GHG emissions reduction outcomes in the real economy.

Members will seek to reach this Commitment, especially through advocating for, and engaging on, corporate and industry action, as well as public policies, for a low-carbon transition of economic sectors in line with science and under consideration of associated social impacts.

This Commitment is made in the expectation that governments will follow through on their own commitments to ensure the objectives of the Paris Agreement are met.”

In line with the above commitment, the Alliance and its members are committed to supporting the real economy in its transition to a net-zero world, while, at the same time, being guided by science. It is important to note that the real economy is not moving as fast as the science recommends and this departure creates a substantial challenge for Alliance members who are committed to holding a net-zero portfolio as well as investing in a net-zero world.

Objective of the Protocol

The publication of the Protocol aims to address two objectives:

1. Maximise the impact of communication with external audiences. The Alliance aims to be reliably transparent and proactive in explaining our role, views and how we are addressing key issues and limitations of portfolio decarbonisation beyond our control. Our open approach to communication also means that we seek to learn from and build on external feedback received through public dialogue.
2. Provide the necessary guidance on Alliance requirements, which will guide and support Alliance members in implementing Alliance-wide approaches harmoniously.

Theory of change: our potential management actions

Asset owners have a unique role to play in today's financial landscape. They have long-term horizons and invest across a wide range of asset classes, geographies, and economic sectors. As such, they are acutely vulnerable to the systemic disruptions that climate change will cause in ecosystems, societies, and economies.

Nowadays, the important role of institutional investors and financial markets in limiting global warming is widely recognised. Article 2.1c of the [Paris Agreement](#) commits all signatories to "Making financial flows consistent with a pathway towards low greenhouse gas emissions and climate resilient development". Achieving the commitment set out in Article 2.1c would require a combination of allocating capital differently across the economy, allocating capital to assist the decarbonisation of individual companies particularly in hard-to-abate sectors, and driving change in individual company behaviours across all economic sectors.

As a result, recent years have seen a historic surge in climate-related pledges and transition plans from the investment industry. Climate plans and targets have begun to appear in regulatory frameworks, public policy, corporate reporting, and the various other spheres of influence that investors have at their disposal including via their portfolio construction and individual company-level investment decisions. Subsequently, investors, data providers, academia and other stakeholders are focusing their efforts on the strategies and mechanisms best suited to achieving the Paris-alignment objective, while also balancing risks and opportunities.

Mechanisms and strategies available to investors

In general, investors have stewardship rights and responsibilities to ensure that boards of companies are accountable for their oversight of financial capital as well as environmental, social or governance (ESG) parameters applied in the day-to-day running of investee companies. However, empirical evidence showing how investor climate pledges, strategies and actions contribute to emissions reductions in the real economy is only beginning to emerge.

It is important to understand the difference between reducing emissions in an investment portfolio and reducing emissions in the real economy. While many mechanisms and strategies may contribute to lowering investment risks, meeting customer demands, or supporting climate targets, they do not contribute equally to lowering emissions in the real economy. The Alliance seeks to draw on the most effective, legally compliant strategies, such as engagement, capital allocation strategies and investment opportunities to enable change and to benchmark progress to show the global investment community how investors can drive real world emissions reductions.

Lütkehemöller et al. (2020) identify the following factors that affect the likelihood of influencing investee behaviour: the level of control over the investee company, reaching critical mass by investors coming together, the size and recognition of the investor taking action, how easily an investor's action can be offset by other investors, the cost for the company of the requested reform by the investor, the investee's previous experience with sustainability issues and its reputational concerns, and finally, market liquidity.

Engagement is the mechanism where the most empirical evidence can be found. Company engagement with respect to climate issues is a structured dialogue with a company that has the intention of improving the company's sustainable value creation and supporting its transition to low-carbon and net-zero business strategies. Engagement is possible as a shareholder as well as a bondholder and may include submitting shareholder resolutions and voting at AGMs. Additionally, bond investors have influence during due diligence.

Kölbel, Heeb et al. (2019) list five different empirical studies that analyse the extent to which companies comply with shareholder engagement requests. Results from these studies show a success rate between 18–60% depending on the approach taken and data used. Meaningful engagement efforts require significant resources and perseverance from the investor as it can take several years to achieve the intended outcome, depending on the issue at hand. This also highlights the importance that investors set clear objectives, timelines, and escalation tactics as part of their engagement strategies and connect it to their voting practices. Collaborative initiatives have shown progress in recent years resulting in improved climate-related pledges and strategies from targeted companies, many of which have now made commitments to net zero.¹⁰

¹⁰ Collaborative engagement will be undertaken with proper respect of antitrust laws and regulations or applicable regulatory requirements.

Capital allocation strategies support the re-allocation of capital between companies, sectors and asset classes based on certain restrictions and parameters linked to investment goals aligned with climate targets. This can include divestment. **Divestment** is where an investor divests from a company or sector due to its specific characteristics, most often as the company's business model or the whole sector is not aligned with the values or financial targets of the investor. Divestment can be applied to several asset classes but is generally most applicable to listed equities and bonds. Although widely adopted by investors, divestment is sometimes critiqued as an abdication of stewardship responsibilities. Divestment limits the opportunity to impact positively on company behaviours. Critics argue it does not generally lead to measurable outcomes in the real economy, while advocates often argue that divestment strategies can increase the cost of capital, lower the market value of targeted companies, and contribute to reputational risk for companies and sectors with poor ESG practices or unsustainable business models, incentivising companies to change behaviour.

While evidence is limited, Cojoianu et al. (2019) find that cumulative oil and gas divestment pledges (not limited to investor pledges) in a country are negatively related to new capital flows to oil and gas companies. However, the size and likelihood of the change to materialise seems to be strongly dependent on reaching a critical mass of investors applying the same divestment strategy, how easily the action can be offset by other investors and the company's cost to improve their ESG practices—the higher the cost to improve the less likely it is to happen. Lütkehemöller et al. (2020) argue that divestment is more likely to create a larger impact in less liquid private markets and in the corporate lending market.

As such, divestment can be considered as an escalation tactic and a last resort in an engagement strategy where the requested change has not materialised. Furthermore, if adopted, divestment strategies should be evaluated as to their compatibility with anti-trust and other regulatory laws and regulations. If the proceeds are used in such a way that they contribute to a change in the financing cost or liquidity for activities considered to yield positive impacts on the real economy, it could be argued that a divestment strategy can contribute to real world change.¹¹

Sector weighting and best-in-class strategies can take different forms and shapes but normally relate to re-allocating capital within or between sectors based on companies' ESG and climate performance. Understanding a company's performance relative to its peers in the same sector allows an investor to identify the most 'carbon efficient' companies and re-allocate capital from the worst to the best performers. In a broader application, these considerations could be extended to the asset class level and be part of the investor's strategic asset allocation (SAA), subject to their fiduciary duty and investment goals to generate risk adjusted returns.¹²

11 Over 1,200 institutions with USD14 trillion in AUM have joined the Divest/Invest initiative. The Alliance welcomes greater collaboration with Divest/Invest committed institutions. divestinvest.org/

12 Strategic asset allocation is a portfolio strategy whereby the investor sets target allocations for various asset classes and rebalances the portfolio periodically. The target allocations are based on factors such as the investor's risk tolerance, time horizon, and investment objectives.

The likelihood of such strategies contributing to emissions reductions in the real economy remains uncertain as the empirical evidence is limited. The rationale is similar to other capital alignment approaches where the argument is that these 'best-in-class' leaders would enjoy a lower cost of capital and higher market values as they are recognised for their positive contribution to climate targets. The likelihood of these strategies contributing to measurable impacts in the real economy depends on the proportion of investors applying the same strategy (i.e., achieving critical mass) and the cost for the company to implement the necessary reforms to improve their performance.¹³

Investing in climate solutions is required for certain industries to decarbonise; decarbonising existing industries is not enough to limit global warming to 1.5°C. Climate solutions are investments in economic activities that contribute substantially to climate change mitigation. These are solutions that reduce greenhouse gases (GHGs) by avoiding emissions and/or by sequestering carbon dioxide already in the atmosphere, or investments in climate change adaptation that contribute to enhancing adaptive capacity, strengthen resilience and reduce vulnerability to climate change. Investors can also contribute to broader change by collaborating with actors across the entire financial value chain to enhance the supply side of finance into climate solutions, to increase liquidity and lower financing costs across sectors through systemic change.

The impact rationale is that increasing investments into climate solutions could contribute to improving the liquidity and lowering the cost of capital for green activities. Whether this holds in practice depends on several factors. For example, investors are more likely to reduce real economy emissions if they target companies that are already constrained in their growth prospects by external market conditions such as access to financing (Kölbel, Heeb et al., 2019).

It is important to note that investing to foster climate solutions in hard-to-abate sectors may result in increased portfolio emissions through the allocation of capital to carbon intensive industries. As climate solutions are deployed by the investee, emissions should reduce during the investment holding period, but this is likely to cover a multi-year period as the industrial solutions required are lengthy to implement. Should the investor decide to retain these investments, the net increase in portfolio emissions may persist beyond 2025. This illustrates that investment in certain climate solutions may have a positive decarbonisation impact on the planet but slow the rate of investors' portfolio decarbonisation.

Although impressive progress has been made in recent years, aligning complex financial portfolios with scientific scenario requirements and assumptions is a highly challenging task. The limited availability of reliable data is a key issue which provides for asymmetrical information and challenges for investment decision making. The significant increase in climate risk mitigation strategies, regulatory measures and disclosure requirements are all important and contribute to a better understanding of financial stability.

13 In all cases, Alliance members will implement their respective strategies with proper respect of antitrust laws and regulations or applicable regulatory requirements.

Each Alliance member has its own unique characteristics which must be carefully considered. Asset and liability management (ALM) constraints, regulation, market conditions, risk-return appetite and investment objectives all differ between members and regions. This will affect the mechanism and approaches an individual asset owner can deploy.

Significant issues, limitations, and constraints persist, but it is the Alliance's belief that progress is more important than perfection and there is no time to wait. Action is needed now, despite the limitations. As methodologies and data availability improve, the strategies will be refined and adjusted.

Transparent and unique targets best suited to encourage real world emissions reductions

Each Alliance member is unique and may identify specific levers that exist within their respective institutions for accelerating real world decarbonisation. They also differ in investment scope, strategies, internal governance structures, current exposure to certain high-emitting sectors etc.

Despite the firm root in science, scaling down global climate, energy, or economic models to the level of a portfolio or economic sector is riddled with challenges. Therefore, while a science-based recommendation is an appropriate guidepost for the average, globally invested asset owner, the composition, structure, investment risks and opportunities, and return targets of a given asset owner will vary significantly.

This Protocol was constructed to allow Alliance members to employ the combination of approaches that best supports their unique decarbonisation and engagement strategies within their fiduciary duty to meet risk adjusted returns. In this way the Alliance members aim to have 'transparent and unique' targets, suited to individual institutions, whilst also being aggregable and measurable, enabling progress to be tracked. Please see the [Alliance Inaugural Progress Report](#) for all targets issued during the first reporting period.

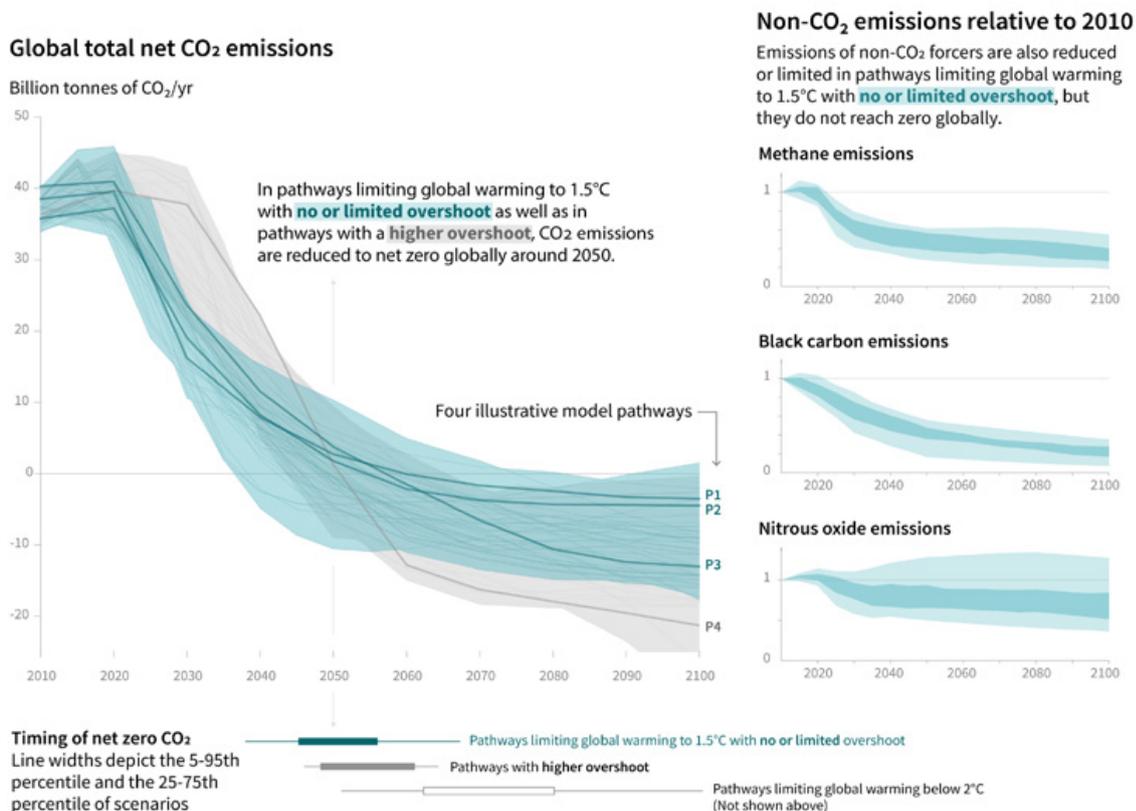
As a result, Alliance members shall set targets based on the criteria outlined in this Protocol and shall explain any necessary deviations.

1. The scientific basis for establishing net-zero targets

Balancing high ambition, science, and the real economy

Diagram II: IPCC Global emissions pathway characteristics

General characteristics of the evolution of anthropogenic net emissions of CO₂, and total emissions of methane, black carbon, and nitrous oxide in model pathways that limit global warming to 1.5°C with no or limited overshoot. Net emissions are defined as anthropogenic emissions reduced by anthropogenic removals. Reductions in net emissions can be achieved through different portfolios of mitigation measures illustrated in Figure SPM.3b.

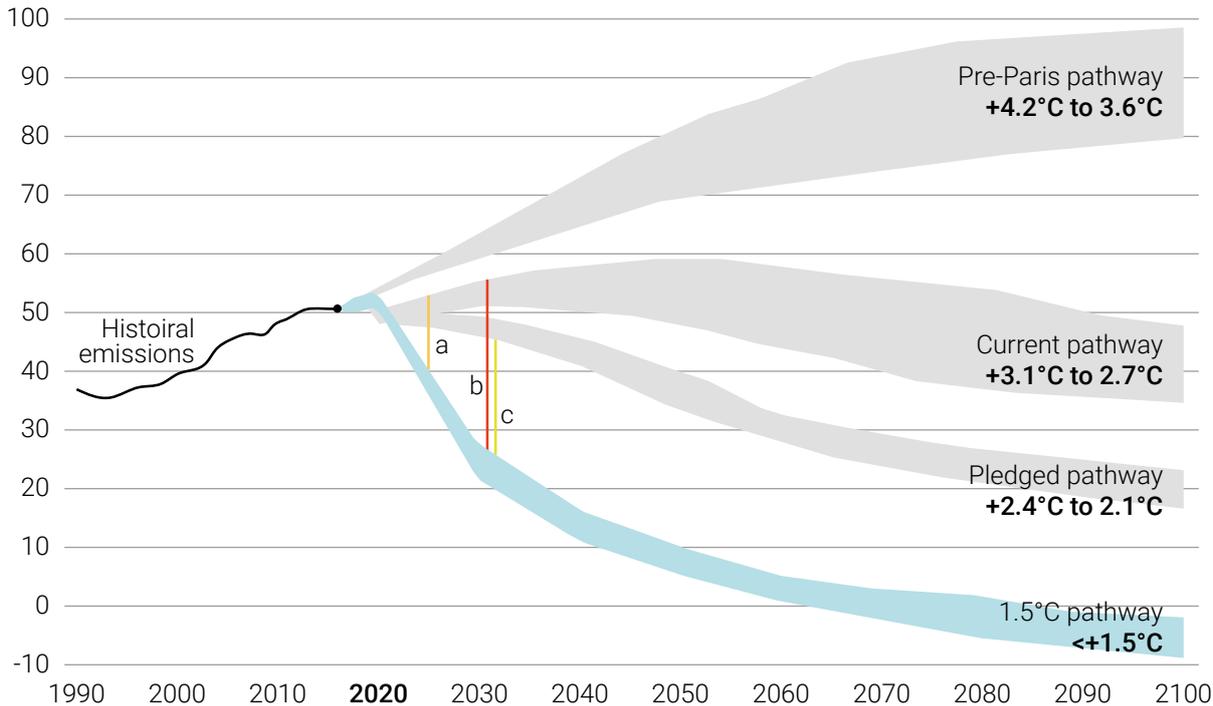


Source: IPCC Special Report on Global Warming of 1.5°C

Members of the Alliance have committed to 1) transitioning their investment portfolios to **net-zero GHG emissions by 2050 consistent with a maximum temperature rise of 1.5°C** above pre-industrial levels, taking into account the best available scientific knowledge including the findings of the IPCC, and 2) achieving this especially through advocating for, and engaging on corporate and industry action, as well as public policies, for a low-carbon transition of economic sectors in line with science and with consideration of associated social impacts. Thus, defining net-zero portfolio pathways will reflect both the requirements of science and the needs of the real economy, while also considering implications for a Just Transition.

In the Inaugural Target Setting Protocol, the Alliance set out intermediate targets on a five-year basis beginning 2020 and ending 2025. It set out the expected range of reductions in GHG emissions for that time period in line the reductions required by IPCC scenarios (-16 to -29%).¹⁴ Each time that an Alliance member adopts its targets following scientific pathways while the global economy does not move as required by science, the gap between the Alliance member's target setting and the real economy widens (see 2025 gap depicted in the chart below by line 'a', and 2030 gap depicted by line 'b'. Line 'c' indicates a gap smaller than 'b' but persistent even in a scenario where governments follow through on pledges).

Diagram III: Illustration of scientific and real economy emissions pathway divergence



Source: Net-Zero Asset Owner Alliance Protocol

14 The range in the inaugural protocol drew from a subset of IPCC 1.5°C SR scenarios, excluding any which overshoot 2°C.

This widening ‘gap’ represents a decoupling of the Alliance member’s (or other net-zero committed investor’s) targets from the real economy pathway. Eventually, if not very soon, this will force members to divest from entire sectors to bring their portfolios in line with the set target range and reduce the flow of capital to those highly capital-intensive sectors which require financing to transition (such as aviation, transport, and materials). This outcome would be highly harmful to the speed of the planetary transition to net zero as the real economy is left behind, hence limiting the real impact on global warming. The Alliance member can only de-couple from the real economy benchmark to a certain extent before its portfolio no longer reflects the sectors, of which, a net-zero economy would be comprised.

Therefore, there is a clear need for governments and policymakers, as well as corporates around the world, to facilitate this transition by moving in line with science and in sync with Alliance members’ intended portfolio trajectories, respectively. Without this collective movement the Alliance may need to tolerate a ‘buffer’ or slight lag behind the scientific pathways, otherwise members may be faced with a decision to exit the majority of the investible universe, which exposes them to other (investment) risks.

Thus, the integration of the commitment via engagement—with corporates, but also policymakers, asset managers, and others—is considered a core component of the Protocol to ensure that not only the Alliance members’ portfolios transition to net zero, but that the actions of Alliance members also have an impact on the real economy. However, there are also sectors of the economy where engagement with corporates themselves or policymakers will ultimately have limited to no impact. As such, an Alliance member’s sole reliance on a corporate engagement strategy might not allow them to achieve net-zero emissions by 2050 due to the limited to no impact of such a strategy, while at the same time exposing their portfolios to high transition risks.

This is particularly important as a critical mass of corporates or countries today have not yet announced concrete and transparent 1.5°C plans and, of those who have, fewer have articulated intermediary targets for 2025. Nevertheless, we expect that today’s efforts by corporate, financial and policy pioneers will turn into a groundswell over the next five years as momentum is building in the real economy. We note that 69 of the systemically important emitters in the CA100+ cohort have set self-described net-zero goals,¹⁵ and that 15 countries have net-zero goals in law¹⁶, which is an indication of the progress possible.

We also expect that by 2025, governments will have further advanced by turning their net-zero pledges into concrete and actionable policies supporting the real-world economy in its transition.¹⁷

15 [CA100+ Progress Report 2020](#)

16 [Net Zero Scorecard | Energy & Climate Intelligence Unit \(eciu.net\)](#)

17 The Alliance notes that jurisdictions considering net-zero legislation account for over 50% of global GDP, there is still a need for binding legislative and/or regulatory targets to ensure progress. Alliance welcomes further government action in this respect. [eciu.net/analysis/briefings/net-zero/net-zero-the-scorecard](#)

Thus, the 2025 interim target must be ambitious enough to signal an Alliance member's expectations while taking into account that the real economy is only just beginning its net-zero transition.

