Defining Net Zero for organisations:

How do climate criteria align across standards and voluntary initiatives?

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Table of Contents

Executive Summary

With net zero commitments on the rise, there is growing concern about the credibility of these targets and their underlying strategies (Energy & Climate Intelligence Unit, 2019; NewClimate Institute *et al.*, 2022). Net zero regulation and policy is growing, particularly related to climate- or sustainability-related risk disclosure, however many government measures to improve the integrity of net zero commitments are still nascent (Race to Zero, 2022). Given this governance gap, voluntary guidance is currently playing a critical role in setting the bar and defining net zero for organisations. This comes in the form of guidance initiatives, orchestration campaigns, standards, investor frameworks and independent trackers aimed at galvanising ambition and helping organisations act towards net zero. However, with so many initiatives offering guidance, it can be difficult for organisations to follow themes and consensus on key criteria.

To provide clarity, Oxford Net Zero mapped key net zero criteria across 33 key standards and voluntary initiatives to trace common and emerging good practice across this landscape. We find that while guidance is scattered across a wide set of initiatives, serving different functions for different groups, there is strong consensus on core net zero criteria and significant cross-referencing between initiatives.

Aims of this report:
1. To understand the current state of guidance and which stages and dimensions of a net zero strategy are being covered effectively and which are not
2. To identify common practice and divergence in core net zero criteria to help net zero committers understand current expectations across the voluntary landscape
3. To identify the current best practice and principles from those "ahead of the curve"
4. To assist policymakers in understanding the current state of soft governance mechanisms that can be strengthened through regulatory mechanisms

General findings:

- There is a broad consensus across voluntary initiatives on key features of a robust net zero commitment. Outright contradictions between voluntary initiatives are uncommon, and variation is often due to differences in focus (e.g., some cover measurement while others cover target setting).

- Several initiatives emerged from the mapping as "pace-setters", i.e., initiatives that are going above and beyond the status quo, encouraging action at a faster speed or higher ambition than others. These offer guidance on emergent, if not yet wide-spread, net zero integrity practices, offering a testing ground for ambitious criteria ahead of consideration by policymakers. Net zero pace-setters require, for example, a formal way for organisations to hold their leaders to account for targets by tying targets to executive pay and strict numerical definitions for residual emissions.

- There are also gaps across the voluntary landscape in criteria coverage by initiatives: guidance is scarce as to how a net zero committers should consider and address wider impacts, such as biodiversity or climate justice. Few initiatives, apart from the Science Based Targets initiative, offer specific guidance on alignment of net zero and interim targets with science-based pathways to the Paris Agreement temperature goals.

Findings on key common guidance for each stage of a net zero strategy:

Voluntary initiatives provide guidance across stages of net zero action, from preparing the groundwork through to reporting and assessing impact. We present our findings across seven distinct stages of a net zero and highlight areas of criteria convergence and divergence throughout. We choose the term "common practice" to reflect that there is a high number of initiatives (usually greater than 50%[7]) offering similar types of guidance. We reserve "best practice" for initiatives we define as "pace-setters", i.e., going further and being on the leading side of net zero integrity.

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[7] Due to the different focus of voluntary initiatives, the absence of a complete figure (e.g., 100% coverage) should not be read as the absence of consensus. As a voluntary initiative focused on measurement, for example, may not be expected to provide guidance on criteria related to leadership preparation, the absence of criteria on leadership preparation does not necessarily suggest lack of support for the criteria from the initiative, simply lack of focus (see Figure 3).

Summary: Common Criteria for Achieving Net Zero

1. **Prepare** i.e., guidance on policies, commitments or information needed for organisations to set up their leadership and governance to deliver on net zero targets.
   - Over half of initiatives (19/33, or 58%) detail the importance of oversight from leadership and an emerging best practice in formalising internal incentivization levers, such as executive remuneration or setting an internal carbon price.
   - Pace-setters recommend the establishment of at least one board member specifically accountable for climate-related risks (see Appendix A).