Furthermore, asset owners are not equal in terms of business mix, regulatory obligations, investment goals and management approaches. Therefore, a one-size-fits-all approach is not constructive. Alliance members have:

1. Different starting points in terms of portfolio carbon emissions;
2. Diverse liability constraints;
3. Diverse sector allocations which may not reflect the global investment universe and may be geographically concentrated;
4. Very different asset class allocations with pension funds at one end seeking diversification and balance across all asset classes, while insurance companies, which have a different business model, concentrated in fixed income;
5. Different investment horizons and portfolio rotation cycles—constraining the ability to keep steady portfolio holdings;
6. Different levels of new business and growth;
7. Varying investment approaches: active management versus buy and hold strategies, high conviction versus index investments, direct ownership versus fund investments;
8. Varying objectives: including that some investors may invest in the decarbonisation of hard-to-abate sectors while others may prefer to avoid such sectors; and
9. Diverse operational footprints and hence differences in geographical concentrations in their portfolios, as the Paris Agreement allows different country decarbonisation paths, this will lead to differences in pace of the decarbonisation of economies and thus portfolios.

Thus, in the short-term, some Alliance members may choose lower range reduction targets (following an 's' shaped curve, rather than a linear pathway to net zero) in order to support the transition in the real economy. Such Alliance members would stay invested or seek to invest in high emitting companies with the explicit intention of financing their transition. Through engagement or active ownership, the Alliance member shall ensure that these companies set out ambitious decarbonisation goals aligned with the relevant sector pathways coupled with robust transition plans. Alliance members should monitor their progress in a transparent fashion.

Proposed reduction range in line with science

The Alliance Commitment refers to “net-zero GHG emissions by 2050 consistent with a maximum temperature rise of 1.5°C above pre-industrial temperatures, taking into account the best available scientific knowledge including the findings of the IPCC.” To this end, we heavily consulted several academic institutions on the scenarios and conclusions of the IPCC Special Report on Global Warming of 1.5°C to inform the recommended emissions reduction range.¹⁸

Recommended decarbonisation range

The Alliance assessed IPCC SR1.5°C no/low overshoot pathways to inform individual members in their target setting approach for portfolio emissions reductions. To limit global reliance on atmospheric carbon removal, **it found absolute emissions reductions for the period 2020 to 2025 should range between -22% to -32% (as outlined in the criteria in the Annex).**

The Alliance also found that the overall absolute emissions reductions **for the period 2020 to 2030 should range between -49% to -65% or beyond**, following the same approach as outlined in the criteria in the Annex.

The underlying, academic-reviewed assumptions are found in the Annex.

The Alliance sub-portfolio ambition

The members shall be transparent as to the nature of the targets they choose (absolute or intensity or a combination of both) and how these targets relate to the pathways mentioned above (including assumptions on CDR/BECCS).

The best available proxy—as described above—is to take guidance from global pathways for the entire economy. This may suit certain Alliance members but may also not fit with the constraints and objectives of others. As part of the Alliance aspiration to further advance the Protocol, Alliance members shall explain why average or general targets do not fit their overall investment approach and may set specific targets better suited to their investable universe and circumstances. For instance, specific targets may be driven by the fact that some members have higher or lower carbon intensity per their respective investment strategy or may opt to invest in the decarbonisation of hard-to-abate sectors.

In all cases, Alliance members should apply pragmatic, science-based principles to their selection, explain their reasoning for how net zero can realistically be achieved without large temperature overshoot or unrealistic assumptions on carbon removal.

¹⁸ IPCC (2018) ‘Global Warming of 1.5°C: An IPCC Special Report on the impacts of global warming of 1.5°C above pre-industrial levels and related global greenhouse gas emission pathways, in the context of strengthening the global response to the threat of climate change, sustainable development, and efforts to eradicate poverty.’ [ipcc.ch/2018/10/08/summary-for-policymakers-of-ipcc-special-report-on-global-warming-of-1-5c-approved-by-governments/](https://www.ipcc.ch/2018/10/08/summary-for-policymakers-of-ipcc-special-report-on-global-warming-of-1-5c-approved-by-governments/).

The Alliance further recognizes that it intends to undertake what is realistically within its control to catalyse emissions reductions. However, the rate of technological or policy change cannot be confirmed. It is noted that targets set considering the no and low overshoot scenarios above may not be attainable with an engagement-only approach without appropriate related government policy and corporate actions.

Sector pathways

The Alliance will review for inclusion of credible, scientifically derived, net-zero sector pathways wherever available. As discussed in Chapter 5 'sector decarbonisation pathways' are a key tool in guiding the global economy towards net-zero emissions. These pathways can account for the different rates at which a given sector can decarbonise, and anchor this in their existing global emissions budget and real-world decarbonisation.

The Alliance promotes the use of sector specific pathways in setting sector targets. Chapter 5 outlines this in more detail, while the Annex compares the One Earth Climate Model and the International Energy Agency (IEA) net-zero pathways.

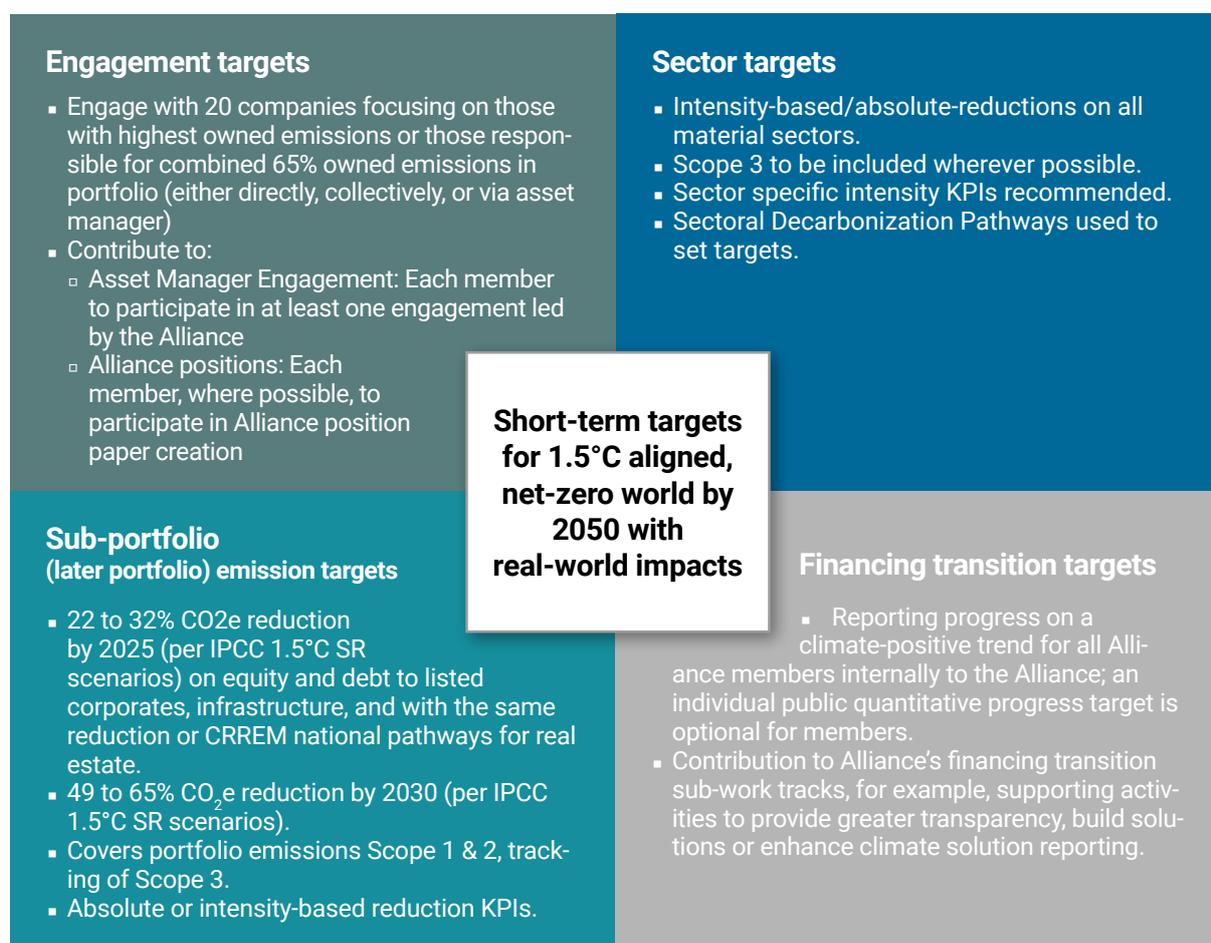
2. Scope of the Protocol

Four-part target setting structure to contribute to real world GHG emissions reductions most effectively

Reducing GHG emissions and having real world impact in a global, diversified investment portfolio is a complex challenge—no simple solution exists. The members of the Alliance MRV track [reviewed](#) many known and available methodologies for target setting. While several approaches exist, no single stand-alone methodology was determined to be suitable to drive GHG emissions reductions in the real economy on a long-term basis. Furthermore, it is generally thought that a multi-faceted approach is likely to be more successful in addressing a challenge as complex as the net-zero transition.

Given this background, the Alliance decided on a 4-part approach to target setting.

Diagram IV: Alliance four-part target setting approach



Source: Net-Zero Asset Owner Alliance Protocol

The implementation of each part will have a particular impact on investee companies and emissions. By combining the four parts, an asset owner can have the greatest impact and contribute to the desired transition towards a net-zero economy. **Hence, Alliance members should set targets on all four parts. The minimum expectation is that Alliance members shall set targets on three (engagement is a mandatory target type).**

Assets covered by the Alliance Commitment

In a Guidance document issued September 2019, Alliance members detailed that the Alliance Commitment should cover “all assets under management (and on balance sheet) managed by the asset owner while exercising asset allocation in fiduciary duty”, this includes:

- inhouse managed money;
- third party managed money (e.g., ETFs, mutual funds, active/passive);
- shareholder money; and
- policyholder money (in cases where the asset allocation is carried out by the asset owner).

But excludes:

- money managed by group owned asset managers for third party clients. This is not considered asset owner money as it does not appear on the balance sheet of the asset owner. However, the Alliance recommends that members engage third party investment partners in discussions on net-zero ambitions and associated target setting.¹⁹

Asset classes covered in the current Protocol

In the Inaugural Protocol, the following asset classes were covered:

- listed equity;
- publicly traded corporate bonds²⁰; and
- real estate holdings.

In this second edition, the following asset classes have been added:

- infrastructure investments (equity and debt); and
- Sovereign debt for emission accounting, but not yet for target setting.²¹

The Protocol requires members to cover certain asset classes wherever methodologies and data are available. Please see the timetable below. Asset class coverage will grow over time. Each Alliance member may define a larger scope for coverage if the member feels comfortable to set targets on this wider scope.

19 Alliance members may include unit linked products when they retain full investment discretion for these products.

20 Private loans to listed companies can be included using existing methodologies.

21 The Alliance is working with PCAF on a shared sovereign debt accounting approach. As well as with partners on an assessment methodology for sovereigns as a public good through the ASCOR project. which will be the basis of target setting, intended to be developed with SBTi. Partners in the ASCOR project include the Coalition for Environmentally Responsible Economies (Ceres), the Institutional Investors Group on Climate Change (IIGCC), the Principles for Responsible Investment (PRI), the Transition Pathway Initiative (TPI) and Chronos Sustainability

Table I: Asset class inclusion timeline

Asset Class ²²	Inclusion in Protocol
Listed equity	Protocol V1, issued 2021
Publicly traded corporate debt	Protocol V1, issued 2021
Real estate (equity)	Protocol V1, issued 2021
Infrastructure incl. renewables (equity & debt)	Protocol V2, issued 2022
Private loans to listed companies ²³	Protocol V2, issued 2022
Sovereign debt	<ul style="list-style-type: none"> ▪ Accounting approach included in Protocol V2, issued 2022 ▪ Targets envisioned Protocol V3, issued 2023²⁴
Mortgages	Envisioned Protocol V3, issued 2023
Private equity	Envisioned Protocol V3, issued 2023
Sub-sovereigns, agencies, & supra-national debt	As methodologies & data availability develop ²⁵
Unlisted (private) corporate debt	As methodologies & data availability develop
Covered bonds	As methodologies & data availability develop
Other	As methodologies & data availability develop

Source: Net-Zero Asset Owner Alliance Protocol

The long-term target is to develop methodologies for target setting in most asset classes listed in the Table above. Sub-portfolio targets will be referred to as simply ‘portfolio targets’ when available methodologies and data cover >85% of the asset classes. While the methodology for listed/publicly traded versus unlisted (private) equity and corporate debt should be consistent, the Alliance decided to start with publicly traded companies because data is more readily available than for unlisted assets. Members should engage on carbon emissions data disclosure with their investees and cover unlisted assets in their short-term targets wherever and as soon as possible. Data for the real estate sector are also considered robust enough to enable target setting, although comprehensive efforts will be required by members to gather relevant tenant-owned emissions data. Asset class targets should be submitted in the next reporting cycle.

22 Please refer to the comprehensive review of alignment methodologies catalogued and contrasted by Institut Louis Bachelier in The Alignment Cookbook—A Technical Review of Methodologies Assessing a Portfolio’s Alignment with Low-carbon Trajectories (2020)

23 Unless it is considered in the private debt asset class

24 The Alliance also seeks to align and build on the efforts of the IIGCC PAII Framework which discusses Sovereigns.

25 PACTA methodologies have been presented as potentially suitable for this asset class and will be explored in next phase for applicability.

Emissions scope covered by the Alliance Commitment

The Protocol's focus is on portfolio emissions (an asset owner's Scope 3) since these represent the vast majority of an asset owner's emissions (95-97%²⁶). Alliance members shall therefore set targets on their Scope 3 emissions. However, the Alliance members shall also commit to net zero (by 2050) with respect to their own operational carbon footprint (Scope 1 and 2), assessing their carbon footprint in line with the [GHG Protocol](#) and developing short- and mid-term targets as intermediate steps towards their net-zero target.²⁷

Emission scope coverage of the underlying asset

Portfolio companies also have their own Scope 1, 2, and 3 emissions targets. Alliance members will review the targets of the companies in their portfolio and shall set targets on their Scope 1 and 2 emissions. Alliance members should also set targets on the Scope 3 emissions of the portfolio company as soon as possible, each individual Alliance member is encouraged to move as early as it deems feasible. At the portfolio level, the Alliance requirement is that members should track, but not yet set targets on Scope 3 emissions until data becomes more reliable.²⁸

Corporate data on Scope 3 emissions is somewhat unreliable and several data providers estimate Scope 3 emissions with a wide range of outcomes.²⁹ The estimation methods and reported data can differ significantly.

GHG coverage (CO₂e)

The Alliance members commit to net-zero GHG emissions by 2050. CDP and similar providers typically produce data for underlying holdings in CO₂ equivalent (CO₂e), which provides a relative measure of the impacts of other GHGs (e.g., Methane 'CH₄', Nitrogen Oxides 'NO_x') versus the climate impact of CO₂. Therefore, Alliance members should report on a CO₂ basis—as provided by CDP or similar data providers. Wherever disaggregation is available for non-CO₂ GHGs, Alliance members are encouraged to report on a disaggregated basis.

Base and target year

The Alliance Commitment requires intermediate targets to be set every five years in line with the Paris Agreement Article 4.9 cycle. Article 4.9 of the Paris Agreement specifies a five-year cycle of 2025, 2030, 2035 etc. For Alliance members joining between these dates, they shall establish targets which align with this cycle. The Alliance publishes five-year targets, while individual members may publish shorter or slightly longer (up to seven

26 Lütkehermöller et al. (2020) Unpacking the finance sector's investment commitments. First analysis of financial sector's investment related pledges on global GHG emissions: newclimate.org/wp-content/uploads/2020/09/NewClimate_Unpacking_Finance_Sector_Sept20.pdf

27 Those AOs wishing to seek SBTi validation should follow the SBTi methodology for their operational Scope 1 and 2 GHG emissions.

28 Comparisons of Scope 3 data reported by similar companies indicate the largest degree of divergence in reported emissions. See Busch, T., Johnson, M., Pioch, T. and Kopp, M. (2018) 'Consistency of Corporate Carbon Emission Data' University of Hamburg: ec.europa.eu/jrc/sites/jrcsh/files/paper_timo_busch.pdf.

29 Busch, T., Johnson, M., Pioch, T. and Kopp, M. (2018) 'Consistency of Corporate Carbon Emission Data' University of Hamburg: ec.europa.eu/jrc/sites/jrcsh/files/paper_timo_busch.pdf

years when the next reporting cycle ends within two years). The Alliance Commitment requires that individual members publish full details of their progress against their target ahead of COP30 in 2025. Furthermore, in anticipation of more asset class methodologies being finalised as well as members joining in the coming years, the Table below outlines potential switch-points of target and related base years. Members should therefore consider the following target dates and underlying data when setting their targets:

Table II: Timetable to Alliance member target setting

Joining year/ year asset class method is made public	Year targets need to be set (within 12 months of joining, unless end of reporting cycle is within 3 months)	Recom- mended base year data	Target year data	Recommended reduction range
2019	2021 ³⁰	FY19	FY24	As per Proto- col V1
2020	2021	FY19 or 20	FY24	
2021 ³¹	2022	FY20 or 21	FY24	
2022	2023	FY21 or 22	FY24 or FY29	As per Proto- col V2
2023	2024	FY22 or 23	FY24 or FY29	
2024	2025	FY23 or 24	FY29	See footnote ³²
2025	2026	FY24 or 25	FY29	
2026	2027	FY25 or 26	FY29	
2027	2028	FY26 or 27	FY 29/34	

Source: Net-Zero Asset Owner Alliance Protocol

Adjusting for pre-existing targets (and reductions achieved)

For Alliance members with pre-existing, public targets it is possible to translate their base year to an earlier one if scientific pathways were considered. A number of Alliance members already have public quantitative, absolute, or intensity-based emissions reduction targets that refer to a different base year to reflect the emissions reductions achieved before 2019 in their targets. Also, members joining in subsequent years are likely to prefer to use more current base years than 2019.

30 The Inaugural Target-Setting Protocol of the Alliance was released in January 2021.

31 Members joining very late in 2021 might also set already targets towards 2029.

32 The Alliance will review climate science and the resulting suggested emissions reduction ranges with every revision of the Target-Setting Protocol. Therefore, we do not yet give ranges for base years beyond 2023, especially as the IPCC’s Assessment Report 6 scenarios will be released in the meantime. The main reason for change from TSPv1 to TSPv2 was the removal of any high overshoot scenario from the set of eligible scenarios.

For those using base years later than 2020 for the target year 2025, members may deduct 5.5%pts to 7%pts from the emissions reduction ambition for their first short-term targets, provided that they consider the overall ambition towards 2030. However, it should be noted that the Alliance acknowledges that reductions of 5.5%pts to 7%pts per annum is not in line with actual global emission trends in years prior to the pandemic, and the real economy needs to make faster progress. As per the example:

A member which would like to align with a 25% reduction target for the period 2020 to 2025, but which joins in 2020 and therefore sets this target in 2021, would take 6%pts from the range so $25\% - 6\% = 19\%$ target for 2021 to 2025.

Finally, if setting an earlier base year, decarbonisation progress made before joining the Alliance must have been made public via a set target or evidenced via public reporting. To maintain consistency with the Alliance reporting cycle, public targets issued more than three years prior (i.e., before 2017) should not be considered.

For example, if a member started their decarbonisation journey in 2018 and wished to apply their early decarbonisation efforts towards the target year 2025 (as if targeting alignment with a 25% reduction pathway for 2020 to 2025), they would add two annual percentage point increases for $25\% + 6\%$ (2019) + 6% (2018) = 37% target for 2018 to 2025.

3. Sub-portfolio targets

Members' sub-portfolio targets shall strive for carbon reductions in the range outlined above of -22% to -32% by 2025, covering listed equities, publicly traded corporate bonds, infrastructure, and real estate asset classes, independently or in aggregate, for Scopes 1 and 2 of the underlying holdings, while tracking Scope 3.³³ In any case, where these targets are not established, the Alliance member shall provide explanation against their commitment to the net-zero goal for the real economy by 2050.

Sub-portfolio targets represent the Alliance member's direct commitment to decarbonising their portfolios. Together with the sector targets, the sub-portfolio targets are the most significant quantitative component of the Alliance's target setting scheme and reporting rubric. Sub-portfolio targets aim to guide a decrease in the underlying emissions profile for a pool of investee companies. They enable an aggregate ambition and monitor progress, notably achieved through engagement and financing activities, against an asset class desired outcome.

Alliance members should be transparent about the scenarios they use to inform their targets.

In cases where Alliance members hold or buy assets that are emission intense or in hard-to-abate sectors with a well-defined strategy to decarbonise these assets, sub-portfolio targets may be adjusted to reflect these additional exposures with respect to the fact that the reduction of industrial emissions of this nature may be slower than the trajectories used to set portfolio-wide targets (which are sector agnostic planetary averages).

The carbon emissions³⁴ included in the first iteration of the Alliance portfolio target are the Scope 1 and Scope 2 of the portfolio companies (as the consistency of Scope 3 data is not robust enough to be used by members of the Alliance for target setting).³⁵ This can be revised backwards if the consistency of Scope 3 emissions improves in the coming years.