2. **Measure** i.e., guidance on the measurement of emissions, mainly related to what Scopes and emissions should be measured by the actor.
   - Over three-quarters (25/33 or 76%) of initiatives recommend measurement of Scopes 1-3 and all greenhouse gases (GHGs) ahead of net zero target-setting.
   - However, of the 25 initiatives that encourage some portion of Scope 3 emissions to be measured, just under half (12/25, or 48%) encourage organisations to account fully for their Scope 3 emissions in their targets.
   - There is relatively little coverage or wide consensus across initiatives as to how to calculate organisations' historical emissions with only 7/33 (21%) stipulating these should be included as part of a net zero strategy.
   - Pace-setters recommend separate accounting for negative emissions and credits from emissions reductions, as well as separate accounting for GHGs and scopes.

3. *Target,* i.e., guidance on the way targets are set e.g. base year, interim targets year, target year and type.
   - There is broad agreement that targets should include full coverage of Scopes 1-3 (24/33 or 73% recommend this) and that all GHGs (not just carbon) should be included in target-setting (22/33 or 67% align with GHG Protocol Guidance).
   - The majority (27/33 or 82%) of standards and voluntary initiatives do not specify a base year to set baseline emissions for reduction targets, however those that do make recommendations about not going too far back in time or picking a year which would over-inflate the appearance of progress.

- Almost half of initiatives (16/33 or 48%) recommend organisations set a target for Net Zero by 2050 at the latest as the target date, and over half of initiatives (18/33 or 55%) require entities to set interim targets.

- Pace-setters call for interim targets in line with the general principle of 50% reduction of emissions by 2030 from a 2018 baseline, with fair share in mind. While this might not be appropriate for all sectors and contexts it provides a helpful benchmark to consider ambition in line with global progress to 1.5 degrees.

- There is an expectation across initiatives that target-setting on the path to net zero to be based in independent, peer-reviewed science-based pathways. Among the initiatives reviewed, the Science Based Targets initiative offers the most robust guidance on this, and several initiatives point back to this one (see figure 11).

4. **Reduce** i.e., guidance on emissions reduction measures outlined across operations and the organisation's supply chains.

- 85% (26/33 of initiatives) require a decarbonisation strategy or transition plan. However, few initiatives specify exactly what benchmarks should be included.

- While there is wide acknowledgement of global 1.5 pathways, more work is needed to define sector and geography-specific "Paris-aligned" decarbonisation pathways. Initiatives do, however, point towards independent, peer-reviewed emission reduction scenarios (including for example the IPCC and IEA at the global level).

5. **Offset and credits** i.e., guidance as to how to counterbalance residual emissions, e.g., through investment in credits, conditions on their use, verification, and claims.

- Over three-quarters of voluntary initiatives recognise that some net zero strategies may have residual emissions which will organisations can counterbalance through investment in credits or offsets. However, pace-setter initiatives prohibit the use of carbon credits towards near-term science-based emissions reduction targets.

- There is consensus across initiatives that efforts to reduce emissions must be prioritized over investment in credits, and that where used, they should be high-quality. Many initiatives require credits to be invested through certified third-party projects with co-benefits, or products approved by relevant expert, governmental or intergovernmental entities (BCORP).

- Though 15/33 (45%) recommend restricting the use offsets to residual emissions, there is a guidance as to how to define residual emissions is emergent. For example, while several initiatives stipulate that residual emissions are "remaining hard-to-mitigate" emissions (CISL) or emissions that remain after "absolute emissions [have] been reduced as much as possible" (BCORP), only pace setters such as the SBTi provide guidance aligned with a numerical threshold. It will be essential for initiatives to continue to develop guidance on what emissions can be considered as "not feasible to eliminate", especially when financial criteria are used to determine feasibility.

- Initiatives most focused on the issue of net zero-aligned offsetting, like the VCMI, ICVCM, SBTI, ISO and the Race to Zero, stipulate that offsets for residual emissions *at the net zero target date* should be based on removals with low risk of reversal.

6. **Report,** i.e., guidance on disclosure of climate-related information, including reporting frequency, emissions, and progress on targets.

   - Common practice converges on the need to publish a report on progress to climate goals, which around 70% of initiatives stipulate should be done on an annual basis.

   - Currently, just over a third (12/24 or 36%) recommend quality assurance of reporting through third party verification.

   - Only 10% (3/33) specify reporting on the limitations of the data, unknowns, known errors or discrepancies, however data limitations can provide significant credibility challenges, especially for scope 3 emissions. Pace-setters require discussion on this.

7. **Impact,** i.e., guidance on engagement with stakeholders when setting net-zero targets, including equity impacts, lobbying and advocacy.

   - Few standards advise on concrete provisions for embedding climate justice and equity into net zero strategies.

   - Those that mention wider impacts beyond climate mitigation often discuss alignment with other sustainable development goals (SDGs) or impacts on operations.

   - More than half of initiatives encourage organisations to align lobbying and advocacy with their climate target.

   - There remains a significant gap on net zero voluntary guidance with regards to how biodiversity and nature are considered within a net zero framework.

Introduction and Purpose

Corporate net zero commitments are on the rise. By mid-2022, 1 in 3 businesses in the Forbes 2,000 list had set a net zero target, a figure up from 1 in 5 companies a year earlier (NewClimate Institute *et al.*, 2022). Net zero (or similar) targets now cover 91% of the global economy, up from 16% in 2019 (Energy & Climate Intelligence Unit, 2019; NewClimate Institute *et al.*, 2022). The rapid increase in the quantity of net zero targets, while encouraging, may not be matched by a comparable rise in quality of the underlying strategies. The mismatch between appearance and action poses a threat to the global goal of reaching net zero CO_2 emissions by mid-century (NewClimate Institute *et al.*, 2022). A multitude of actors, from civil society organisations to academics, have warned that the net zero frame may be used to delay action, and avoid accountability through regulatory means. The UN Secretary-General, António Guterres, warned that there has been "a deficit of credibility and a surplus of confusion" over net zero targets by non-state actors (ActionAid *et al.*, 2020; Fankhauser *et al.*, 2022; UN News, 2022). These concerns point to the need for standardisation, accountability, and government intervention. In response, net zero-related policy and regulation is emerging, particularly related to climate- or sustainability-related risk disclosure, which is or will become mandatory in jurisdictions covering 47.9% of global GDP in the next few years. However, many government measures to ensure net zero integrity have yet to be deployed in most jurisdictions. These might include regulation on the claims that companies can make, requirements of net zero transition plans, regulation of the use of the voluntary carbon market (Race to Zero, 2022). Given this governance gap, voluntary initiatives are currently playing a critical role in setting the bar and defining net zero integrity.

The net zero governance landscape is continually developing on what can be conceptualised as |a governance conveyor belt for net zero" (Hale, 2021) (see Figure 1). Accordingly, elements of the 'net zero ecosystem' fall on a spectrum ranging from less to more binding. Best practice often emerges from voluntary initiatives, to be consolidated into orchestration campaigns (like