Finally, purchase of carbon credits by asset owners or investee companies shall not count towards the target achievement, except for qualified removals purchased by investee companies³⁶ (as per the Alliance position on this topic, please see [The Net in Net Zero: The role of negative emissions in achieving climate alignment for asset owners](#)).

33 Members may also use the same approach to cover private loans to listed companies where relevant.

34 By carbon emissions, it is implied throughout this document that this notion covers carbon and the equivalence of other GHG converted to CO₂.

35 However, Alliance members who believe they can set targets on Scope 3 emissions are encouraged to do so.

36 This is also in line with the SBTi Finance [Foundations-for-Science-Based-Net-Zero-Target-Setting-in-the-Financial-Sector.pdf](#) (sciencebasedtargets.org)

Debt or equity investments in listed corporations

Key metrics

Alliance members shall set targets on the basis of absolute carbon emissions or emission intensity. Alliance members should report both absolute and intensity based KPIs.

Definition: A listed corporation refers to any corporation whose shares are listed on a stock exchange. Debt or equity investments are all forms of loans, bonds or shares which provide financing to these companies.

Both absolute and intensity metrics are useful for investors to measure and reduce their portfolio emissions for the following reasons:

- Carbon intensity can be a useful tool to inform capital allocation decisions, in the construction of reduced carbon portfolios and in measuring progress on carbon emission targets by portfolio companies. Therefore, carbon intensity can play a key role in setting the stage for achieving absolute emissions reductions.
- In a given sector, absolute corporate emissions are highly dependent on the size of the corporate. Using a carbon intensity measure allows an investor to compare companies within an industry and select the most carbon efficient player within that industry, independent of the size of a company.
- Alliance members may also expect significant growth in their portfolios as a result of shifting capital, good returns, economic growth or simply because they manage products or plans that are in an accretive phase (contributions exceed withdrawals). The opposite may be true for other members. These variations of asset under management will highly influence absolute portfolio emissions and thus not reflect real decarbonisation trends. Here, an intensity metric helps to better mirror the decarbonisation efforts on the marginal dollar.

Notwithstanding the Alliance's overarching (absolute) net-zero ambition for 2050, we consider that intensity metrics and intensity-based targets can play an important role in the implementation and management of a portfolio's carbon reduction performance by asset owners (see table below). Alliance members may therefore set absolute or intensity-based targets, particularly in the early years.

Members should report for both absolute and intensity-based metrics, irrespective of the metric used to set the target. If an intensity-based metric is used then members should understand, on a disaggregated basis, the portion of the intensity reduction originating from asset purchases and disposals, the portion originating from organic emissions reductions generated by assets in the portfolio and the portion that originates from changes in financial metrics. If an intensity-based metric is reported, it is recommended that either Revenue or EV/EVIC is used.

Intensity-based targets need to counterbalance economic (GDP) growth to lead long-term to the same absolute emissions reductions as absolute emission-based targets. When calibrating targets members should be aware of the growth assumption inherent in climate models for the regions where their portfolio is invested.

Using market cap is common for equity portfolios but as most members of the Alliance are also invested in corporate bonds, we recommend using enterprise value (or EVIC) to allocate emissions to the relevant parts of the balance sheet (equity/debt).³⁷

In general, Alliance members should ensure all calculations (nominators and denominators) are closely aligned e.g., taking nominal value for bonds in an EV-based calculation, as the outstanding debt component in the EV of a company is also based on nominal value. Moreover, less volatile measures will lead to more stable results.

EV/ EVIC is closely linked to the financing sources of companies, hence directly linked to the role of investors. This logic can also be applied to real assets like real estate and infrastructure, thus allowing a more uniform approach to the total portfolio. On the other hand, revenues are more closely linked to the production output of companies and thus to the source of emissions. In our long-term effort to expand this Protocol to all asset classes we see a slight preference for EV/EVIC-based intensity metrics.

It is not the ambition of the Alliance to create a market standard—this will be done by standard setters and regulators in the next years (which might even lead to different market standards per region (in the United States of America, European Union etc.) in the beginning).

Table III: Comparison of absolute and intensity carbon metrics

Total carbon emissions (absolute metrics)	Carbon intensity (intensity metrics)
<p>This metric measures the Total Owned Carbon Emissions associated with the underlying investments of a portfolio. The Scope 1, Scope 2 and potentially Scope 3 carbon emissions are attributed based on the equity or debt ownership relative to the Enterprise Value or EVIC and for equities, Market Cap.³⁸</p>	<p>This metric represents the volume of emissions attributed to an Alliance member in relation to a specific financial metric. The carbon intensity can be expressed with different denominators as shown below.</p>
<p>Pros:</p> <ul style="list-style-type: none"> ■ Easily understandable and well known across the investment industry. 	<p>Pros:</p> <ul style="list-style-type: none"> ■ As emissions data coverage improves and new asset classes are added, an intensity metric is more stable and better accommodates baseline adjustment

37 This is also in line with the EU Benchmark Regulation linked to the EU Action Plan on Sustainable Finance and the European Banking Authority’s Regulatory Technical Standards (RTS) consultation.

38 The Alliance notes that market cap would not be a reasonable metric for calculating emissions for fixed

<ul style="list-style-type: none"> ▪ The metric can be used on a number of asset classes, including real estate, by using the asset value as the denominator. ▪ Linked to the total absolute global carbon emission budget available in a 1.5°C scenario. 	<ul style="list-style-type: none"> ▪ The metric can be used on a number of asset classes, including real estate assets. If a member selects a combined target, this metric can still be created by using the asset value or revenues as the denominator. ▪ This metric can be used to compare the emission intensity level of different asset classes, portfolios or even members. It is also a useful metric to select, within the same sectors, the best players to rebalance a portfolio towards a low-carbon tilt. ▪ A quantitative analysis on variation factors can be performed on this metric.
<p>Cons:³⁹</p> <ul style="list-style-type: none"> ▪ Portfolio growth can outpace the reduction in carbon emissions. Adaptations for M&A under unusual portfolio growth rates are necessary. ▪ Difficult to compare portfolios, to each other or to a benchmark 	<p>Cons:⁴⁰</p> <ul style="list-style-type: none"> ▪ The reduction/increase in emissions can be driven by volatility in the economic metric selected as the denominator. ▪ Total emissions can still increase even if the carbon intensity measure used decreases. ▪ Revenues in high emitting sectors are often directly linked to volatile commodity prices (e.g., oil, gas, and coal).
<p>Formula: Weighted by EV</p>	<p>Formula: Carbon Intensity by EV</p>
$\sum_{i=1}^n \left(\frac{I_i}{EV_i} \times C_i \right)$	$\frac{\sum_{i=1}^n \left(\frac{C_i}{EV_i} \times I_i \right)}{\sum_{i=1}^n I_i}$
<p>Weighted by Cap:</p>	<p>Carbon Intensity by Revenues</p>
$\sum_{i=1}^n \left(\frac{I_i}{M_i} \times C_i \right)$	$\frac{\sum_{i=1}^n \left(\frac{C_i}{R_i} \times I_i \right)}{\sum_{i=1}^n I_i}$
<p>I: Current value of investment in issuer i EV: Enterprise Value of issuer i M: Market Capitalisation of issuer i C: Carbon emissions of issuer i Other initiatives which are utilising similar metrics:⁴¹ TCFD, PCAF</p>	<p>I: Current value of investment in issuer i EV: Enterprise Value of issuer i R: Annual revenues of issuer i C: Carbon emissions of issuer i Other initiatives which are utilising similar metrics: European Union Financial Supervisory Authorities (EBA, ESMA, EIOPA, PCAF and TCFD).</p>

Source: Net-Zero Asset Owner Alliance Protocol

39 The Alliance recommends the use of debt's nominal value.

40 We recommend the use of debt's nominal value for the value of a fixed income investment

41 tcfddhub.org/Downloads/pdfs/E09%20-%20Carbon%20footprinting%20-%20metrics.pdf

Adjustments for growth for absolute emission targets

Where a member sets targets on absolute emissions an adjustment for extensive variation in portfolio size (either organic or inorganic) may be necessary.

For instance:

- In case portfolios grow significantly faster or slower than average GDP over time, a target adjustment could be made to account for this change. The climate models used by Alliance members to define their CO₂e reduction targets usually work with assumed GDP growth based on World Bank data suggesting a 3% global average growth rate (see Table to the right).
- In the case where portfolios are structurally subject to significant variations in size, members may express footprint targets per million (volume) invested, thereby simultaneously encompassing inflows in their target setting scope, while neutralising the bias that would be caused by capital flows.

Region	Growth rate
OECD North America	2.1%
OECD Pacific	1.3%
OECD Europe	1.5%
Eastern Europe/Eurasia	2.5%
Middle East	3.4%
Latin America	2.8%
China	4.2%
Africa	4.4%
India	5.6%
Non-OECD Asia	3.6%
Global	3.2%

Adjustments based on Merger and Acquisitions (M&A) activities

	Company A	Company B	Company A+B
Base date	31.12.2019	30.06.2021	
Target date	31.12.2024	31.12.2024	31.12.2024
Share in target timeline	100%	70%	
Reduction	-25%	-18%	
CO₂ emissions @base date	100	35	
Target CO₂ emissions	75	28.9	103.9

M&A transactions may require an adjustment to sub-portfolio targets. For the adjustment, a linear reduction between base year and target year is assumed. The emissions of the acquired (or sold) portfolio are measured at transaction time and the adjusted portfolio will then have a new target. It is the responsibility of each Alliance member to decide whether an M&A transaction is large enough to justify a new target and to properly document the adjustment when a new target is set.

For example, Company A sets targets with base date 31.12.2019 and absolute reduction of -25% in five years (target date: 31.12.2024), reducing emissions from the 100-pt baseline figure to 75pts. Company A acquires Company B on 30.06.2021 with emissions of 35pts at that date. As the remaining time until the target date (31.12.2024) is 70% of the initial five-year period, Company B needs to reduce emissions by 18% from 30.06.2021 to 31.12.2024 and the new joint emissions target is 103.9pts. See also the Table above detailing the calculation adjustment.

Matching portfolio information with emission data

The following considerations might be useful to Alliance members when selecting their emission data matching and reporting principles:

Option 1

Matching reporting year financial data (e.g., 2020) with corresponding CO₂e data (e.g., 2020, as available in the second half of 2021):

- Pro:
 - Data reflects an adequate snapshot of financed emissions at a certain point in time.
- Con:
 - Portfolio decisions need to be made before data becomes available.
 - Most data providers collect data from CDP, which only releases data during Q3. Accordingly, data tends to only become available for >80% of a portfolio in Q4.
 - This causes reporting lags of at least one year and requires additional ex-post data matching for the purpose of reporting.

Option 2

Matching reporting year financial data (e.g., 2020) with most recent CO₂e data (e.g., most recent at year-end 2020):

- Pro:
 - Latest available data, although backward looking, can be fed into portfolio management systems as soon as it becomes available.
 - Portfolio decisions are made on latest available data.
 - Data systems can be run in synch with standard data processes such as system freezes, audit schedules, etc.
 - Reporting can be adjusted to annual/sustainability report cycles without artificial time lags.
 - Some regulation (such as upcoming EU SFDR or French Art 173) requires up-to-date reporting which is only possible by matching year-end financial data with most-recent emission data.

- Con:
 - Financed emissions systematically combine current portfolio holdings with reported emissions that are 1-2 years old by the time they become available, creating backward looking financed emissions.

Alliance members should choose a reporting principle before calculating the target baseline and refer to the methodology chosen in target reporting. Additionally, the approach should be applied in subsequent time periods.

Communicating target adjustments

While far less applicable for intensity-based targets, all adjustments made to targets and methodologies shall be communicated in a transparent way, explaining the reasons and the methods in detail.

Additional alignment metrics under review

Temperature alignment methods

The Alliance sees large potential in temperature alignment methods to incorporate systematically forward-looking data. As these methodologies are still evolving and there is no recognised global standard, it is still too early to set temperature-related targets. As these methodologies evolve, the Alliance will consider when it may become appropriate to utilise these approaches to guide engagement dialogue with companies as well as provide an indication of portfolio alignment. Until then, the Alliance will rely, when helpful, on temperature scoring methodologies to identify portfolio leaders and laggards.⁴²

Portfolio company alignment methods

The Alliance recognises the value of the important work of many initiatives, including the Science Based Targets initiative, Transition Pathway Initiative, and CA100+'s corporate benchmark. The Alliance looks forward to collaborating further as the Protocol, and these initiatives, develop. For general target setting the number of companies covered by these initiatives is still too low.

⁴² Please also refer to the Measuring Portfolio Alignment Report for further discussion; tcfhub.org/wp-content/uploads/2020/10/PAT-Report-20201109-Final.pdf

Real estate

Target Setting Protocol summary

Term	Summary
Asset Class	Alliance members shall set emissions reductions targets on “fully and jointly owned” real estate portfolios.
Sectors	Commercial and residential buildings.
Scope	Targets shall be set on Scope 1 and 2, and should where possible, include tenant related Scope 3 emissions from heating and electricity.
Target	Targets shall include both landlord controlled and tenant-controlled areas in line with the overall sub-portfolio target or Carbon Risk Real Estate Monitor (CRREM) 1.5°C national pathways. The output shall be an emission target (per gross floor area) at the portfolio level. The recommended metrics is total financed CO ₂ e/annum. An intensity metric, expressed as kgCO ₂ e/m ² /annum or kgCO ₂ e/ft ² / annum, may also be used.
Approach	Alliance members shall use a science-based scenario (the use of CRREM ⁴³ 1.5°C pathways is therefore recommended).

Key definitions

- **Residential buildings:** refers to private dwellings such as apartments and houses.
- **Commercial buildings:** includes properties related to trade, finance, retail, public administration, health, food and lodging, education, and commercial services.
- **Fully owned:** includes all assets that are held 100% in the portfolio during the baseline year (2019).⁴⁴
- **Joint venture:** when an asset or assets are part of a joint venture, joint operation or are in joint ownership, participants should report on these assets. As a guiding principle, joint venture partners with a stake of 25% or higher are considered to have significant influence over operational initiatives and can therefore drive implementation of performance improvements.
- **Operational control:** is defined by the asset owner having the ability to introduce and implement operating policies, health, and safety policies, and/or environmental policies. (This recognises the actual capacity of the asset owner to advance decisions which can lead to a reduction in the level of CO₂e emissions.)
- **Tenant controlled:** where a single tenant has the greatest authority to introduce and implement operating policies and environmental policies, the tenant should be assumed to have operational control.⁴⁵

43 The Carbon Risk Real Estate Monitor (CRREM) is a European Horizon 2020 research and innovation project. The objective of CRREM is to accelerate the decarbonisation and climate change resilience of the EU real estate sector by providing appropriate science-based carbon reduction pathways at property, portfolio and company level. See: crrem.eu.

44 Final guidance is being elaborated but the working definition would include assets held 200 of 365 days.

45 For example, in the case of a full repairing and insuring (FRI) lease in England and Wales, the tenant has operational control meaning that the area is tenant controlled.

- **Scope 1:** for the purposes of this asset class refers to direct emissions from onsite fuel combustion for space heating, water heating, cooking purposes in the full building.
- **Scope 2:** for the purposes of this asset class refers to indirect emissions from the generation of purchased energy (electricity, steam, heat, and cooling) for space heating, water heating, space cooling, lighting, cooking, appliances and miscellaneous
- **Scope 3:** for the purposes of this asset class refers to indirect, tenant-related emissions from electricity and heating (embodied carbon, downstream, upstream not included).

Setting a real estate target

As a science-based scenario is required, the use of CRREM 1.5°C pathways is recommended.⁴⁶ As such, an Alliance member shall choose from one of the following options:

1. A specific target for the real estate portfolio:
 - using CRREM 1.5°C pathways; targets derived from the CRREM model allow asset owners to reflect the actual makeup of their real estate portfolios with respect to geographic location and building type (such as residential and commercial).
 - that is independent from the CRREM model but equally recommended as long as included in the range defined by the Alliance for the sub-portfolio target (i.e., a reduction in the range of -22% to -32% by 2025).
2. An aggregated target which combines the different asset classes (listed equity, corporate bonds, and real estate), that can be expressed in the form of:
 - an absolute reduction target (metric suggested is CO₂e/annum, also see below); or
 - an intensity-based reduction target (metric suggested is tCO₂e/asset value, also see below).

The Alliance acknowledges that there is more than one way to measure intensity, and each metric has a different purpose. For intensity targets specifically set for the real estate portfolio, Alliance members should use kgCO₂e/m²/annum. However, if Alliance members wish to include the real estate portfolio in a combined target with other asset classes, the tCO₂e/asset value may also be used.

The use of CRREM pathways

CRREM offers the possibility to evaluate the progress of a portfolio's carbon reduction performance against reduction targets in line with the Paris Agreement (i.e., limiting global warming to 2°C/1.5°C above pre-industrial levels). CRREM offers several inputs to define a specific target for a real estate portfolio and allows for global and/or country-specific decarbonisation rates.

It is possible to set geographic specific targets: A member with 50% of the buildings in country A and 50% of the buildings in country B would have an aggregated target based on a 50% weight for the national pathway target for country A and country B, respectively. Additional adjustments could be made in similar ways for specific building types.

⁴⁶ A different pathway provider can be used by the Alliance member as long as it is aligned with a credible net-zero by 2050 model or scenario which conforms to a 1.5°C carbon budget. The Alliance is not aware of any alternatives to CRREM at this time.

Individual member targets defined according to this approach can differ significantly as national decarbonisation targets differ significantly. As an example, the 2020–2025 emissions reduction requirement in CRREM 1.5°C global pathway is 28% but national reductions vary between 15%–28% (residential) and 14%–32% (commercial).

Limitations are noted in the CRREM pathways as its current version coverage is limited to the European Union (EU) and a select number of additional countries. However, the Alliance determined that, with its current composition of asset owners, the CRREM model is sufficient to support members in defining specific targets, via the tool or via the global pathway model.

Coverage

Where an Alliance member cannot define a target based on the total floor area under management, the member shall:

- Declare in a transparent way the percentage of its real estate portfolio (in terms of percentage of total gross floor area) covered by the target.
- Declare the percentage of estimated emissions considered in the target.
- Define and communicate how they intend to reach full coverage over time (a clear timeline should be defined).

As Alliance members should show a positive commitment to cooperate with tenants, all members are encouraged to track an energy performance metric.

Data availability and estimation

Data is, as for all asset classes, a central component in the ability to set and achieve emissions reduction targets. Significant differences exist between regions in terms of reported data availability for the carbon emissions and/or energy consumption, particularly when the building is occupied by third party tenants.

Reported data is preferred over inferred (proxy-based) data. Proxies may be used to cover lack of data provided these are transparent and based on robust estimation.

Estimation

When annual energy consumption data is partially unavailable or unreliable for a building, estimation is allowed. Where estimations are used, the Alliance member should disclose the proportion of data that is estimated and give a general description of the methodology used. Members who rely on estimated data should include a strategy to collect real data and replace estimated data with real data in the coming years. A revision mechanism should be considered to allow for evolution in the target as data quality improves. One best practice to increase the availability of data from tenants is the use of ‘green lease’ which allows utility data sharing between tenants and landlords.

Use of market-based versus location-based approach

Alliance members should construct, calculate, and report on their real estate targets using either a market-based or a location-based approach for their portfolio's Scope 2 emissions.⁴⁷

Each method's results reflect different risks and opportunities associated with emissions from electricity use and can inform different decisions and levers to reduce emissions. It is also important to bear in mind that the choice of method can be more or less suitable depending on the use case, such as carbon-accounting, risk management and target setting.

A **location-based method** reflects the average emission intensity of grids on which energy consumption occurs (using mostly grid-average emission factor data). Emission factors are often defined using geographic locations. These can be based on local, subnational, or national boundaries, consistent with local power grid boundaries. The location-based method would, in a target setting perspective, put more emphasis on energy efficiency measures as new green electricity purchases from the grid would not count in the reduction of Scope 2 emissions. This method does not value the effort of owners who buy green electricity via dedicated contracts and might penalize owners with a large proportion of historical buildings that cannot easily be deeply renovated.

A **market-based method** reflects emissions from electricity that companies have purposefully chosen. It derives emission factors from contractual instruments, which include any type of contract between two parties for the sale and purchase of energy bundled with attributes about the energy generation, or for unbundled attribute claims. Markets differ as to what contractual instruments are commonly available or used by companies to purchase energy or claim specific attributes about it, but they can include energy attribute certificates (RECs, GOs, etc.), direct contracts (for both low-carbon, renewable, or fossil fuel generation), and/or supplier-specific emission rates. The market-based method values the choice of investors willing to pay a premium (when electricity from renewable energy is more expensive) in order to have access to green energy, whilst at the same time penalising investors or tenants who do not choose it, because they would have to use the emission factor from the residual mix which is normally much higher than the grid-average.

The choice of method will have implications for target setting and the levers available to Alliance members to reduce their respective portfolio emissions.

It could be argued as to whether a specific method better contributes to emissions reductions in the real economy. The arguments for a location-based method relate to a better reflection of the broader transition taking place in the jurisdiction or region where the building is located and that using purchased off-site generated green electricity as a means to reduce a building's emissions has limited short-term impact on real world emissions. On the other hand, it could also be argued that using a market-based approach could incentivise an increase in the demand for green electricity contracts which, in turn, could increase the incentives for grid-operators to change their resource mix and increase the supply of green electricity.

⁴⁷ This discussion on market-based versus location-based approach applies as well to electricity sourced by tenants.

Alliance members shall clearly state in internal Alliance reporting which method has been used for the calculation of the emissions to reach the target and ensure comparability over time. The Alliance also encourages members to state which method is used in their own public reporting. Regardless of method, the calculation of Scope 2 emissions should follow well-recognized and established accounting standards such as the Scope 2 guidance of the [GHG Protocol](#).

Key levers for advancing emissions reductions in the real estate asset class can be found in the Annex.

Future work

As a general principle, embodied emissions (e.g., from retrofits) should be included in target setting considerations. However, the availability of consistent and reliable standards and data is currently very limited. This can make it difficult to include embodied emissions in the first round of targets for real estate. Embodied emissions calculations (methodology, estimations, etc.) will be discussed further before being included in any sort of Alliance target.

Exposure through real estate funds etc. will also be investigated in the future and addressed on the basis of its materiality among Alliance members.

Infrastructure

Target Setting Protocol summary

Term	Summary
Infrastructure definition	An infrastructure investment is defined as an investment in an entity or corporate group which derives the substantial majority (i.e., more than two thirds) of its revenues from owning, financing, developing or operating infrastructure assets. Infrastructure assets mean physical assets, structures or facilities, systems and networks that provide or support essential public services (see asset types).
Asset types	See Table VI below
Assets included in target boundary	The Alliance recommends that members initially set emissions reduction targets on infrastructure assets in carbon intensive sectors (i.e., Carbon Intensive Energy Infrastructure) and where they have >20% ownership or a board seat. All other infrastructure assets (e.g., for renewable energy infrastructure, lower ownership shares and debt investments) targets shall be phased in to achieve full coverage by 2025 at the latest.
Scope of emissions	Targets shall be on annual Scope 1 and 2 emissions, and should wherever possible, include Scope 3 emissions.
Target	The output shall be an emission target at the portfolio or asset class level, in line with practice for public equity and listed corporate debt. Alliance members shall use owned emissions via equity and debt (in line with PCAF) as the target setting metric.

Approach	As a science-based scenario is required, Alliance members shall use sector specific pathways where applicable, and the global average of IPCC P1–P3 scenarios where sector specific pathways are not available (See Annex for scenario and sector pathway information).
Greenfield definition	Construction of new assets or re-constructing an existing asset to a material extent. Examples include new roads, new railway connections, new windmills, as well as for example, re-constructing a coal power plant into a gas power plant.
Brownfield definition	All other projects which are not greenfield.

Key definitions

The Alliance reviewed a wide range of infrastructure definitions⁴⁸ and agreed to utilise the Solvency II definition as follows:

An infrastructure investment is defined as being an investment in an entity or corporate group which derives the substantial majority of its revenues from owning, financing, developing or operating infrastructure assets. Infrastructure assets mean physical assets, structures or facilities, systems and networks that provide or support essential public services.⁴⁹

While the following features are not universal or prescriptive, infrastructure assets may sometimes be characterised as being illiquid, capital intensive, having income that is stable and predictable over the long-term, a natural monopoly or have a strong competitive position often as a result of having inelastic demand, and include risk profiles that may depend on maturity.

The Alliance uses ‘greenfield’ to describe new infrastructure projects that lack the constraints of prior work and existing infrastructure assets undergoing major CAPEX (e.g., re-constructing a coal power plant into a gas power plant). All other infrastructure assets are considered brownfield.

The Alliance recognises that asset owners may hold infrastructure assets, either listed or unlisted, across different asset classes within their portfolios. This chapter is written from the perspective of a stand-alone, unlisted infrastructure asset class. Alliance members should decide, and clearly communicate, whether infrastructure assets that sit outside their infrastructure portfolio fall under their infrastructure reduction target or sit within the target for another relevant asset class (e.g., an asset owner may decide that listed infrastructure within an equities portfolio falls under their equities reduction target and is measured using the equities carbon accounting methodology).

⁴⁸ Global, regional and in-house definitions were considered.

⁴⁹ Solvency II amending Delegated Regulation (EU) 2015/35 issued by the European Commission on 8 June 2017 (points 55a and 55b of Article 1: The Solvency II regulations further provide a list of criteria under Article 164a that such investments have to meet in order to be classified as a ‘Qualifying’. By public services we mean electricity, water and so on as described in Table VI, irrespective as to whether the purchaser is a single private entity (e.g., a power plant which sells all production to a single company rather than the public).

Asset types in scope are outlined in the Table VI (below) with a general definition for guidance purposes only.

Table VI: Infrastructure Asset Types in Scope

Infrastructure type	Sub-types examples	General definition
Energy infrastructure ⁵⁰	(Carbon Intensive) Energy infrastructure	Carbon-intensive energy infrastructure are the physical assets that enable large-scale energy generation such as (upstream) coal, gas, nuclear, utilities infrastructure, and low-quality distribution infrastructure.
	(Low Carbon) Energy infrastructure, distribution, and technology	Low carbon energy infrastructure, distribution, and technology encompasses renewables, electricity transmission lines, as well as technologies such as advanced electrical metering, smart building systems, and power plant control systems, and high-quality distribution infrastructure.
Transportation infrastructure	Rail networks; airports; road works (including bridges); public transportation systems; ports	Transport infrastructure refers to the framework that supports the transportation system. It includes roads, highway systems for mass transit, public transportation systems, airports, ports, trains, subways, and light rail systems, bridges, and tunnels.
Social infrastructure	Public buildings; hospitals; schools and universities; community housing	Social infrastructure refers to facilities that support social services and include public buildings or works (e.g., courts, schools, social housing).
Water infrastructure	Water treatment; water supply; sewer systems	Water infrastructure includes water treatment plants, water supply systems, sewer systems, and sewage treatment facilities.
Communications infrastructure	Telecom utilities	Communication infrastructure refers to the backbone of the communications system upon which various broadcasting and telecommunication services are operated, and includes wireless, cable, and satellite networks, and data centres.
Waste management infrastructure	Landfills; recycling	Waste management infrastructure includes infrastructure for landfills, converting waste to energy (WTE), and recycling or composting.

Source: Net-Zero Asset Owner Alliance Protocol

⁵⁰ In line with forthcoming Alliance position paper on Oil/Gas/Coal that no new Oil/Coal assets or capacity should be financed, permitted, developed or constructed.

Carbon accounting for infrastructure

It is recommended that the carbon emission measurement of infrastructure assets⁵¹ be aligned with the GHG Protocol.⁵² Alliance members should measure emissions for all infrastructure-related assets as described in this chapter.

Greenfield assets and lifetime emissions

For greenfield assets, the Alliance is aligned with the PCAF Standard for the Financial Industry which recommends that financial institutions assess the total projected lifetime Scope 1 and 2 emissions.⁵³ Such reporting ensures transparency with regards to the emissions profile of greenfield assets that the asset owner is sponsoring, and can be useful to identify carbon lock-in. It also ensures when asset owners provide financing to greenfield projects that is then quickly repaid (resulting in minimal “owned” operational emissions), they report the impact of these projects over their entire lifetime.

Members should attempt to report lifetime emissions for greenfield energy infrastructure projects. Lifetime emissions for other assets types should be reported where possible.

For greenfield assets, it is necessary to distinguish between the different development stages (early development, construction, turn-key). Where an asset owner is the initial sponsor or lender in an early development greenfield infrastructure project, members should report estimated lifetime Scope 1 and 2 emissions for the asset in the year of contracting (as per PCAF).⁵⁴ They should also make an assessment as to whether the purpose of the asset and its lifetime emissions are aligned with (or can be brought in line with) the net-zero ambition by 2050 (considering that the asset’s lifetime may go beyond 2050). This can be done using the scenarios discussed in Chapter 5 (and in further detail in the Annex), or other 1.5°C-aligned scenarios/methodologies with no/low overshoot. For investors based in the European Union, the EU Taxonomy gives guidance for many business activities on how to align with net-zero ambition.⁵⁵ In other jurisdictions similar taxonomies are under development.⁵⁶

If an asset owner enters an investment at a later stage (construction or turn-key), members should report estimated lifetime Scope 1 and 2 emissions for the asset in the year of contracting. For this kind of investment, Alliance members should undertake an assessment as to whether the purpose of the asset and its lifetime emissions are aligned with (or can be brought in line with) the net-zero ambition by 2050 (again using scientific solid 1.5°C scenarios with no/low overshoot).

Existing greenfield investments of any kind invested via a fund structure sit outside the current scope for Alliance recommendations for an estimate of lifetime emissions. This

51 To improve readability, we always refer to “infrastructure assets” instead of “infrastructure assets or corporations managing or /and owning infrastructure assets”.

52 ghgprotocol.org/corporate-standard

53 PCAF (2020), The Global GHG Accounting and Reporting Standard for the Financial Industry. First Edition. P75

54 PCAF (2020), The Global GHG Accounting and Reporting Standard for the Financial Industry. First Edition. P75

55 ec.europa.eu/info/sites/default/files/business_economy_euro/banking_and_finance/documents/200309-sustainable-finance-teg-final-report-taxonomy-annexes_en.pdf

56 Also see the International Platform on Sustainable Finance which is working to align common ground among taxonomies.

is due to the low level of influence combined with the fact that most asset owners will not have existing reporting requirements in place. However, Alliance members should include reporting requirements with regards to lifetime emissions for future investments via funds and engage current invested fund managers to do so.

Reporting of lifetime emissions shall be separate to reporting of annual emissions. Once a greenfield project becomes operational, the member should report annual operational emissions as per Chapter 3.

Brownfield assets

Alliance members should measure Scope 1 and 2 emissions on an annual basis for brownfield assets, in line with the GHG Protocol. Scope 3 emissions should be measured wherever possible and material. This should be considered for all infrastructure investments; those held via debt instruments (including Mezzanine) and those held via equity investments (both direct and indirect, including co-investments).

Projects are often structured including various operational entities (OpCos) which are owned by a holding structure (HoldCo); investors might provide debt on both levels. Other more complex structuring also occurs regularly. Ownership share should always be determined via an economically consolidated (virtual) balance sheet (see formula below) of the borrower.

Diagram IV: HoldCo diagram



Source: Net-Zero Asset Owner Alliance Protocol

The Alliance has aligned their accounting methodology with the PCAF Standard for the Financial Industry.⁵⁷ As per PCAF, the asset owner should determine their share of each infrastructure asset’s annual emissions based on the ratio between the asset owner’s outstanding amount (numerator) and the total equity and debt of the infrastructure asset (denominator). The outstanding amount being the amount of debt and/or equity provided by the asset owner.

$$\text{Financed emissions} = \sum \left(\left(\frac{\text{outstanding amount}}{\text{total equity + debt}} \right) \times \text{Infrastructure asset annual emissions} \right)$$

Following PCAF recommendations; in the case of debt, the outstanding amount is defined as the value of the debt the borrower owes to the lender (i.e., disbursed debt minus any repayments) while in the case of equity, the outstanding amount is the outstanding value of equity the financial institution holds in the project. It is calculated

57 PCAF (2020), The Global GHG Accounting and Reporting Standard for the Financial Industry. First Edition. P. 70

by multiplying the relative share of the financial institution in the respective project by the total equity of the respective project's balance sheet. Financial institutions shall either use the calendar or financial year-end outstanding amount, provided the approach is communicated and used consistently.

Financed emissions can only be calculated for infrastructure assets where financial data is available. For assets where such data is unavailable, and owned emissions cannot be calculated, rough estimations can still be made based on region- and sector specific average financial data and the outstanding amount. PCAF provides direction on how to estimate annual emissions in the face of data availability issues.⁵⁸

The Alliance does not recommend the use of revenue as a denominator for infrastructure assets for two reasons: 1) during construction phase revenues are usually zero and 2) for many regulated assets the revenues are not directly linked to output/usage measures. This differs from other asset classes where the argument can be made that revenues are linked to the amount of carbon produced, for many infrastructure types this logic does not hold.

Target setting for infrastructure

There are multiple ways in which asset owners are exposed to infrastructure as an asset class and the level and type of influence that can be effectively employed is impacted, in part, by the type of investment. In general, equity owners tend to have more direct influence than debt holders. For equity owners, direct ownership provides more clear influence than indirect ownership (via fund structures), and for direct equity owners the level of influence is strongly related to the ownership share (i.e., majority stake owners tend to have greater influence than minority stake owners).

The ability of an asset owner to effectively influence an infrastructure asset may be further impacted by whether the asset owners hold a board seat(s), the type of fund they are invested in (open versus closed), and the line of sight they have to co-investors.

As outlined below, independent of how an asset owner is invested, members should take a holistic approach to carbon reductions within their infrastructure portfolios. At a minimum, Alliance members shall:

- measure and report the annual emissions of Carbon-Intensive Energy Infrastructure within their infrastructure portfolio by 2022.
- measure and report the annual emissions of all infrastructure assets by 2025.
- initially set carbon reduction targets for those equity assets:
 - where they own greater than 20%, or
 - where they have a seat on the board,⁵⁹ or
 - that qualify as carbon intensive energy infrastructure.

58 PCAF (2020), The Global GHG Accounting and Reporting Standard for the Financial Industry. First Edition. p73. Table 5.6, options 3b and 3c.

59 This follows international accounting standards where significant influence is assumed, see IAS 28.5 If an entity holds 20% or more of the voting power of the investee, it is presumed that the entity has significant influence. This does not include seats on Fund boards where the fund also invests in Infrastructure.

- have all infrastructure assets covered by an emissions reduction target by 2025 (approach to phase-in is at the discretion of the member on a best effort basis).
- support the phase-out of fossil fuels required by 1.5°C scenarios.
- not provide new finance to infrastructure assets whose purpose or emissions cannot be aligned with the Alliance net-zero ambitions which are guided by IPCCs no/low overshoot scenarios, OECM and the IEA’s NZE2050.⁶⁰ This recommendation holds especially for investments in coal, oil, and gas:
 - For coal, Alliance members shall follow the Alliance’s position paper regarding thermal coal.⁶¹
 - For oil, members shall not finance assets which are not aligned with science-based or government-issued regional/national 1.5°C degree pathways, especially not finance upstream greenfield projects beyond those already committed by the end of 2021. Further guidance will be given in a forthcoming position paper on oil & gas.
 - For gas, members shall not invest in assets which are not aligned with science-based or government-issued regional/national 1.5°C degree pathways. Further guidance will be given in a forthcoming position paper on oil & gas.
- commit to engage with existing fund managers on setting their own emissions reduction targets and engaging their underlying assets on climate alignment.
- commit to ensuring by 2025 that all new fund manager appointments include net-zero/temperature alignment requirements.

The following table summarises the target setting approach by type, criteria, and timeline:

Table VII: Infrastructure target setting approach

Type	Criteria	Timeline
Direct Investments	Ownership >20%	Targets set by end of 2022
	Board seat	Targets set by end of 2022
	(carbon-intensive) Energy, infrastructure (ex renewables)	Targets set by end of 2022
	All assets, phase in approach on best effort basis	Targets set by end of 2025
Fund Investments	New funds: shall engage towards net-zero targets for the fund	Targets set by end of 01.01.2025
Infra Debt Investments	New investments: shall engage towards reporting GHG emissions	Immediately
	Investments in energy infrastructure	Targets set by end of 2022 and GHG reporting by end of 2022
	All assets (ex renewables)	Targets set by 01.01.2025 and GHG reporting in place

Source: Net-Zero Asset Owner Alliance Protocol

60 [iea.org/reports/world-energy-model/net-zero-emissions-by-2050-scenario-nze](https://www.iea.org/reports/world-energy-model/net-zero-emissions-by-2050-scenario-nze)

61 [unepfi.org/wordpress/wp-content/uploads/2020/11/Net-Zero-Asset-Owner-Alliance-Thermal-Coal-Position.pdf](https://www.unepfi.org/wordpress/wp-content/uploads/2020/11/Net-Zero-Asset-Owner-Alliance-Thermal-Coal-Position.pdf)

Phase in approach to emissions measurement

Alliance members shall measure the annual emissions of all brownfield infrastructure assets within their portfolio. The Alliance realises that data availability may be an issue and that, in some cases, this may require an engagement process of its own which can take several years. In such cases, Alliance members should prioritise engagement with those assets where they plan to set an emissions reduction target.

Approaches to improving data availability may include direct engagement with the asset itself, engagement via asset managers, and collaborative engagement with co-investors where possible. Alliance members shall report annual Scope 1 and 2 emissions for 100% of their energy infrastructure assets by 2025. Carbon reporting for Carbon-Intensive Energy Infrastructure should be in place by the end of 2022.

How to set targets

The Alliance members shall set emissions reduction targets for infrastructure investments based on annual emissions.⁶² Targets shall be expressed as a reduction in financed (owned) emissions.

Members shall choose one option of the following to set targets:

- for individual infrastructure investments.
- for infrastructure investments as an asset class (either jointly for equity and debt, or stand-alone).
- jointly with Corporate Bonds/Listed Equities.⁶³

The Alliance members shall use sector specific pathways as far as possible to determine the ambition of reduction targets (see Chapter 5 for details on Sector target setting and the Annex for details on specific sector pathways). In cases where sector pathways are not available asset owners' ambition should be in the same range as for corporates and listed equity (see also Chapter 2 for base year translations). The discussion in Chapter 3 on constraints, starting points and portfolio growth is also applicable to this asset class. In practice, Alliance members should choose a sector specific pathway for each individual sector, or a combination where specific pathways are not possible, for example a specific sector pathway for energy infrastructure and the general reduction range for all other sectors.

62 For Renewables (Wind, Solar, Biomass, Hydro) material emissions occur only during construction phase (e.g., embedded emissions). Emissions produced during the operation of renewable assets is usually on a very low level. Thus, we see no necessity to set reduction targets for renewables in operation.

63 Using the same methodology as for corporate bonds and/or listed equities.

Engagement and manager alignment

Members may choose to utilise several means of reducing the real-world emissions of their investments and moving assets towards reduction targets. This may include direct engagement with the assets themselves, engagement of existing asset managers, inclusion of net-zero and/or temperature alignment requirements in new manager appointments, the use of new debt instruments. For new investments, independent of the ownership share, members should use their influence during the due diligence phase to push for 1.5°C-aligned reduction targets.

Therefore, members shall engage on emissions reductions with all assets within their infrastructure portfolio on an annual basis, regardless of ownership levels. This engagement shall be aimed at encouraging each asset to set an emissions reduction target aligned with a 1.5°C pathway. This may be through direct engagement or engagement via a fund manager.

Alliance members should engage annually with existing fund managers on the importance of setting decarbonisation targets within their portfolios.

Finally, all new fund manager appointments should include a commitment to net zero and alignment with a 1.5°C decarbonisation trajectory. The Alliance appreciates this may not be possible immediately in every jurisdiction, so it is suggested that asset owners engage with all managers to align their assets under management with net zero as soon as possible, working towards ensuring all new fund manager appointments are aligned from 2025 at the latest. Members shall use their opportunity for influence during the due diligence phase to push fund managers to full carbon reporting and 1.5°C compatible reduction targets for their assets under management.

4. Sovereign debt carbon accounting

The Alliance started working on a target setting approach for sovereign counterparties in 2021. In line with other asset classes, a target setting approach requires carbon footprint measurement and accepted assessment methodologies. For sovereign counterparties there is no aligned approach for any of the two components, and the Alliance has joined forces with partners in two projects to develop respective standards:

Carbon accounting of sovereigns with the Partnership for Carbon Accounting Financials (PCAF)

Alliance members are co-leading the PCAF workstream to define a standard for measuring financed emissions from sovereign bonds. The draft methods were under public consultation from November to December 2021:

PCAF launches a public consultation on three new draft methods and a discussion paper on capital market instruments | PCAF (carbonaccountingfinancials.com)

The Alliance will continue to closely work and align with PCAF on the recommended approach following the public consultation.

Assessing Sovereign Climate-related Opportunities and Risks (ASCOR)⁶⁴

Recognising the need to develop a robust approach to assessing sovereign carbon performance that could serve as a base for target setting frameworks, the Alliance has launched this project with partner institutions to enable assessment of the current and future climate change governance and performance of sovereigns:

[The ASCOR Project: Assessing Sovereign Climate-related Opportunities and Risks | News and press | PRI \(\[unpri.org\]\(https://unpri.org\)\)](#)

64 ASCOR partners include the Coalition for Environmentally Responsible Economies (Ceres), the Institutional Investors Group on Climate Change (IIGCC), the Principles for Responsible Investment (PRI), the Transition Pathway Initiative (TPI) and Chronos Sustainability

5. Sector targets

The sector targets guidance has four main objectives, to:

1. Define average carbon reduction pathways for key high-emitting sectors;
2. Inform member's engagement efforts, identifying desirable emissions level outcomes;
3. Support investment decisions in companies implementing climate solutions designed to reduce their emission intensity; and
4. Inform portfolio construction, sectoral allocation and target setting at Alliance member-level.

Setting sector targets is a relatively new exercise for asset owners. Therefore, Alliance members who set sector targets shall progressively start implementing sector targets beginning with their most material sectors from an owned-carbon emissions standpoint and increasing the sector coverage over time by 2025. Alliance members shall aim to have sector targets in place by 2025 (for 2030 targets) covering at least 70% of total owned emissions. Alliance members shall comply with the recommendations herein or explain why they have a coverage level below the 70% threshold in 2025. The identified threshold for setting targets at sector level should be commensurate with both the member's portfolio size and the portfolio emissions profile both in absolute and relative terms. Finally, Alliance members should report the absolute emissions reductions associated with the necessarily intensity-based targets described below.