the global Race to Zero campaign[8], see Appendix A) and finally scaled through formal standards and/or made binding through regulation.
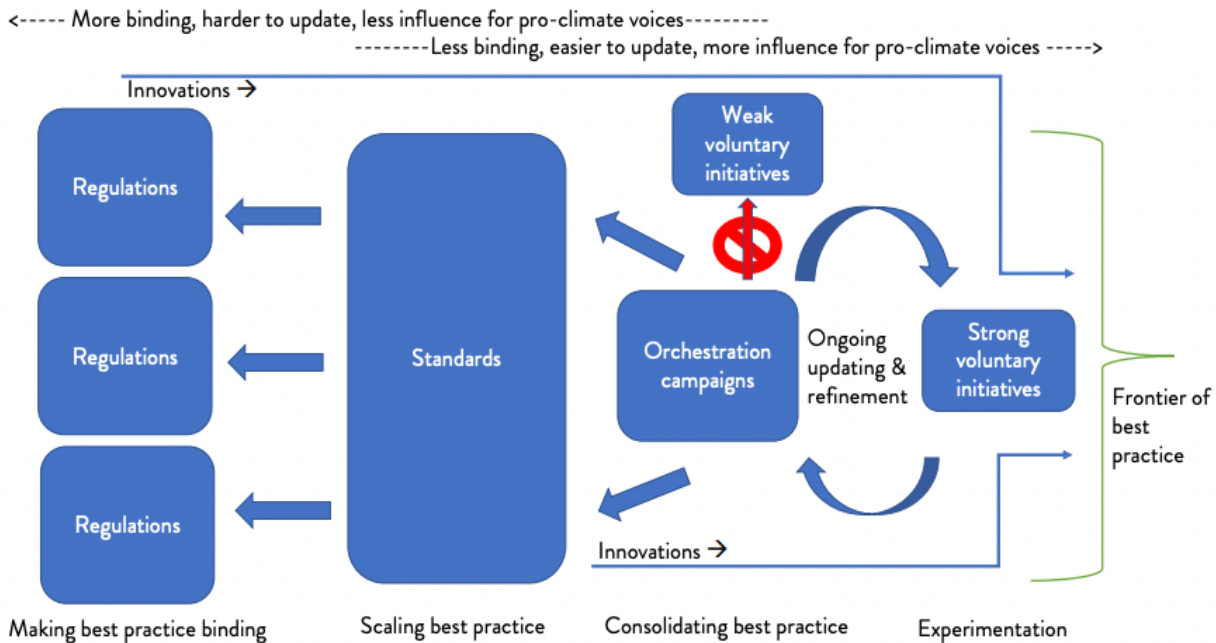
Figure 1 "Conveyor belt" governance system for Net Zero. Hale 2021.

This research focusses on voluntary initiatives for non-state actors as this is where most of the progress in defining net zero has been to date. As net zero regulatory instruments spread, we intend to develop a separate analysis of these in relation to the criteria across voluntary initiatives. For now, to better understand the proliferation of guidance across the voluntary landscape, we assessed 33 voluntary initiatives. There are four main intentions of this analysis:

1. To understand the current state of guidance and which stages and dimensions of a net zero strategy are being covered effectively and which are not
2. To identify areas of consensus and divergence in core net zero criteria to help net zero committers understand current expectations across the voluntary landscape
3. To identify the current best practice and principles from those "ahead of the curve"
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[8] The Race to Zero is a global campaign led by the UN Climate Change High Level Champions to rally non-state actors, including companies, cities, financial institutions and more to take action to halve global emissions by 2030 Race to Zero, 2022. It mobilises a coalition of leading net zero initiatives, asking all actors to meet stringent criteria with transparent action plans and robust near-term targets.

Based on Hale's 'conveyor belt' framework, we review voluntary types of initiatives providing guidance on net zero, which we categorise into guidance initiatives and pledges, orchestration campaigns, standards, investor frameworks, and independent trackers (see Appendix A, B). We categorise these all as "voluntary initiatives" given they provide different types of guidance that is not mandated or regulated.

Overview of Methods[9]

Stages of a Net Zero target

From an initial mapping of core general initiatives, we found guidance on net zero strategy could be clearly mapped across seven stages as follows:

Prepare	Guidance on policies, commitments or information needed for organisations to set up their leadership and governance to deliver on net zero targets.
Measure	Guidance on the measurement of emissions, mainly related to what Scopes and emissions should be measured by the actor.
Target	Guidance on the way targets are set e.g. base year, interim targets year, target year and type.
Reduce	Guidance on emissions reduction measures outlined across operations and the organisation's supply chains.
Removals/ Offsets/dealing with residual emissions	Guidance on the use of carbon credits, and any explanation of their extent of use, measurement, and communication.
Report	Guidance on disclosure of climate-related information, including reporting frequency, emissions, and progress on targets.
Impact	Guidance on engagement with stakeholders when setting net-zero targets, including equity impacts, lobbying and advocacy.

Figure 2 Stages of net zero guidance. Our selection of initiatives[10] offers guidance across each of these stages.

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[10] A full list of these initiatives and their descriptions can be found in Appendix B.

Criteria analysis

We chose several of the most functionally broad initiatives (those that gave guidance across all seven stages) and identified key themes. We began with a handful of core initiatives and independent trackers tied to the UN-backed Race to Zero campaign, which acts as an umbrella organisation for net zero initiatives. These included the Transition Pathway Initiative, Net Zero Tracker, WBCSD SOS 1.5 and the Exponential Roadmap Initiative. Additionally, we surveyed experts in the net zero voluntary initiative ecosystem and corporate sustainability leaders, using snowball sampling of their recommendations to arrive at a set of the most relevant initiatives in this landscape.[11] We recognise that our list of initiatives is not exhaustive and acknowledge that some of the initiatives reviewed were still under consultation still in their net zero criteria at the time of this research.

We used these themes to develop a common list of questions to review the guidance offered by all the other initiatives[12]. A full list of these questions can be found in Appendix C. We reviewed the additional initiatives and updated our criteria database with additional questions to map. We coded all 33 initiatives to review what each said about these key questions. By reviewing each of the most recent source documents for each initiative assessed (Appendix B) and gathering the text to answer questions in our list of criteria questions (Appendix C).[13] Where initiatives set out criteria on questions, we noted the exact language used by the resource. See Appendix D for a link to our mapping dataset.

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[11] Initial work was informed by and done in collaboration with National Centre Social Research. Their preliminary mapping of this landscape was integrated into Oxford Net Zero's analysis, resulting in this collaborative research output.

[12] For example, under the "Target" stage, some of the questions we coded for included:
- Which type of target does the resource specify organisations set? (Absolute Targets, Absolute or Intensity Targets, Absolute and Intensity Targets, Not specified)
- Does the resource ask entities to set Interim Target (Yes/Not specified)
- Which GHGs does the resource recommend the target cover? (All according to the GHG Protocol /Some/CO2 Only/Not specified)

[13] Please note that some of the source documents reviewed were under consultation at the time of review and may have changed slightly since our mapping in July and August 2022. Where possible we have attempted to review additional source texts and context websites and interpretation guides for key criteria but may have missed something that an initiative had intended to express.
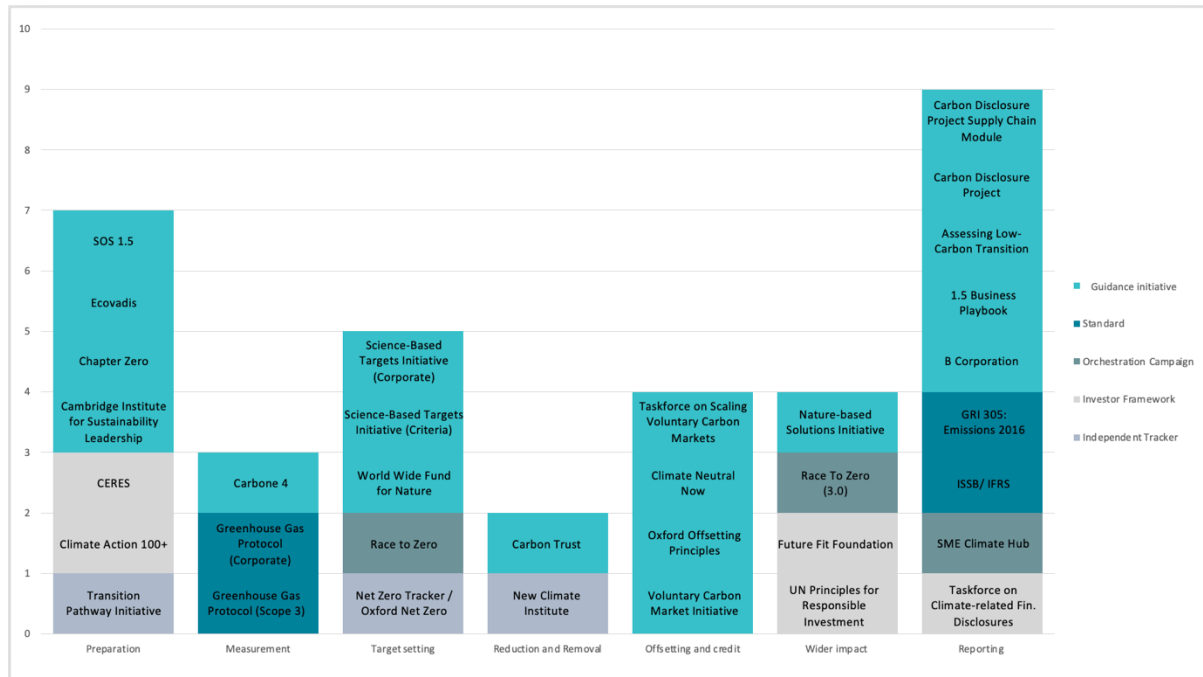
Figure 3 **Focus of these voluntary initiatives.** While we recognise that these initiatives often focus on more than one stage of a net zero strategy, we have represented the predominant focus of these initiatives[14].