High emitting sectors and link to engagement

Targeted sectors:

- Oil & gas
- Utilities, including coal (26–39% of global emissions)
- Transport
 - Civil aviation (2–3% of global emissions)
 - Shipping (2–3% of global emissions)
 - Road transport (11–17% of global emissions)
- Materials
 - Steel⁶⁵
 - Cement
 - Aluminium
- Agriculture, forestry, and fisheries
- Chemicals
- Construction and buildings
- Water utilities
- Textiles and leather

65 Various sources including IPCC, WRI, and US Department of Energy

The Alliance aims to set sector targets for the most material sectors in terms of carbon emissions. The Alliance sectors covered in the Inaugural Protocol were:

- i.** Energy, including oil & gas and utilities;
- ii.** Transport (civil aviation, shipping, and road); and
- iii.** Steel.

The second edition of the Protocol now covers most other carbon intensive sectors (see box above).

Sector targets enable Alliance members to enhance the link between overall (absolute) portfolio emissions reductions and sectoral efficiency gains. Sector targets inform the need to invest in climate solutions, track changes in the underlying holdings in line with a net-zero trajectory, as a direct or indirect result of engagement and policy actions. This is done by tying emissions reductions in the overall portfolio to real economy sector emitters held in the portfolio. Sectors, particularly so called 'hard-to-abate' sectors, given their various roles in achieving a net-zero economy, have different sequencing in their role in the transition and thus varying rates of decarbonisation over time. Ultimately it would be ideal to have sector targets for all sectors. Since the 2021 Inaugural Protocol, which covered most high emitting sectors, additional sectors have now been added. These priority sectors also align with engagement track efforts.

It should be noted that transport is a large component of the oil & gas sector's Scope 3 emissions, and the Alliance views this 'value chain' approach as a first step towards tackling oil & gas Scope 3 emissions. See the Annex for the NACE/GICS/BICS classification codes and their association to the sectors named above. In the first instance, Alliance members who set sector targets should set them in line with the engagement priority sectors described above. Alliance members who wish to set targets on additional sectors, are encouraged to do so.

Three steps for setting sector targets

The global carbon budget⁶⁶ as referenced by the Alliance is the cumulative amount of carbon and other GHG emissions permitted until the end of the century to keep within a 1.5°C threshold. The concept supporting sector targets is to allocate this remaining carbon budget across economic sectors split by geographic locations until 2050 using a set of economic and technological assumptions compatible with 1.5°C pathways.

There are three steps involved in setting sector targets. Alliance members shall:

1. Identify the most material sectors in the investment portfolio on an owned-emissions basis;
2. Identify available carbon emission metrics for the identified sectors (see Annex);
3. Select a modelled sector pathway to be applied to each sector and apply a target relating to the selected carbon emission metric.⁶⁷

As described in the Annex, a small number of models/scenarios are known to provide sector decarbonisation pathways for both total CO₂e emissions on Scope 1 and 2, and on a sector product/production specific level using an output intensity metric. At this time, this allows an Alliance member choosing to use either the OECM (One Earth Climate Model) or the IEA model to set sector targets.⁶⁸

66 The IPCC special report Global Warming of 1.5°C (SR1.5) called for a total carbon budget of 420 GtCO₂ to maintain 66% chance of staying below the threshold of 1.5°C in global average temperature rise, adjusted to account for additional warming since the beginning of the industrial era (circa 1750). More recent analysis such as the AR6 WGI Report identified this budget as 400 Gt CO₂.

67 Where governments and regulators have set required sectoral targets, these derived targets could be checked against the required sectoral targets to see if they are aligned.

68 See detailed comparison between the sector pathways in the Annex.

Step 2: Carbon emissions metrics for identified sectors

Asset owners should choose from three possible types of carbon emissions metrics (either intensity or absolute emissions-based targets). They can decide to use different metrics for each sector among the three metrics described below depending on data availability.

The first metric is **product/production metric-based** sector targets which, for example, can be measured, for the steel sector, in CO₂e per ton of steel produced or for the automotive sector, in CO₂e per km of produced cars. We acknowledge that the lack of data availability or unreliable/weak data is an issue for asset owners when it comes to using product/production metrics to set sector targets as the data required to set sector targets need to be sourced at a company level. One of the advantages of using the product/production specific sector targets is that these are largely independent of economic variables such as revenue and have no market or price volatility, making it easy to track the real emissions reductions in isolation, and also to compare performance between companies.

The second metric is **carbon intensity-based** sector targets based on EV or Revenue, using the same calculations as described on Chapter 3 for carbon intensity. Carbon intensity-based sector metrics are easily available but are dependent upon economic variables (such as revenue), and mainly cover Scope 1 and 2 in the sector decarbonisation pathways.

The third metric is **absolute emissions-based** sector targets. The pros and cons of using this metric are described in Chapter 3. When using absolute emissions-based targets, asset owners should apply the absolute emissions sector pathways to the companies in their portfolio belonging to a given sector/geography.

Scope of emissions covered by sector targets

Alliance members shall set sector targets on Scope 1 and 2, as well as track and report on Scope 3 emissions.

Alliance members should use product/production specific sector targets if data allows, and carbon-intensity targets in conjunction with absolute emission targets if appropriate data is not available. The reason for not recommending setting targets on absolute emissions only is to limit the risk of divestments and to stimulate emissions reductions in the real economy, as well as capture carbon efficiency gains related to business transition.

Scope 3 is especially material for the oil and gas sector as these are inputs for many industrial production processes. Initially, the Alliance will focus on the demand side, setting sector targets for, for example, the transportation and steel sector. Due to data availability and lack of consistent metrics for Scope 3 within the oil and gas sector, we do not currently recommend setting carbon-intensity-based Scope 3 sector targets for oil and gas in the short term. To ensure that we have better, comparable Scope 3 data for the next target setting period, the Alliance will work to clarify the definition of Scope 3 emissions and provide open-source data for the largest oil and gas companies in the coming years. For the automotive sector, Scope 3 emissions can be addressed through product specific targets, such as CO₂e per km of produced automobiles.

Sector targets for utilities and energy sectors should reflect the scientific consensus, as derived from the IPCC no/low overshoot pathways, IEA NZE2050 and OECM, to withdraw financing from new coal related assets and new oil and gas fields and respectively refrain from investing in, or providing finance to, assets that support the expansion of coal, oil, or gas production and to scale down production as indicated in the scenarios.

More detailed information on the rationale, way forward and recommended metrics for sector targets of high emitting sectors, as well as a comparison of key models is included in the Annex.

6. Engagement targets

The importance of conducting engagement

Engagement is perhaps the most important mechanism asset owners have to contribute to a net-zero transformation and engagement targets should reflect this ambition to generate real world impact. These engagement targets should also be set in conjunction with sub-portfolio and sector targets. **Therefore, all Alliance members shall set engagement targets.**

In addition to targeting real world decarbonisation, engagement efforts need to outline what action is taken when engagement expectations are not met. Alliance members should therefore clearly define escalation procedures for their own climate engagements or set escalation expectations for the asset managers conducting climate engagements on their behalf. Members should design these escalation procedures to accelerate a just transition to a 1.5°C-aligned no/low overshoot scenario in the real economy.

Additionally, as detailed in the Alliance published guidance on proxy voting,⁶⁹ there is a clear connection between engagement and proxy voting. Where applicable, Alliance members should transparently explain how proxy voting is systematically employed to align with their net-zero commitment. This should include the use of votes to hold companies accountable when they are making unsatisfactory progress to address climate change or support climate change mitigation. Alliance members that rely on their asset managers for casting proxy votes should use the Alliance proxy voting guidance—complemented by their own expectations—in the selection, appointment, and monitoring of their asset managers.

Recognising that corporate engagement alone does not drive sufficient systemic action to solve the climate crisis, Alliance members should leverage their insights from corporate engagement to inform their contribution to sector/value chain engagement or engagement with policy makers, where possible.

Finally, one of the most important and impactful engagement opportunities asset owners have is engaging asset managers to support greater climate action and 1.5°C alignment. Asset managers not only allocate assets, but they also conduct corporate engagements, cast proxy votes (notably on directors and climate resolutions), and have an important voice in the business community. Alliance members shall engage their asset managers to 1) increase their understanding of how their asset managers are representing the owner's long-term climate interests and 2) increase the alignment between the asset

69 [unepfi.org/wordpress/wp-content/uploads/2021/04/16-Elevating-Climate-Diligence-2.pdf](https://www.unepfi.org/wordpress/wp-content/uploads/2021/04/16-Elevating-Climate-Diligence-2.pdf)

manager's actions and their asset owner interest when necessary.⁷⁰ Asset owners must require stewardship activities by asset managers that move beyond just incremental and linear levers, which are insufficient to meet our ambition of limiting global temperature rise to 1.5°C. This includes pushing some corporate engagement topics, like transparency requests, into public expectations of all portfolio companies, to be reinforced by systematic stewardship action like votes against directors. Lastly, the expansion of activities beyond corporate engagement should include sector and policy engagement.

Setting engagement targets

Scope of Alliance members' engagement targets

All these engagement activities **seek to achieve a common outcome:** To increase the percentage of companies that are aligned with the Alliance's corporate net-zero expectations. Therefore, to meet the spirit of the Alliance net-zero engagement commitments, members shall set targets to conduct engagement in at least two, or where possible, all four identified forms:⁷¹

- **Corporate engagement** bilaterally between asset owner and portfolio company, collaboratively through the CA100+ initiative or any other collaborative engagement initiative in line with the Alliance ambitions;
- **Sector and value chain engagement**, whereby investors engage simultaneously with numerous companies and stakeholders from the same sector or value chain;⁷²
- **Position paper contribution**, whereby the asset owner, either individually or jointly with others, endorses or publishes position papers on pertinent climate topics that benefit from asset owner commitments in line with the Alliance ambitions to guide net-zero engagement activities or topics;
- **Asset manager engagement** to evaluate the manager's climate change mitigation efforts, their management of climate risks/opportunities, and to ensure their alignment of stewardship activities and public messaging with the long-term climate interests of the Alliance on climate change.

70 unpri.org/policy/a-legal-framework-for-impact (page 119)

71 The Alliance members are of different size, geography, and business nature; therefore they have different engagement strategies, and operations, thus a one-size fits all approach does not fit, and the Alliance identifies a set of ways in which the members can set and report on targets.

72 In all cases, collaborative engagement will be undertaken with proper respect of antitrust laws and regulations or applicable regulatory requirements

How to set 2025 or 2030 engagement targets

Individual Alliance members shall:

- Identify either i) 20 companies with a focus given to those generating the highest owned emissions, or ii) the companies responsible for at least 65% of owned emissions in their corporate bond/equity portfolio; and ensure these companies are covered by either direct, collaborative, or their asset managers' engagement activities in line with the Alliance ambition, with a focus on non-aligned emitters.⁷³
- For asset manager engagement: set up a structured engagement approach that is integrated with their selection, appointment, and monitoring activities of asset managers. They should utilise the expectations of asset managers described below to ensure long-term alignment of Alliance interests with asset managers activities.

In addition, Alliance members should:

- select two or more of the four forms of engagement contributions listed above that are most relevant for their own engagement activities, approaches, and resources, and set their own outcome based KPI from the common KPI framework (see Annex). This can include an expansion of corporate and asset manager engagement or new engagement efforts related to sector and policy engagement.

Guidance for alliance aligned engagement ambitions

The following section provides guidance to Alliance members on the expectations of their engagement activities with companies and asset managers in order to ensure alignment with the Alliance ambition. By focusing on common goals, the delivery of positive real-world outcomes (through expanded coverage of net-zero expectations), and enhanced collaboration, the Guidance for Alliance Engagement Ambitions is consistent with the PRI Active Ownership 2.0 framework.⁷⁴

73 Non-aligned refers to those which do not already have Paris Aligned commitments, or do not have a concrete set of mid-term reduction targets. Alignment with PAII or CA100+ benchmarking criteria is encouraged.

74 PRI Active Ownership 2.0, available at unpri.org/download?ac=9721

Alliance members' net-zero engagement requests to all companies

- To immediately put into place policies and transition plans that commit the company to net-zero GHG emissions across their value chains by no later than 2050 and to be supportive of the transition to a net-zero GHG emissions world by 2050;
- To accelerate progress towards full 'green' on the CA100+ Net Zero Company Benchmark indicators, or, if not a CA100+ target company, to still meet all of its expectations;
- To set science-based near-term GHG reduction targets that are in line with reaching net-zero emissions by 2050, and consistent with maximum 1.5°C of warming;
- To develop and implement plans for their businesses to remain viable in a carbon neutral economy, with meaningful consideration of associated social impacts;
- To support the adoption and implementation of governmental policies that facilitate the transition to net-zero emissions;
- To support, prepare for and not disrupt pricing mechanisms on GHG emissions;
- To take action and make progress on efforts to lower GHG emission intensity of their operations and products,
- To disclose their efforts and progress on decarbonisation in line with the four core elements of TCFD recommendations; and
- To enter direct time-bound engagement dialogue with Alliance members and/or other investor initiatives to discuss efforts to decarbonise their business by 2050.⁷⁵

Source: Net-Zero Asset Owner Alliance Protocol

Alliance members' net-zero engagement requests to all asset managers

- To publicly commit to support the transition to a net-zero world by 2050 in line with no/low overshoot 1.5°C;
- To commit their entire portfolios to 1.5°C degree alignment and net zero by 2050, preferably through an established framework like the Net-Zero Asset Manager Initiative;
- To collaborate with Alliance members to develop viable opportunities to finance the transition to net zero and expand the 1.5°C-aligned investable universe, including through collaboration on blended finance vehicles;
- To publish their approach to integrating climate risks and opportunities (both transition and physical) across their portfolio management and stewardship team's training and activities;
- To clearly state the benefits and limitations of their climate engagement program(s) and/or stewardship activities and how the limitations are addressed via complementary work streams, including how they leverage public discourse;
- To clearly describe how their engagement approach differs across asset classes, what levers of influence are applied to each, and how their approach supports portfolio decarbonisation objectives. This includes requiring 1.5°C-aligned strategies in companies where the asset manager has significant control;
- To use systematic engagement approaches to streamline engagement efforts, where possible. For example, call publicly for company or sector action and systematically reinforce expectations through principle and merit-based voting as detailed in the Alliance guidelines found [here](#); and
- To adopt policies that are congruent with Alliance position papers, for example the Alliance's [thermal coal position](#).

Source: Net-Zero Asset Owner Alliance Protocol

⁷⁵ However, companies should not discuss nor share information which could trigger antitrust or other regulatory laws and regulations or amount to insider information.

Alliance engagement ambitions beyond corporate and asset manager engagement

Society should not expect outcomes that align with the Alliance ambitions for 1.5°C if those outcomes require entire sectors ceasing to exist despite their products, and the processes to produce them, remaining economically viable and in demand. Climate change is a systemic problem, requiring a systematic approach. Therefore, policy engagement is critical to ensure that decarbonisation in line with 1.5°C is feasible for all sectors, or where it is not, the demand of the sector's products can be substituted in a way that mitigates social risks in a just manner.⁷⁶ Sector engagements, including those conducted through the CA100+ Global Sector Strategies, can help uncover where policy incentives need to shift to enable real world decarbonisation.

In addition to having expectations of our investee companies, asset managers and policy makers to ensure global warming is kept within the limits of 1.5°C maximum temperature rise, the Alliance wants to hold itself and our activities to the same standards. Therefore, in light of the CA100+ Net Zero Company Benchmark, the Alliance endorses this as a tool for companies and asset managers and the Alliance has evaluated the indicators that are relevant for its own activities. See the Annex for more details.

76 A common position on the Just Transition is not yet defined by the Alliance, but related guidance for individual members may be found here unpri.org/research/climate-change-and-the-just-transition-a-guide-for-investor-action/3202.article

7. Financing transition targets

Alliance financing transition overview and overall strategy

The Alliance track on Financing Transition focuses on assessing climate solution investments e.g., in the form of blended finance vehicles and structures, carbon removal instruments (nature-based and technical solutions) and climate solution technologies, which avoid, remove, or sequester emissions. The track aims to enhance the supply side of climate solution investments by collaborating with leading companies in the real economy on financing climate solution infrastructure, creating more transparency on investable climate solutions or publishing specific requirements and criteria for blended finance structures, motivating asset managers to create such investment vehicles. The objective of the track is also to support the growth in climate solution investments within the Alliance members' investment portfolios.

Asset owners have a fiduciary responsibility to seek the maximum risk-adjusted returns on their investments. Risk/return expectations of climate solution investments must also fulfil such requirements. This means among other criteria that no investments in the green transition and climate solutions should be conducted if they are expected to give a loss or perform worse than other investments. The Alliance therefore strives to collaborate with all stakeholders e.g., public finance institutions like DFIs, policy makers and other stakeholders to work on blended finance, de-risking mechanisms and enlarging the supply side of climate solutions.

Definition of “climate solution investments”

To enable consistency across the Alliance membership, a definition for “climate solution investments” has been established taking into account publicly available definitions:

Climate solution investments are investments in economic activities considered to contribute substantially to climate change mitigation (solutions substantially reducing greenhouse gases by avoiding, removing emissions/by sequestering carbon dioxide already in the atmosphere)/ climate change adaptation (where that activity substantially contributes to enhancing adaptive capacity, strengthening resilience and reducing vulnerability to climate change). Economic activities making a substantial contribution to the first two objectives (climate change mitigation or adaptation) must be assessed to ensure they do not cause significant harm to all remaining environmental or social objectives.

Alliance members should track both direct solutions and adaptation technologies as climate solution investments.⁷⁷

Financing transition targets and reporting

Financing transition targets ensure that Alliance members use the resources and capacities available to them to grow net-zero solutions including in their investment portfolio. Alliance members are asked to build on their network of governments, asset managers, industry, and other stakeholders to contribute to this overarching target. Asset owners should explore supporting the growth of climate solution investments as defined above.

Alliance members, independent of whether a financing transition target has been set or not, should report annually to the Alliance on climate solution investments tracking. All members that have set a financing transition target shall contribute to the financing transition track and sub-track work. Members may also set an individual quantitative target.

⁷⁷ This is also in line with the EU Taxonomy (however, this alignment does not mean that the EU Taxonomy should be applied in all cases, notably non-EU members which do not need to comply with EU Taxonomy approaches)

Diagram V: Financing transition—target setting

Targets	<ol style="list-style-type: none">1. Report on progress on a climate-positive trend for all Alliance members—an individual public quantitative progress target is optional.2. Contributions to Alliance’s Financing Transition sub work tracks for example supporting activities providing larger transparency, building solutions or developing a climate solution reporting
Reporting	<ul style="list-style-type: none">▪ Assets under Management of Climate Solution Investments—portfolio revenue share in “green/brown activities” for listed or private equity/debt, EU taxonomy compliant (optional)▪ Internal reporting for public aggregation of inventory (base year) and annual progress, as defined in the Protocol, is relevant for all members▪ Report on OECD and non OECD countries (recommended)▪ Reporting on impact KPIs is recommended—one possible KPI eg. avoided emissions for owned renewables.



Contributions to the financing transition track and sub-tracks

The financing transition track works on content via the following sub-tracks:

- i. Instruments and Vehicles
- ii. Asset Classes and Sectors
- iii. Target Setting and Reporting
- iv. Climate Benchmark
- v. Carbon Markets

By contributing to these sub-tracks, Alliance members qualify for financing target achievement. This includes active participation contribution to delivering content e.g., via developing guidance for climate solution reporting, consulting the TSVC, support developing a digital road map for climate solution reporting and establishing relationships with other initiatives. Going forward, more sub-tracks might be added as requested by the members.

8. Policy engagement

A supportive policy environment is critical to the viability of a net-zero transition. Without decisive action by governments to reduce emissions, there will remain insufficient market incentives to allocate capital in line with a 1.5°C trajectory.

The private sector, including investors, can play an important role in raising government awareness and making the business case for getting back on track with the Paris Agreement and achieving climate neutrality by the middle of the century.

Asset owners are in a unique position in the financing value chain, especially those setting portfolio targets and therefore being dependent on change in policy and the real economy. The Alliance policy track seeks to amplify investor voices to realise these goals.

The Alliance is committed to policy advocacy as a necessary means to achieve net zero by 2050. Individual members are encouraged to engage governments to increase ambition on decarbonisation, for example by participating in The Investor Agenda.⁷⁸ New Alliance members are encouraged from all geographies and in time, the Alliance membership will be truly global in its geographic coverage.

The Alliance policy track has developed a strategy to work on these three priorities:

- aligning 2030 emissions reductions targets with net zero by 2050 goals and pathways;
- sector policies (real economy and financial sector) to promote transition; and
- promotion of mandatory climate reporting and transition plans.

In the execution of this strategy the track will leverage policy and regulatory messages developed in the other tracks, e.g., MRV where it relates to disclosure recommendations, or engagement where it relates to sectoral policy barriers.

The Alliance will also advocate for financial market regulation as well as support structures that enable financial institutions to finance the net-zero transition, e.g., disclosure requirements in line with TCFD-recommendations, development of country-specific transition plans, and raising awareness of climate risk impact.

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Aligning 2030 emissions reduction targets with net zero by 2050 goals and pathways

The new round of NDC submissions required under the Paris Agreement has seen enhanced commitments and emissions reduction plans but NDCs continue to fall short of putting the world on track for 1.5°C. Maximising the opportunity presented throughout 2022 and into 2023 to further advance NDCs and national plans is a key goal for the policy track.

Targeted goals

1. Commitment to enhance current NDCs with 2025 and 2030 targets that are in line with a trajectory to achieve net-zero GHGs by 2050 or sooner from developed countries; and
2. Implement net-zero commitments and trajectories via best practice national policy mechanisms, including: climate legislation enshrining the net-zero commitment; intermediate targets; an independent body to monitor and advise government; and appropriate carbon pricing regimes.

Sector policies to promote transition

Sector policies are a key component of effective climate policy, and the Alliance will advocate for sector policies consistent with net-zero emissions by 2050 or sooner from developed and large emitter countries, complemented by a commitment to a just transition.

Targeted goals

1. Elimination of direct and indirect fossil fuel subsidies;
2. Policy measures (via regulation or carbon pricing or both) to deliver the national phase-out of fossil fuel technologies e.g., coal-fired power and coal mining, sale of new internal combustion engine vehicles;
3. No deforestation, no peat, no exploitation policies⁷⁹ (NDPE);
4. Support for enhancement of natural capital, and a net-zero pathway for agriculture;
5. Support for and potentially redirecting of subsidies for scale-up of new technologies that will provide solutions in hard-to-abate sectors, e.g., CCS, green hydrogen;
6. Sectoral net-zero policies for key economic sectors: energy, power, industry, agriculture, auto- motive, aviation, and shipping; and
7. Commitment to develop granular short, medium, and long-term zero carbon infrastructure plans.

⁷⁹ Refers to no exploitation of the rights of indigenous peoples, workers and local communities.

Promotion of mandatory climate reporting and transition plans

Supporting the COP26 presidency, the Alliance provided, and will continue to provide investor support for mandatory TCFD reporting and net-zero transition plans in advanced markets.

Policy track working methods

The policy track will operate primarily through:

1. Direct engagement with politicians/officials of target countries including on accounting and audit;
2. Setting standards to ensure integrated reporting;
3. Private letter writing to officials from Alliance members;
4. Attendance at UNFCCC talks in Bonn and Glasgow (for COP26);
5. Leveraging UN platforms (e.g., UNSC office, the Coalition of Finance Ministers for Climate Action) and key moments (e.g., World Bank meetings, Climate Action Weeks, Petersburg Dialogue, PRI in Person, IMF annual meetings).
6. Mobilising Alliance members to sign appropriate investor statements;
7. Letter writing to target countries or multilateral fora; and
8. Media activities.

9. Reporting

Reporting on progress is firmly rooted in the Alliance Commitment. Members have committed to publish targets and report on progress in line with Article 4.9 of the Paris Agreement. For the Alliance and its members, it is important to communicate on progress publicly and transparently both individually and collectively.

Alliance members shall submit and publish targets within 12 months of joining (unless the end of the reporting cycle is within 3 months of joining, then members should submit and publish within a maximum of 15 months). Alliance members shall report on an annual basis, internally to the Alliance via the reporting template (the Alliance will then aggregate to provide an annual progress report). Alliance members should also report publicly on progress annually. Alliance members shall report publicly and individually on quantitative progress achievement every five years in line with Article 4.9. The Alliance will publish a progress report reflecting the Alliance's work and achievements on an annual basis and publish a more detailed report on quantitative achievements every five years.

Each member is encouraged to go beyond the Protocol by setting more aspirational ambitions. More ambitious quantitative targets in the areas defined in the Protocol may be submitted through the reporting template. Any target category which is not (yet) covered and therefore outside the Target Setting Protocol is not systematically collected, however members may publish such targets themselves.

Members shall submit their reporting on progress towards intermediate targets annually to the Alliance, including on investment portfolio emission profiles and emissions reductions. Members will be asked to submit their annual reporting in the first half of each year. The reporting should be based on the latest year-end portfolio figures. Climate data may be from an earlier date due to the updating cycles of data vendors. Members shall publicly publish quantitative outcomes against the targets every five years.

The Alliance shall issue an annual progress report based on the Alliance members' reporting to cover progress against targets to date. This will also provide some quantitative information related to range and size of the set targets. In addition, the Alliance will publish a quantitative outcome report every five years. For this purpose, the Alliance will release some of the submitted data in aggregated form. Member-specific data will be made available via company links if provided to the Alliance.

Additional information included in the report will refer to governance, membership growth, and progress from all 'working group' tracks, including references and updates to the MRV Target Setting Protocol. Furthermore, the Alliance will report on its engagement progress with collaborative initiatives, asset managers, corporates as well as policy makers, and will provide an overview related to financing the transition.

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Annex



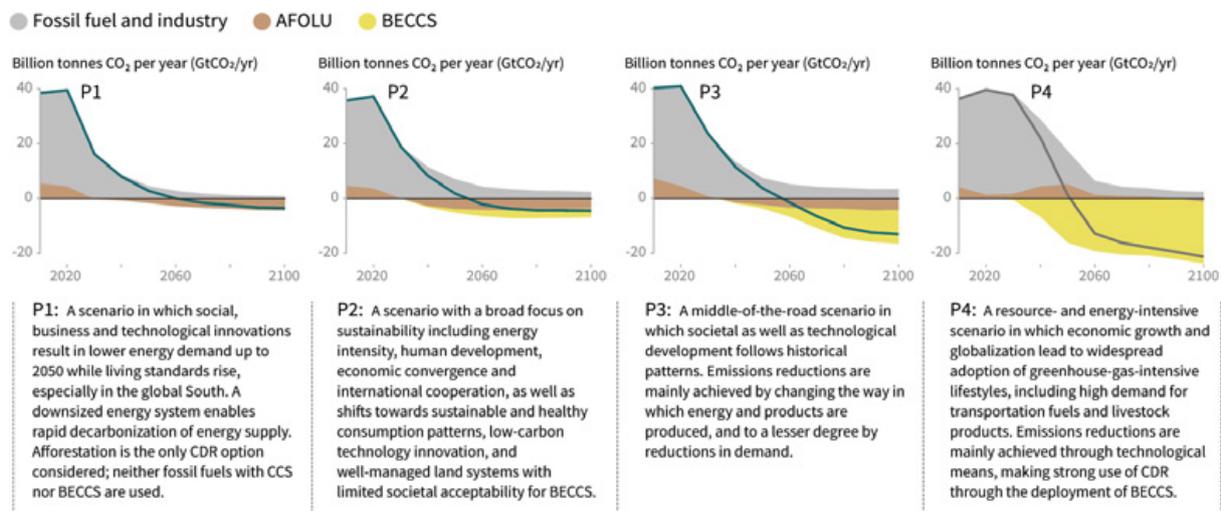
Section I: Scenario pathways

Chapter 1 sets out the recommended emissions reduction range for Alliance members. The following explains the assumptions for deriving this range.

Diagram I: Characteristics of four illustrative model pathways

Different mitigation strategies can achieve the net emissions reductions that would be required to follow a pathway that limits global warming to 1.5°C with no or limited overshoot. All pathways use Carbon Dioxide Removal (CDR), but the amount varies across pathways, as do the relative contributions of Bioenergy with Carbon Capture and Storage (BECCS) and removals in the Agriculture, Forestry and Other Land Use (AFOLU) sector. This has implications for emissions and several other pathway characteristics.

Breakdown of contributions to global net CO₂ emissions in four illustrative model pathways



Source: IPCC Special Report on Global Warming of 1.5C

Assumptions:

- The Alliance requires use of no and low overshoot scenarios only (often referred to as P1, P2, P3 type scenarios):
 - Noting that forthcoming AR6 scenario results are expected to be roughly in line with SR15 scenarios.
- The Alliance is committed to reviewing climate science and the resulting suggested emission reduction ranges with every revision of the Target Setting Protocol.
- CO₂ trajectories provide the blueprint for all GHGs; the Alliance's goal is net zero by 2050 for all GHGs, which is more ambitious than the IPCC climate scenarios, because

these largely see net zero for non-CO₂ GHGs later than 2050. However, due to data reporting practices at present, data is typically reported in CO₂e. Thus, the Alliance will need to set targets on CO₂e. This has the effect of somewhat balancing out the net zero end date between GHGs given practical constraints for tracking GHG emissions reductions as CO₂e.

- Global pathways are sufficient when portfolios are diversified regionally and by sector.
- When scenarios do not provide data for 2015, 2025, 2035 etc. the data is linearly projected, a method that is supported by colleagues consulted at CICERO, PIK, among other partners.
- To be less sensitive to the assumptions and narratives of individual scenarios, the Alliance will rely on the median of a sub-set of scenarios, namely by filtering those scenarios which foresaw more than 2% reductions from 2015–2020, since the emissions reductions seen during these years were not as scenarios projected (aside from the impacts of the COVID-19 pandemic).
- The Alliance does not consider any P4-type scenario to be eligible for the emission reduction calculations and justifications.
- The Alliance also sensitised the chosen scenario set against substantial increase in bioenergy use beyond efficiency gains. If scenarios which foresee more than 10% increase versus 2020 baseline would be excluded, the resulting emission reduction range from remaining scenarios would be condensed to -24 to -31% (2025). The overall proposed reduction range seems sufficiently robust against this sensitivity.
- To not rely on extreme scenarios, the Alliance deems the 25–75% quantile best for deducting the reduction range. Nevertheless, IPCC P1–P3 scenarios outside this corridor are still backed by science.

Section II:

Real estate levers

The levers available for decarbonisation of real estate assets held in a portfolio depend on the building type and geographic exposure. Reallocation or divestment approaches are less feasible compared to liquid asset classes. Achieving emission reductions by selling low performing buildings and acquiring better performing ones should not be the primary lever to reach targets. Instead, the approach should be reducing the carbon emissions of the existing portfolios or purchasing high-emitting assets with the intention of making them net zero by 2050.

The key levers are:

- Improving the buildings' energy efficiency (this lever can require capital expenditure (CAPEX) and should ideally be based on building-specific retrofit plans that lead to net zero by 2050 at latest). The suitability of this lever depends on the average age of the portfolio, as for more recent buildings the improvement can be marginal.
- Installing on-site renewable energy sources and/or purchasing off-site generated green electricity. Switching to low-carbon energy sources can be done both through installing on-site renewable energy (e.g., through solar panels) or purchasing off-site generated green electricity (assuming market-based approach is used). Tenant engagement. The use of this lever is key for buildings rented to third party tenants. The applicability of this lever depends on regulation and on the type of tenant (easier for buildings with a single well-capitalised tenant). For a more fragmented portfolio, the use of a green lease can help.
- Policy advocacy and grid operator engagement. Engaging with policy makers and real estate industry associations with the intention to create obligations for the disclosure of energy consumption data from tenants and to align asset owner and tenants on a common goal of reducing the carbon emissions from the building. Where possible, Alliance members should also aim to engage with grid operators, directly or through policy makers or industry associations, to accelerate the decarbonisation of the grid.

The ability to work with these levers and to understand how they will impact each Alliance member's decarbonisation is important. Efforts across the real estate sector will have significant regional differences and also depend on the owner structures. In particular, engagement initiatives will need to be member-specific at the local, national, or regional level.

Section III:

Sector target metrics

The following describes detailed information on the rationale, way forward and recommended metrics for sector targets of high emitting sectors.

Electric utilities

The utilities sector covers emissions associated with the energy, transport, operations, and maintenance of power/heat generating equipment and associated transport infrastructure (energy grid and pipeline infrastructure).

Rationale for inclusion:

- One of the sectors with the most significant exposure to climate-related risks is utilities, as this sector lies at the core of the energy transition.
- Reliance on coal is one of the key transition risks for electric utilities. Uncertainty remains about when and at what pace the coal-fired plants will be phased out.

Way forward:

- Setting carbon emission reduction targets is a key area of engagement for investors with electric utilities.
- More transparency is needed on the retirement schedule of coal-fired plants (particularly on a national level) as the timing of this is important to understand the future financial impact on companies and the investments that will be needed to develop alternative generation sources. Speed of development of renewables and other low-emission energy sources sets the pace of the shift away from fossil fuels.
- Supported by a conducive regulatory and economic context, coupled with strong customer demand evidenced by growth in power purchase agreements (PPAs), hydro, nuclear, wind and solar PV will be significant sources of emission-free electricity.

Coal phase out

All Alliance targets related to coal shall therefore be in line with the findings of the IPCC Special Report on Global Warming of 1.5°C. The Alliance has produced a Position Paper on Coal¹ and target setting on utilities, should follow the guidance as indicated in the paper. The Alliance will allow for coal thresholds determined by either 'energy generated' or 'installed capacity'.

Examples of product/production targets:

- tCO₂e/MWh
- mio. tCO₂/PJ

Oil & gas

The oil and gas industry can be roughly broken down into three main segments: upstream, midstream, and downstream. The Alliance sector metrics focus predominantly on upstream and downstream, as this is where the majority of emissions are produced, and mitigation actions focus on. Methane emissions resulting from fossil fuels mining and extractions are also to be considered.

- Upstream: Upstream businesses are involved in exploring for oil and gas reservoirs, developing the sites, and then extracting the fossil fuels.
- Midstream: Midstream businesses are responsible for moving extracted raw materials to refineries to process the oil and gas. They include shipping, trucking, pipelines, and storage operations.
- Downstream: Downstream businesses refine raw materials into products for sale, converting oil and gas to products such as gasoline, heating oil, lubricants, and plastics. All the supermajors are integrated, meaning they have both upstream and downstream assets.

Rationale for inclusion:

- The sector has a range of climate and environmental problems, not least because the fossil fuels it produces, and that the global economy is dependent on, are one of the main global sources of GHGs.
- Carbon emissions from oil and gas in existing fields and mines take the world beyond 1.5°C of warming and nearly exhaust a 2°C carbon budget.

Way forward:

- The sector itself must fundamentally transform if we are to achieve the goals of the Paris Agreement, with companies either winding down and returning value to shareholders or pivoting and driving the transition to a low-carbon energy system.
- Oil and gas companies need exponential growth in environmental innovation. Examples of intensity targets:
 - Operational carbon intensity (Scope 1 & 2); mio. tCO₂e/PJ
 - Portfolio carbon intensity (Scope 1,2 & 3); tCO₂e/TJ

¹ [unepfi.org/wordpress/wp-content/uploads/2020/11/Net-Zero-Asset-Owner-Alliance-Thermal-Coal-Position.pdf](https://www.unepfi.org/wordpress/wp-content/uploads/2020/11/Net-Zero-Asset-Owner-Alliance-Thermal-Coal-Position.pdf).

Transport

Under the Alliance Protocol, the transport sector includes civil aviation, shipping, and road transport. Civil aviation includes passenger planes and airline services/airplane operation. Shipping includes ships and shipping line services/ ship operation. Road transport includes light and heavy-duty vehicles, car services/ car operations, and truck/ bus services or operation.

Rationale for inclusion:

- Transport accounts for about a quarter of global energy-related carbon emissions. This contribution is rising faster than for any other energy end-use sector. Without aggressive and sustained policy intervention, direct transport carbon emissions could double by 2050.
- Emissions from aviation and shipping have recently been increasing at a faster rate than for any other transport mode. But energy demand and emissions have also continued to rise for all modes of road transport (cars, trucks, buses and two- and three-wheel vehicles).

Way forward:

- The transport sector is dependent on the ability of the energy and utility sector to provide sufficient amounts of renewable electricity, bio, and synthetic fuels to supply airlines, shipping lines and road vehicles for passenger and freight transport.
- The key responsibility for the transport sector is to move to electric vehicles, biofuels, and renewable produced synthetic fuels. A rapid electrification of road transport fleets has crosscutting benefits for energy and especially for the utility sector as increased numbers of electric vehicles will come with higher storage capacities for electricity and significant demand side management possibilities to integrate high shares of variable solar and wind generation.

Examples of product/production targets:

- g CO₂/pkm
- MJ/pkm
- g CO₂/tkm
- MJ/tkm

Materials

Steel

The steel sector covers steel manufacturing from mining to the product steel, and does not take into account emissions from secondary steel products e.g., construction materials.

Rationale for inclusion:

- The global demand for steel continues to rise as economies grow, urbanise, consume more goods, and build up their infrastructure. Steel is deeply engrained in our society.
- The steel sector is an important global GHG emitter from fossil fuel use and industry.
- Without targeted measures to reduce demand for steel where possible, and an overhaul of the current production fleet, CO₂ emissions are projected to continue rising.

Way forward:

- Through innovation, low-carbon technology deployment and resource efficiency, steel producers have a major opportunity to reduce energy consumption and GHG emissions, develop more sustainable products and enhance their competitiveness.
- Some companies are trying to make green hydrogen-based steel economically viable.

Examples of product/production targets:

- tCO₂/ton steel

Cement

The cement sector covers the manufacturing of cement steel, this includes all activities required to produce cement, from mining limestone and clay to the final cement product. However, it does not include further processing of cement e.g., in the construction industry.

Rationale for inclusion:

- Cement is used to produce concrete, the most consumed manufactured substance on the planet. Rising global population and urbanisation patterns, coupled with infrastructure development needs, drive up the demand for cement and concrete and increase pressure to accelerate action in reducing the carbon footprint of cement production.
- Availability of alternative cementing materials is limited; therefore, cement will continue to remain in demand. Consequently, cement plants may not face an immediate stranded assets problem, but they will have to confront serious long-term emissions challenges.

Way forward:

- Key strategies to cut carbon emissions in cement production include improving energy efficiency, switching to lower-carbon fuels, promoting material efficiency (to reduce the clinker-to-cement ratio and total demand), and advancing process and technology innovations.
- Key strategies for optimising the use of concrete in construction include reducing waste, encouraging reuse and recycling, maximising design life and using concrete's properties to minimise operational energy of the built environment.

Examples of product/production targets:

- tCO₂/ton cement
- tCO₂/ton clinker²

Aluminium

This sector covers the energy demand for the production of primary and secondary aluminium.

Rationale for inclusion:

- Demand for aluminium, an essential material for several key industries including construction, transportation, and power transmission, is expected to grow significantly by 2050. As such, emissions must be addressed now.
- As a significant emitter, the aluminium sector needs an action plan towards its pathway to decarbonisation. Now is the time to focus on finding solutions so it can play its part in meeting international decarbonisation targets.

Way forward:

- The decarbonisation of electricity consumption. The aluminium industry's power supply can be fundamentally addressed through the transition to renewable energy sources.
- The decarbonisation of direct emissions from the processing of aluminium. The highest-impact pathways to decarbonise process emissions are transitioning to technologies that can provide heat and steam without the use of fossil fuels and the development of a non-carbon anode.
- The recycling of aluminium scrap, which requires just 5% of the energy needed to produce primary aluminium.

Examples of product/production targets:

- tCO₂/ton aluminium

2 Clinker is a nodular material produced in the kilning stage during the production of cement and is used as the binder in many cement products.

Agriculture, forestry, and fisheries

The agriculture sector covers agriculture and food including tobacco production. The forestry sector covers the energy demand for all wood and wooden products including pulp & paper and printing. Fisheries covers the energy demand for the fishing industry.

Rationale for inclusion:

- Agriculture, forestry, and fisheries must play a critical role in limiting global warming to 1.5°C as these sectors account for a large, growing, and impactful share of global GHG emissions. A growing world population will result in a need for more food, including proportionally more protein and, it follows, increased agricultural emissions.

Way forward:

- Reducing agricultural emissions will require changing how we farm, what we eat, how much we waste, and how we manage our forests and natural carbon sinks.
- Efforts can involve expanding adoption of technologies or agricultural practices that can reduce emissions while maintaining food production levels.
- Efforts can involve reducing deforestation and delivering reforestation, afforestation, and other natural sinks.

Examples of product/production targets:

- Activity parameter—MJ/\$GDP

Chemicals

The chemicals sector in our review is divided into the following sub-sectors:

1. Pharmaceuticals
2. Agricultural chemicalsSpecialties, inorganic chemicals, consumer products
3. Manufactured fibres, synthetics rubber
4. Bulk petrochemicals & intermediates, plastic resins

Rationale for inclusion:

- The chemicals sector is the largest industrial energy consumer and is a key contributor of direct CO₂ emissions. The sector's substantial energy consumption is propelled by demand for a vast array of chemical products. Demand for primary chemicals—which is an indication of activity in the sector overall—has increased significantly in recent years and is expected to grow.

Way forward:

- Increased energy efficiency—through both incremental improvements to existing methods and step changes resulting from switching to fundamentally more efficient methods (e.g., from coal- to natural gas-based processing).
- Improved recycling has multiple benefits, including reducing the need for virgin production, reducing downcycling (in which a material is recycled into a lower-value end use), and reducing plastic waste.

Examples of product/production targets:

- Activity parameter—MJ/\$GDP

Construction and buildings

This sector covers the electricity, heating and climatisation energy demand for residential and commercial buildings.

Rationale for inclusion:

- The building and construction sector plays a central role in the shift towards a low-carbon economy as the sector's GHG emissions account for a significant proportion of global GHG emissions.
- The major contributors to these emissions are the materials used, as well as the heating, cooling, and lighting of buildings and infrastructure.