Findings: Trends in Criteria Across Stages of a Net Zero Strategy

This section outlines the trends within each area of analysis under each stage of a net zero journey, identifying common practice, divergence, the guidance of pace-setters (leaders) and gaps across voluntary initiatives and standards. Overall, despite concerns about fragmentation across a panoply of initiatives, we find high convergence and strong cross-referencing among well trusted and high-quality independent initiatives and scientific institutions on several key issues.

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[14] Though many initiatives focus on more than one stage of a net zero strategy, we have grouped them here according to the stage of a net zero strategy for which they offer the most guidance.

We developed a categorisation of types of questions/guidance linked to each stage of a net zero strategy. When reviewing initiatives, we considered a "primary focus" when it had the most guidance in a specific stage.

The difference in focus across the governance landscape (e.g., measurement vs reporting criteria) can create the appearance of divergence in the voluntary landscape, when in fact the analysis shows strong convergence and cross-referencing among widely cited and trusted initiatives (see Figure 11).

To show areas of common practice, we note the number of initiatives which require or suggest key criteria and represent these as a portion of the total (e.g., 26/33, or 79%, recommend scope 3 coverage). Due to the different focus of voluntary initiatives, the absence of a complete figure (e.g., 100% coverage) should not be read as the absence of consensus. As a voluntary initiative focused on measurement, for example, may not be expected to provide guidance on criteria related to leadership preparation, the absence of criteria on leadership preparation does not necessarily suggest lack of support for the criteria from the initiative, simply lack of focus (see Figure 3). In this way, coverage figures are likely to underestimate rather than over-estimate consensus, however they do help to demonstrate the diffusion of key criteria across the voluntary initiatives landscape. We examine areas of disagreement within initiatives that cover the same stages of a net zero strategy within each section. A full list of questions used for assessment can be found in Appendix C.

PREPARATION

Guidance on policies, commitments or information needed for organisations to set up their leadership and governance to deliver on net zero targets.

Several standards refer to the need to align leadership and governance structures behind the commitment to net zero. In this section, we have assessed criteria that relates to policies, commitments or information needed for organisations to set up their leadership and governance to deliver on net zero targets.

Leadership	There is wide acknowledgement of the critical role of empowered and climate literate executives and boards behind net zero commitments. Over half (58%, or 19/33) recognise the need for clear climate oversight from top leadership[i]. In practice, at present, only ~20% of the Forbes 2,000 companies that have a net zero target have a formal way of holding their leadership to account for the targets, e.g., through executive pay (Net Zero Tracker, 2022). This demonstrates a gap between common criteria in the voluntary landscape and current practice.
Internal incentive levers	Leadership oversight is widely expected to be further formalised through internal incentive levers such as **tying executive remuneration to interim sustainability targets[ii][iii] or setting internal carbon pricing**. 36% (12/33) of voluntary initiatives call for executive remuneration to be tied to the achievement of climate targets.
Pace-setters: Designated responsibility teams & carbon literacy training	Pace-setters recommend the **establishment of (a) board members specifically accountable for climate-related risks[iv]** and opportunities (Climate Action 100+[v] and Cambridge Institute for Sustainability Leadership[vi]); as well as a **course to increase "carbon literacy"[vii]** of Boards at the beginning of a Net