Way forward:

- Approaches such as maximising the use of existing assets, promoting renovation instead of demolition and seeking new circular business models that reduce reliance on carbon intensive raw materials are needed.

Examples of product/production targets:

- CO₂/m²
- kWh/m² a

Water utilities

This sector covers the energy demand for water utilities.

Rationale for inclusion:

- Water utilities are a source of global carbon emissions from energy consumption, as well as process emissions from nitrous oxides and methane emissions in wastewater systems. Therefore, it can contribute its share to meeting international decarbonisation targets. A large amount of energy is expended to supply, treat, and use water, meaning that water-oriented strategies can result in significant reductions in energy use and GHG emissions.

Way forward:

- The largest proportion of the water industry's CO₂e emissions is attributed to energy use. Therefore, decarbonisation of the energy industry is essential to enable the water industry to meet its target for reduction of emissions.
- New technologies for treatment and processing of 'waste' streams are suggested, which would recover heat and valuable raw materials for agriculture and manufacturing, further reducing carbon use.

Examples of product/production targets:

- kWh/m³

Textiles and leather

This sector covers the energy demand for the textile and leather industry.

Rationale for inclusion:

- It is one of the major polluting sectors of the world. From fibre production to the consumer use phase, the industry releases huge amounts of carbon dioxide.

Way forward:

- Several full life-cycle assessments of garments and other textiles have been undertaken, and they demonstrate that attention must be paid at every stage of the supply chain, to reduce the total environmental load. This includes how fibre is grown or synthesized, how fabric is spun, treated, and dyed, how the garments are constructed and delivered and then how they are used, washed, and finally disposed of. Everyone, from farmers to manufacturers, to designers and consumers can contribute to change.

Examples of product/production targets:

- Activity parameter—MJ/\$GDP

Section IV: Sector pathway comparison

Sector pathways

The sector targets are being set using scenarios and sector pathways modelled to align with a 1.5°C carbon budget. The modelling approach provides a translation of technology development and technology use into transition and decarbonisation pathways for economic sectors. The 1.5°C models explored include:

One Earth Climate Model (OECM); and

1. IEA Net Zero by 2050: A Roadmap for the Global Energy Sector

The two initial models (for which information was provided to the Alliance) have been compared in order to establish a corridor of possible quantitative targets and will also be used to corroborate the portfolio target to make sure portfolio targets and sector targets are aligned and consistent.

It is challenging to identify multisector models which include information at the sector level, with enough granularity for target setting purposes. The Alliance continues to call upon the scientific community and other providers to continue to advance such modelling.

In addition, the following chart is adapted from the Glasgow Financial Alliance for Net Zero (GFANZ) progress report, to which the NZAOA contributes under Workstream 2 on Sector Pathways. The chart provides an overview of a number of initiatives which are seeking to use sector pathway modelling in their work.

Table I: Sector modelling efforts and initiatives applying sector pathway modelling

	Modelling efforts			Initiatives applying sector pathway modelling (implementation of 1.5°C pathways in progress)		
	One Earth Climate Model	Network for Greening the Financial System ³	International Energy Agency NZE2050 ⁴	Mission Possible Partnership	Climate Action 100+	Transition Pathway Initiative
Agriculture	✓	✓				
Aluminium	✓	✓		*		*
Cement	✓	✓	✓	*	✓	*
Chemicals	✓	✓	✓	*	*	*
Coal	✓	✓ (covered in Energy)	✓		*	*
Commercial & residential real estate	✓	✓	✓			
Steel (& Iron)	✓	✓	✓	✓	✓	*
Oil & gas	✓	✓ (covered in Energy)	✓		✓	✓
Power generation	✓	✓ (covered in Energy)	✓		✓	
Transport	✓	✓	✓		*	*
Aviation	✓		✓	✓	✓	*
Shipping	✓		✓	✓	✓	*
Trucking	✓	✓	✓	*		
Auto	✓	✓	✓	*	*	*

✓ Covered * In Progress

Source: Adapted from GFANZ Progress Report 2021

3 Includes use of 3 models: GCAM5.3_NGFS, MESSAGEix-GLOBIOM 1.1, and REMIND-MAgPIE 2.1–4.2.

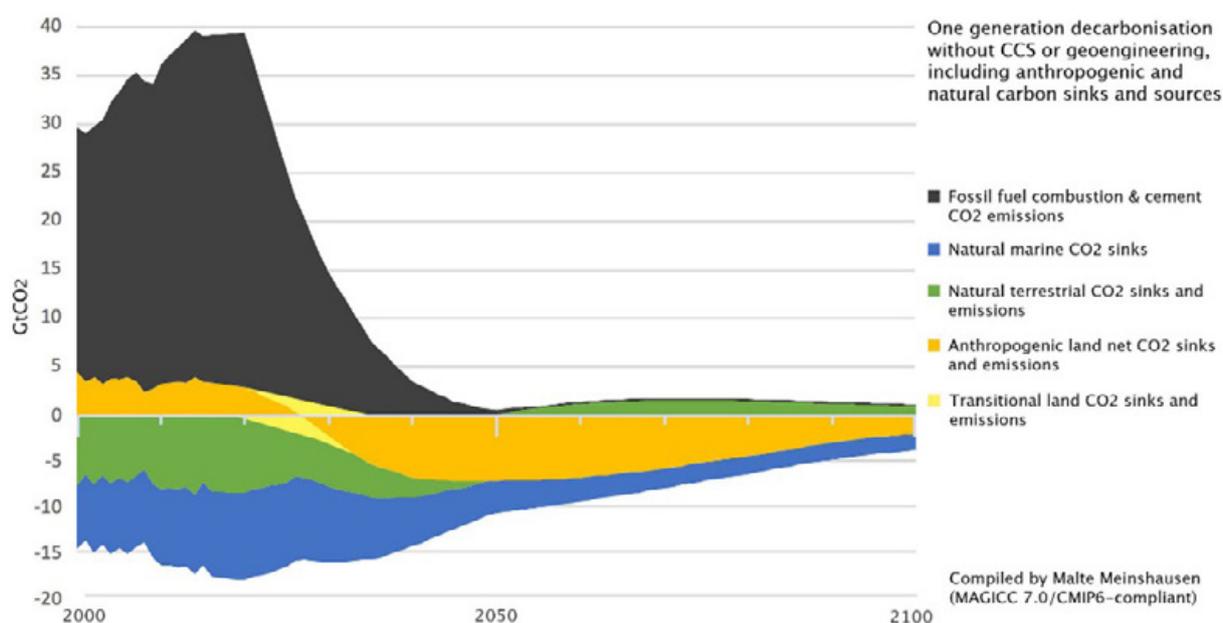
4 Also included in World Energy Outlook

Model: One Earth Climate Model (OECM)

Beginning Q1 2020 and following a period of consultation with various climate modelling organisations, the Alliance collaborated with the University of Technology Sydney, Institute for Sustainable Futures' OECM. It has been used as a first reference case against which Alliance members could set sector targets at five-year intervals to 2050 across all economic sectors and geographic (including regional data for North America and the European region) regions.

The 1.5°C scenario is based on the goal of limiting global warming to 1.5°C, drawing on scenarios underpinning the IPCC's Special Report on Global Warming of 1.5°C, and the scientific consensus around the severe risks associated with global warming even at 1.5°C, and which will continue to increase significantly beyond 1.5°C. The scenario aims to achieve a global energy-related CO₂ emissions budget of around 400 Gt, accumulated between 2020 and 2050. The [OECM \(2020\)](#) shows the 1.5°C target can be achieved through a rapid transition to 100% renewables by 2050, with renewables needing to hit 56% of the global power generation mix by 2030 under the model. The shift to renewable energy will need to be coupled with a major conservation effort to increase the resilience of natural ecosystems and boost food security. This includes a moratorium on land conversions by 2030 and nearly 86 GtCO₂ of 'emissions removed' via afforestation and land restoration (shown in gold below the zero line), which pulls carbon dioxide out of the atmosphere and stores it in trees and the soil.

Diagram II: One Earth Climate Model



Source: One Earth Climate Model

The OECM is based on a modelling cluster that provides sector specific five-year targets compatible with a 1.5°C pathway. The model is based on the following assumptions:

- Development of a 100% renewable energy scenario;
- Decarbonisation of the entire global energy sector within one generation (until 2050);
- Based only on technologies currently available or under development, excluding BECCS, CCS and nuclear energy. Note that the exclusion of CCS technology from the OECM model used to set sector targets might differ from the approach used by other organisations. OECM also includes methane emissions resulting from fossil fuels mining and extraction.

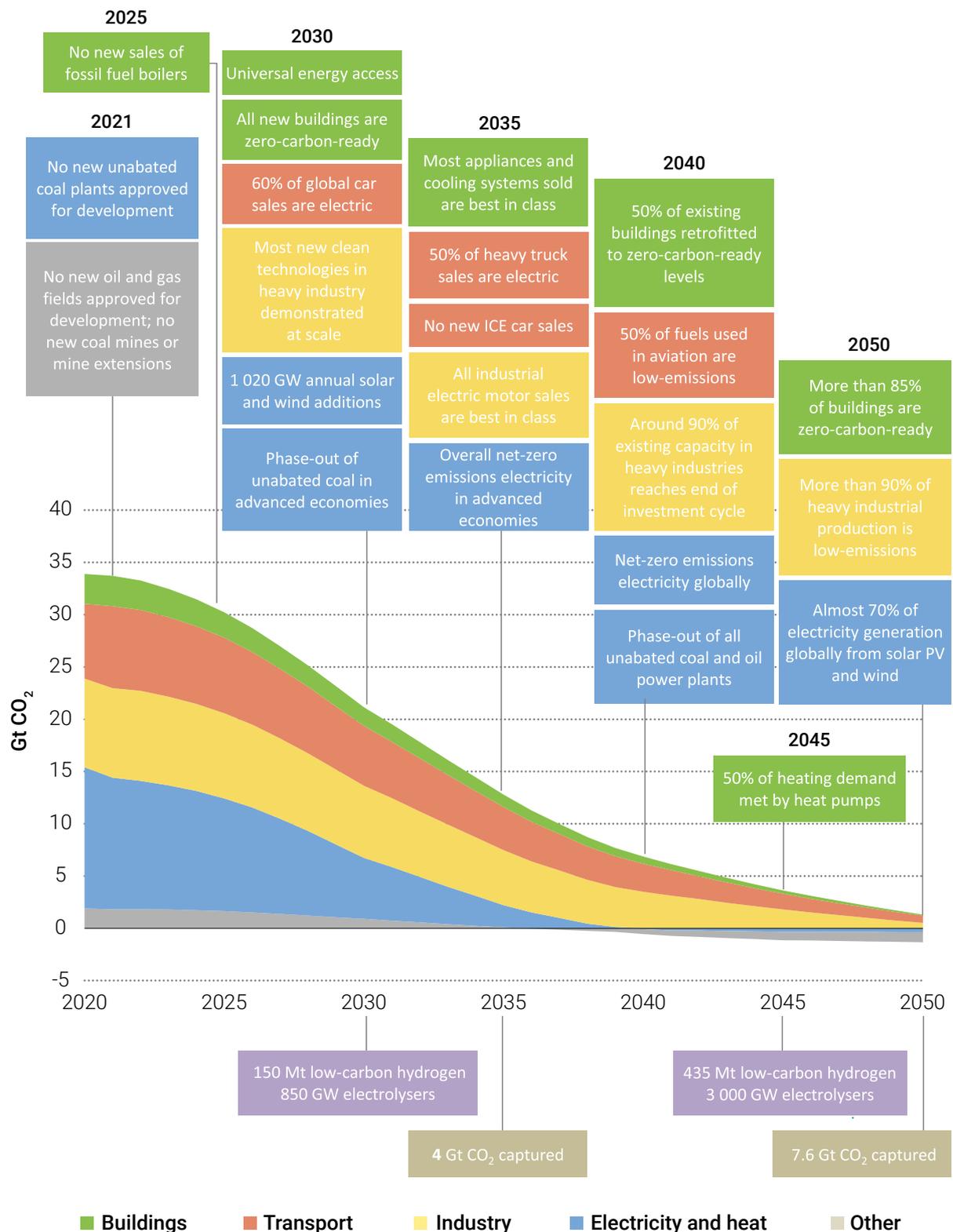
The OECM-derived net-zero pathways have been peer reviewed by a number of climate modelling organisations including the Energy Transition Commission, Exponential Roadmap, Potsdam Institute for Climate Impact Research, Science Based Targets Initiative, CDP, and WWF.

The International Energy Agency (IEA): Net Zero by 2050, A Roadmap for the Global Energy Sector

In 2021 the IEA released a special report of how to transition to a net-zero energy system by 2050 while ensuring stable and affordable energy supplies, providing universal energy access, and enabling robust economic growth. It sets out a cost-effective and economically productive pathway, resulting in a clean, dynamic, and resilient energy economy dominated by renewables like solar and wind instead of fossil fuels. The report also examines key uncertainties, such as the roles of bioenergy, carbon capture and behavioural changes in reaching net zero.⁵The IEA NZE2050 scenario includes an overall carbon budget of 460GtCO₂ (CO₂-only) for global energy-related and industrial process only.

5 Press release, IEA Special report: Net Zero by 2050

Diagram III: Key Milestones in the pathway to net zero



Source: IEA NZE2050

Comparison between the IEA Net Zero Roadmap and the OECM 1.5°C sector pathway⁶⁷

To aid Alliance members in their assessment and application, the main differences between the OECM and the IEA NZ are outlined below.

One Earth Climate Model (OECM)

The One Earth Climate Model (OECM) is a SSP 1 scenario as defined by the IPCC: SSP 1 is a scenario in which social, business, and technological innovations result in lower energy demand up to 2050 while living standards rise, especially in the southern hemisphere. A downsized energy system enables rapid decarbonisation of energy supply. Afforestation is the only carbon dioxide removal option considered, neither fossil fuels with CCS nor BECCS are used.

OECM avoids a carbon budget overshoot and expands 'natural carbon sinks' (e.g., forest, mangroves & seaweed) to achieve negative emissions to compensate process emissions which are currently unavoidable (with currently available technologies).

Key features:

- Cumulative energy-related CO₂ emissions 2020–2050: 400 GtCO₂. Overall cumulative negative emissions via natural carbon sinks: (-) 86 GtCO₂. The OECM includes 50 GHG gases—including over 30 CFCs and HFCs as well as black carbon.

Reporting:

All GHG emissions are separated:

- Data is split into primary and secondary energy emissions, as well as end use activity emissions. Data for 12 industry sectors is in line with the Global Industry Classification Standard (GICS).
- Data is disaggregated by region: Global, OECD North America, OECD Europe (more regions are planned). The OECM also provides carbon emissions data, product level intensity data as well as energy demand data per sector.

IEA Net Zero by 2050 scenario

The energy pathway of IEA Net Zero by 2050 scenario classifies (partly) as an IPCC SSP 2 scenario which is defined as “a scenario with a broad focus on sustainability including energy intensity, human development, economic convergence and international cooperation, as well as shifts towards sustainable and healthy consumption patterns,

6 IEA Special report: Net Zero by 2050, A Roadmap for the Global Energy Sector, page 20

7 The Alliance will make available a quantitative comparison between the two models when the next phase of the OECM is finalized.

low-carbon technology innovation, and well-managed land systems with limited societal acceptability for BECCS". Land-use scenarios and all other non-energy GHGs including over 30 substances that fall under the Montreal Protocol are not included.

Key features:

- The Net Zero Emissions by 2050 Scenario (NZE) is designed to show what is needed across the main sectors by various actors, and by when, for the world to achieve net zero energy-related and industrial process CO₂ emissions by 2050. Cumulative global energy-related and industrial process CO₂ emissions between 2020 and 2050 amount to just over 460 Gt. The NZE also aims to minimise methane emissions from the energy sector. Alongside corresponding reductions in GHG emissions from outside the energy sector, consistent with limiting the global temperature rise to 1.5°C without a temperature overshoot (with a 50% probability). Universal access to sustainable energy is also achieved by 2030.

Reporting:

The IEA Net Zero by 2050 covers: All energy related and industrial process emissions but does not split between Scope 1, 2 and 3 emissions. Does not specify all regions and industry sub-sectors and does not use the GICS categories.

As demonstrated above, a detailed quantitative comparison is not possible, however, key differences are outlined below.

Table II: Comparison of OECM versus IEA NZ2050 scenario

IEA Net Zero Scenario	OECM—Energy pathway
Aside from projects already committed as of 2021, no new oil or gas fields, or coal mines or mine extensions should be approved for development after 2021.	Existing oil and gas fields and coal mines are phased out at an average annual decrease rate of at least 8.5%, 3.5% and 9.5% respectively. New fossil fuel projects cannot go ahead.
Fossil fuel use falls from almost 80% of global energy supply in 2021 to just over 20% in 2050. CC(U)S is used after 2030 for coal, gas, and bio energy fuelled plants.	Fossil fuels will account for just under 8% of total energy supply in 2050 (for non-energy use only).
No new investment decisions should be taken for new unabated coal plants, the least efficient coal plants should be phased out by 2030, and by 2040 any remaining coal plants should be retrofitted with CCUS.	No new investment in fossil power plants after 2030, and coal power plants—including combined-heat and power (CHP)—will be phased out in Europe and North America between 2030 and 2035.
Emissions reductions through to 2030 rely on existing technologies, but by 2050, 46% of emissions reductions come from technologies that are currently at the demonstration or prototype phase.	Emissions reductions are almost completely driven by the shift to existing renewable energy technology, with some new technological development needed to assist the transition to electric vehicles, biofuels and hydrogen in the industry and transport sectors.

IEA Net Zero Scenario	OECM—Energy pathway
<p>Carbon Capture, Utilization and Storage (CCUS) will capture 7,600 Mt CO₂ per year by 2050. 5,245 Mt of this will be from fossil fuels and processes (including power, industry, and hydrogen production), 1,380 Mt from bioenergy (e.g., BECCS), and around 1,500 Mt will be from DACS technologies. IEA: approx. -120 Gt until 2050 (cumulative) no data for 2100.</p>	<p>BECCS and CCUS are both excluded from the analysis due to their lack of commercial viability. Reforestation begins immediately, and deforestation ends by 2030. Nature-based carbon sinks (forests, mangroves, and seaweed) are used instead of CCS to compensate for process emissions. OECM: -5 GtCO₂ by 2050/-86 GtCO₂ (cumulative until 2100)</p>
<p>Hydrogen production will be scaled up to be used as fuel in sectors such as shipping, air travel and heavy industry, with a total of 11 EJ/a produced by 2050.</p>	<p>7% of final energy use (2 EJ/a] will be supplied by renewable generated hydrogen, mainly for industrial process heat by 2050.</p>
<p>Electricity will account for almost 50% of total energy consumption in 2050, and total electricity generation will increase by 250% from 2021. IEA: Total global power generation in 2050: 72,000 TWh</p>	<p>Electricity will account for around 65% of total energy consumption in 2050. Electricity generation will increase by 206% until 2050, based on 2020 levels. OECM: Total power generation in 2050: 53,500 (2020: 26,700 TWh)</p>
<p>Almost 90% of global electricity generation in 2050 comes from renewable energy. Solar and wind account for 70%. Two thirds of <i>total energy supply</i> in 2050 is from renewables, with solar accounting for one fifth of total global energy supply.</p>	<p>100% of electricity generation will be from renewable energy. 100% of <i>total energy supply</i> will be from renewable energy, with solar accounting for one third of global energy supply. Any remaining fossil fuels will only be used for non-energy uses such as the petrochemicals industry.</p>
<p>Solar generation capacity is expected to increase 20-times between now and 2050, and wind capacity by 11 times.</p>	<p>Solar generation is expected to increase by 23 times between 2020 and 2050, and wind by 14.5 times.</p>
<p>Annual rate of energy intensity improvements of around 4% per year to 2030.</p>	<p>While the rate differs per region, this report assumes a comparable global average rate of energy intensity improvements to the IEA.</p>
<p>Total global final energy demand in 2050 is around 17% less than 2020.</p>	<p>Total global energy demand is 29% less than in 2020.</p>
<p>Bioenergy will be deployed for aviation, shipping, cooking, and replacing natural gas with biomethane to provide heat and electricity. Bioenergy will produce 102,000 PJ/a by 2050.</p>	<p>Sustainable biomass will produce 85,000 PJ/a in 2050. It will primarily be used for process heat and aviation.</p>
<p>The biggest innovation opportunities are in the areas of advanced battery storage, hydrogen electrolysis and direct air capture and storage (DACs).</p>	<p>No reliance on “break-through” technologies such as BECCS or DACS, but focused on technology that is already market ready, including technologies that may still evolve and fall in cost over time use to economies of scale.</p>

Source: Net-Zero Asset Owner Alliance Protocol Annex (with contributions from Dr. Sven Teske)

World Economic Forum Mission Possible Partnership (WEF MPP)

The Mission Possible Partnership is a coalition of public and private partners working on the industry transition to set heavy industry and mobility sectors on the pathway towards net-zero emissions by mid-century. MPP is comprised of four core partners—the Energy Transitions Commission, Rocky Mountain Institute, the We Mean Business coalition, and the World Economic Forum. It focuses on developing partnerships to deliver key initiatives for enabling industries to achieve net-zero CO₂ emissions, including aviation, circular cars, heavy-duty road transport, shipping, aluminium, chemicals, cement and concrete, and iron and steel. Sector pathways will be reviewed when made available to the Alliance.

Sectoral intelligence received from sector participants

To reality check the top-down sector pathways, the Alliance will also employ a bottom-up approach. This includes, but is not limited to:

- **Sector dialogues:** As companies converge around intensity-based or CO₂ emissions per production unit, it is possible to begin to identify those who are ‘on the mark’ and those who fall short. Through sector dialogues, the “climate change sector leaders” will be used for reality checking the net-zero targets.⁸ Gap Analysis: Transition Pathway Initiative (TPI) and other initiatives and data providers have collected targets for the high emitting sectors. This data will be used for a gap analysis of where the selected high emitting sectors are today and will be compared to what science deems necessary to achieve net-zero pathways. The result will feed into sector, company, and policy engagement. Reference to other sector pathways: Where sector pathways are not derived from an economy-wide model, but rather developed per sector, the Alliance will compare the individual sector pathways as well. For example, the Science Based Targets initiative has produced a 1.5°C pathway for the power sector. The results from these sector decarbonisation pathways will be compared to the top-down sector pathways ‘corridor’ derived from OECM and the IEA.

8 One Earth Climate Model Sector Pathways to Net Zero

Section V: Engagement target and metrics

Engagement KPIs⁹

1. KPIs linked to the Alliance member's engagement activities that contribute to achieving net-zero commitments

Corporate and sector bilateral engagement contributions:

Number of corporate engagements, aligned with the Alliance's net-zero corporate expectations, led or supported by the Alliance member (conducted directly by the member or by explicit request given to at least one of their AMs).

- **Background:** This KPI aims to capture all corporate engagement activities pursued by the member independently that contribute to more companies meeting the Alliance's net-zero corporate expectations.
- **Definition:** The net-zero corporate expectations are outlined briefly in the Engagement Chapter of the Protocol and articulated in an open letter to portfolio companies¹⁰ and available to members in an engagement briefing. Engagements that do not meet this level of ambition should not be included. Engagement performed through the Alliance may be included. Targets may be fulfilled through the creation of published member expectations for specific sectors or sub-sectors, or direct discussions with the company.

9 In all cases, Alliance members will implement their strategies with respect antitrust laws and regulations or applicable regulatory requirements

10 [AOA_Engagement.pdf \(unepfi.org\)](#)

Corporate and sector collective engagement contributions:

Number of collaborative engagements (e.g., via CA100+ or other engagement initiatives) supported by the member:

- **Background:** This KPI aims to capture the additionality of collaborative engagement.
- **Definition:** Any kind of support in collaborative engagement with companies, which are in line with the ambitions of the Alliance, e.g., taking a leadership role or active participation. It could also include a contribution to the creation of sector positions or contributing to sector roundtable discussions by either representing their institution as a member of the Alliance or helping co-organise the engagement.

Asset manager engagement contributions:

Number of asset managers engaged based on their climate change policies and practices. This could include focused engagements by members on net-zero alignment with asset managers or engagement on Alliance-generated content such as the guidance contained within the published document, “Elevating Climate Diligence on Proxy Voting Approaches: A Foundation for Asset Owner Engagement of Asset Managers”.¹¹

- **Background:** This KPI aims to capture a member’s engagement activities with asset managers on their respective climate-related stewardship activities.
- **Definition:** Qualifying actions include bilateral engagement with asset managers on climate specific topics (for existing managers) and building in climate expectations and Alliance guidelines on climate topics for asset manager selection, appointment, and monitoring programs (for new asset managers).

Asset manager collective engagement contributions:

Number of asset managers engaged collectively on climate change policies and practices.

- **Background:** This KPI aims to capture the additionality of collaborative asset manager engagement activities.
- **Definition:** This could include collaborative engagement with asset managers on specific topics, participating in wider engagement forums with Alliance members and the asset manager, or contributing to the development of additional Alliance climate relevant expectations and guidelines to assist Alliance members in their bilateral asset manager engagement and selection, appointment, and monitoring programs.

11 <https://www.unepfi.org/wordpress/wp-content/uploads/2021/04/16-Elevating-Climate-Diligence-2.pdf>

Position papers engagement contributions:

Number of climate position papers published by the member in line with Alliance corporate expectations

- **Background:** This KPI aims to capture a member's contribution to building reference climate positions.
- **Definition:** Position papers are public documents which define the member's position on topics (i.e., that may have policy implications) of key relevance to the net-zero agenda. The positions must include a clear reference to the net zero/1.5°C goal.

Alliance position papers engagement contributions:

Number of contributions to Alliance position papers.

- **Background:** This KPI aims to capture the additionality of the Alliance membership to the joint publication of position papers.
- **Definition:** Contribution to a position paper is defined as the material participation in its development through the engagement track, for example written contributions, either as text, or comments and edits, or attendance at position paper meetings.

Note: It is estimated that the track will produce 2–3 positions per year.

2. Cross-cutting outcomes through net-zero portfolio coverage (optional for target setting, compulsory to report on a 5-year basis)

Engagement contributions:¹²

Portfolio science-based target coverage in key Alliance sectors.

- **Background:** Investee companies are beginning to set their own science-based targets. Portfolio coverage is the portion of an asset owner's portfolio which is covered by a company target. This KPI aims to capture the progress of engagement activities via an outcome-based metric, i.e., increasing the number of net-zero or science-based commitments by portfolio companies.

¹² Science based targets as verified by the SBTi as well as corporate targets that can be shown to be based in scientific scenarios will be accepted (reference to appropriate sector pathways should be included in the latter case). Verified targets are encouraged.

Section VI: Financing targets

Alliance members shall report their investments in a standardised way such that the Alliance may summarise and publish aggregate figures e.g., average share of climate solution investments of total assets under management. Members will decide whether their individual figures will be published. For the time being, the Alliance will report on progress on a climate-positive trend, if possible, in a quantitative way—without a specific numerical progress target. Setting an individual public quantitative progress target for climate solution investments is optional.

A climate solution reporting template has been developed with the target to understand via which asset classes and into which sectors the financing of climate solution flows. The reporting template identifies climate solutions by theme and applicable sectors (such as Energy, Pollution, Waste & Water, Sustainable Land & Marine, Transportation, Manufacturing & Industry, Buildings, and ICT), and asks asset owners to report alignment by asset class. The climate solution themes are derived by reviewing regulatory and industry-accepted taxonomies such as the EU Taxonomy, People's Bank of China Green Bond Endorsed Project Catalogue, Green Bond Principles, Climate Bond Initiative, and proprietary taxonomies from commonly used data providers. Green bonds and transition bonds can also be reported via this template. Transitioning bonds or projects may qualify for a climate solution investment in cases where concrete plans are available for how the companies/projects align with a net-zero pathways and/or the Paris Agreement.

In addition, Alliance members have developed a guidance document providing an overview of existing principles and taxonomies and how they can be applied for climate solution reporting and giving guidance via case studies for listed equity and bonds, private equity, and bonds and how to possibly report for green or transition bonds with respect to their sector allocation.

Common reporting on positive trends is done via invested/committed value in climate solution investments e.g., green buildings, renewable energy, equity, or bond investments' green share, for example in alignment with EU taxonomy. Guidance via a document and a case study support the members in the assessment of climate solution investment assessment.

The work track is now focusing on impact metrics—defining KPIs for various asset classes to allow for the assessment of positive climate impact.

Diagram IV: Climate solutions reporting

Net Zero Asset Owner Alliance—Climate Solution Investments Report											
Reporting Currency is million USD			Investor:								
AUM in bn USD:				Time Stamp:		XX-XX-202X					
Climate Solution Theme	Asset Class										
	Listed Equity	Listed Corporate Debt	Sovereign Debt (issued green bond)	Private Debt	Private Equity & Venture Capital	Infrastructure	Direct Real Estate	Indirect Real Estate (e.g. REITs)	Forestry	Farmland	Other (e.g. Hedge Funds, Commodities, etc.)
Energy							N/A		N/A	N/A	
Pollution, Waste & Water							N/A		N/A	N/A	
Sustainable Land & Marine							N/A				
Transportation							N/A	N/A	N/A	N/A	
Manufacturing & Industry							N/A	N/A	N/A	N/A	
Buildings									N/A	N/A	
ICT							N/A	N/A	N/A	N/A	
In case a sector split is not possible please add the total per asset class											
Total	\$ million	\$ million	\$ million	\$ million	\$ million	\$ million	\$ million	\$ million	\$ million	\$ million	\$ million
Certified "Green" Investments/incl. climate resilient bonds											
Transition Investments (bonds, infrastructure)											
Total	\$ million	\$ million	\$ million	\$ million	\$ million	\$ million	\$ million	\$ million	\$ million	\$ million	\$ million

 To be filled in case invested based on principles like EU taxonomy, green bonds standards or own assessment in line with global standards	 not to be filled as not applicable	 not mandatory but recommended—see for guidance Alliance "Climate Solution Investment Principles - Booklet"	 mandatory to be filled
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Total Climate Solution Investments in mn USD	\$ million
Total AuM in bn USD to the time stamp (in cell F5)	\$ billion
Climate Solution Investments share of total AuM	0.00%

Source: Net-Zero Asset Owner Alliance Protocol Annex

Section VII: CA100+ evaluation

Climate Action 100+ and the Net-Zero Company Benchmark

Climate Action 100+ (CA100+) is an important initiative for collaborative investor engagement with investee companies. CA100+ was launched in December 2017 and is delivered through five partner organisations, namely PRI, AIGCC, IGCC, IIGCC and CERES. CA100+ is an investor initiative aiming to ensure the world’s largest corporate GHG emitters take necessary action on climate change. Over 600 investors with over \$60 trillion in AUM are engaging 167 companies to request the companies to reduce emissions in line with Paris Agreement targets and improve governance and strengthen climate related financial disclosures in line with TCFD recommendations. The target companies include 100 ‘systemically important emitters’, accounting for two-thirds of annual global industrial GHG emissions, alongside more than 60 others with significant opportunity to drive the clean energy transition. Many Alliance members that are also signatories of CA100+ collaborate on sector specific decarbonisation pathways and support collective investor action. Collaborative engagement enhances investor influence, builds expertise, and improves efficiency of the engagement process by sharing the workload. The Alliance encourages all its members join the CA100+ group. Since the first Protocol was published in January 2020, CA100+ released the “Climate Action 100+ Net-Zero Company Benchmark”, which is the CA100+ initiative’s primary tool for assessing focus companies based on the analysis of publicly disclosed information. The Alliance welcomes this development. Leading by example

To ensure that the Alliance members ask of themselves what they ask of others, the Alliance has compared the ten indicators of the CA100+ benchmark framework to this Protocol. However, it should be stated that a financial institution is different from a real economy company and so some elements of the benchmark do not make for analogous comparison—for example Indicator 6 Capital Allocation Alignment is less relevant for Alliance members. This considered, we found four areas which required addressing (highlighted in dark blue in Diagram V: CA100+ Criteria).

Diagram V: CA100+ Criteria

- 1 Net-zero GHG emissions by 2050 or sooner ambition
- 2 Long-term (2036–2050) GHG reduction target(s)
- 3 Medium-term (2026–2035) GHG reduction target(s)
- 4 Short-term (up to 2025) GHG reduction target(s)
- 5 Decarbonisation strategy
- 6 Capital allocation alignment
- 7 Climate policy engagement
- 8 Climate Governance
- 9 Just Transition
- 10 TCFD Disclosure

Source: Adapted from CA100+

Indicator 2 and 3: Long-term (2036–2050) and medium-term (2026–2035) GHG reduction target(s)

We recognise that setting medium- and long-term targets play an important role in achieving the net-zero 2050 target. However more immediate, short-term targets are necessary to maintain accountability and signal to the broader business and regulatory community that we expect real world decarbonisation. By committing to set both short-term targets on a five-year cycle and a long-term target in line with IPCC no/low overshoot scenarios, the Alliance believes members are meeting a 1.5°C decarbonisation trajectory. As portfolio targets directly depend on the decarbonisation speed of investee companies, Alliance members need a constant feedback loop from real world decarbonisation into their target setting. Otherwise, targets might lead to forced divestments from specific sectors before all stewardship efforts and engagement are attempted. For investors, this is fundamentally different from the Scope 1 and 2 emissions of real-world companies where their level of control is substantially higher. By Alliance members having i) set a long-term 2050 net-zero target in line with 1.5°C, ii) set a short-term target to support immediate portfolio steering, and iii) agreed to align with no/low overshoot pathways, their mid-term targets are then implicitly made.

Indicator 7: Climate policy engagement

The members of the Alliance strive to align all climate policy engagement with the goal of accelerating the transition to a 1.5°C-aligned future. In this context Alliance members should review their membership and participation in associations and organisations. In order to be transparent, members should disclose their respective climate policy positions and memberships in associations and organisations. Furthermore, members should consider taking an advocacy position within organisations that do not align their climate policy advocacy with the Paris Agreement and the goals of the Alliance. Additionally, in instances where members' attempts to persuade organisations to become Paris-aligned are deemed ineffective over a sustained time-bound engagement, they should consider cessation of membership.

There may be certain aspects of financial institutions' activities that cannot be evaluated in the same way as companies by the CA100+ benchmark. For example, sovereign wealth funds are legally advised to avoid political positions or lobbying activities and therefore, would not be able to engage on policy the same way that other asset owners could. The same may apply to some (re)insurance activities. An important focus for all Alliance members beyond their own policy engagement activities is the climate advocacy activities of all investee companies. Engagement can help gauge the company's level of Paris-alignment through lobbying and asking for alignment where necessary.

Indicator 10: TCFD Disclosure

Alliance members shall commit to following the TCFD recommendations on governance, strategy, risk management and measurement in their own business operations, reporting and disclosures.

Section VIII: Financial sector classifications

Oil & gas		
Proposal Financial Sector: Energy and O&G		
NACE	B - Mining and quarrying	B5: Mining of coal and lignite
		B6: Extraction of crude petroleum and natural gas
		B7: Mining of metal ores
		B8: Other mining and quarrying
		B9: Mining support service activities
BICS - Bloomberg	Energy	Coal
		Oil & gas
		Oil Comp-Explor&Prodtn Oil Comp-Integrated
		Oil Refining&Marketing
		Oil & Gas Drilling
		Oil-US Royalty Trusts Oil&Gas Services Pipelines
GICS - S&P and MSCI	Energy	Energy Equipment & Services
		Oil & Gas Drilling
		Oil & Gas Equipment & Services
		Oil, Gas & Consumable Fuels
		Integrated Oil & Gas
		Oil & Gas Exploration & Production
		Oil & Gas Refining & Marketing
		Oil & Gas Storage & Transportation
		Coal & Consumable Fuels

Utilities

Proposal Financial Sector: Utilities/Electric Generation and Distribution and Gas distribution

NACE	D - Electricity, gas, steam and air conditioning supply	D35: Electricity, gas, steam, and air conditioning supply
		D35.1: Electric power generation, transmission and distribution
		D35.1.1: Production of electricity
		D35.1.2: Transmission of electricity
		D35.1.3: Distribution of electricity
		D35.1.4: Trade of electricity
		D35.2: Manufacture of gas; distribution of gaseous fuels through mains
		D35.2.1: Manufacture of gas
		D35.2.2: Distribution of gaseous fuels through mains
		D35.2.3: Trade of gas through mains
		D35.3: Steam and air conditioning supply
		D35.3.0: Steam and air conditioning supply
BICS - Bloomberg	Utilities	Electric
		Distribution
		Generation
		Integrated
		Transmission
		Independent Power Producer
		Gas
		Distribution
		Transportation
		Water
		Water

GICS - S&P and MSCI	Utilities	Electric Utilities
		Companies that produce or distribute electricity. Includes both nuclear and non-nuclear facilities.
		Gas Utilities
		Companies whose main charter is to distribute and transmit natural and manufactured gas. Excludes companies primarily involved in gas exploration or production classified in the Oil & Gas Exploration & Production Sub-Industry. Also excludes companies engaged in the storage and/or transportation of oil, gas, and/or refined products classified in the Oil & Gas Storage & Transportation Sub-Industry.
		Multi-Utilities
		Water Utilities
		Independent Power and Renewable Electricity Producers
		Companies that operate as Independent Power Producers (IPPs), Gas & Power Marketing & Trading Specialists and/or Integrated Energy Merchants. Excludes producers of electricity using renewable sources, such as solar power, hydropower, and wind power. Also excludes electric transmission companies and utility distribution companies classified in the Electric Utilities Sub-Industry.
		Renewable Electricity
Companies that engage in the generation and distribution of electricity using renewable sources, including, but not limited to, companies that produce electricity using biomass, geothermal energy, solar energy, hydropower, and wind power. Excludes companies manufacturing capital equipment used to generate electricity using renewable sources, such as manufacturers of solar power systems, installers of photovoltaic cells, and companies involved in the provision of technology, components, and services mainly to this market.		

Transort

Proposal Financial Sector: Transportation/Airlines, Transportation/Light and Heavy Road Transport, Transportation/Shipping

NACE		
NACE	H - Transporting and storage	H49: Land transport and transport via pipelines
		H50: Water transport
		H51: Air transport
		H52: Warehousing and support activities for transportation
		H53: Postal and courier activities
	C - Manufacturing	C29: Manufacture of motor vehicles, trailers and semi-trailers
		C29.1: Manufacture of motor vehicles
		C29.1.0: Manufacture of motor vehicles
		C29.2: Manufacture of bodies (coachwork) for motor vehicles; manufacture of trailers and semi-trailers
		C29.2.0: Manufacture of bodies (coachwork) for motor vehicles; manufacture of trailers and semi-trailers
		C29.3: Manufacture of parts and accessories for motor vehicles
		C29.3.1: Manufacture of electrical and electronic equipment for motor vehicles
		C29.3.2: Manufacture of other parts and accessories for motor vehicles
		C30: Manufacture of other transport equipment
		C30.1: Building of ships and boats
		C30.1.1: Building of ships and floating structures
		C30.1.2: Building of pleasure and sporting boats
		C30.2: Manufacture of railway locomotives and rolling stock
		C30.2.0: Manufacture of railway locomotives and rolling stock
		C30.3: Manufacture of air and spacecraft and related machinery
		C30.3.0: Manufacture of air and spacecraft and related machinery
		C30.4: Manufacture of military fighting vehicles
		C30.4.0: Manufacture of military fighting vehicles
C30.9: Manufacture of transport equipment n.e.c.		
C30.9.1: Manufacture of motorcycles		
C30.9.2: Manufacture of bicycles and invalid carriages		
C30.9.9: Manufacture of other transport equipment n.e.c.		

BICS: Bloomberg	Consumer, Cyclical	Airlines	Auto/Trk Prts&Equip-Repl
		Airlines	N/A
		Auto Manufacturers	Rubber-Tires
		Auto-Cars/Light Trucks	Home Builders
		Auto-Med&Heavy Duty Trks	Bldg-Mobil Home/Mfd Hous
		Auto-Truck Trailers	Bldg-Residential/Commer
		Auto Parts&Equipment	Retail
		Auto/Trk Prts&Equip-Orig	Textiles
	Industrial	Aerospace/Defense	Packaging&Containers
		Building Materials	Shipbuilding
		Electrical Compo&Equip	Transportation
		Electronics	Transport-Air Freight
		Engineering&Construction	Transport-Marine
		Environmental Control	Transport-Rail
		Hand/Machine Tools	Transport-Services
		Machinery-Constr&Mining	Transport-Truck
		Machinery-Diversified	Trucking&Leasing
		Metal Fabricate/Hardware	Transport-Equip&Leasng
		Miscellaneous Manufactur	Trucking & Leasing
GICS: S&P and MSCI	Transporta- tion	Road & Rail	Airport Services
		Railroads	Highways & Railtracks
		Trucking	Marine Ports & Services
		Transportation Infrastructure	

Cement

Proposal Financial Sector - Materials/Cement

NACE	C - Manufacturing	C23.5: Manufacture of cement, lime and plaster
		C23.5.1: Manufacture of cement
		C23.5.2: Manufacture of lime and plaster
		C23.6: Manufacture of articles of concrete, cement and plaster
		C23.6.1: Manufacture of concrete products for construction purposes
		C23.6.2: Manufacture of plaster products for construction purposes
		C23.6.3: Manufacture of ready-mixed concrete
		C23.6.4: Manufacture of mortars
		C23.6.5: Manufacture of fibre cement
		C23.6.9: Manufacture of other articles of concrete, plaster and cement
		C23.7: Cutting, shaping and finishing of stone
		C23.7.0: Cutting, shaping and finishing of stone
		C23.9: Manufacture of abrasive products and non-metallic mineral products n.e.c.
		C23.9.1: Production of abrasive products
		C23.9.9: Manufacture of other non-metallic mineral products n.e.c.
		C24: Manufacture of basic metals
BICS - Bloomberg	Industrial	Building Materials
		Bldg Prod-Air&Heating
		Bldg Prod-Cement/Aggreg
		Bldg Prod-Doors&Windows
		Bldg Prod-Light Fixtures
		Bldg Prod-Wood
		Bldg & Construct Prod-Misc
		Ceramic Products
GICS - S&P and MSCI	Materials	Construction Materials
		Construction Materials



Investment
Leadership
Programme

UN-convened Net-Zero Asset Owner Alliance

unepfi.org/net-zero-alliance/

In partnership with:

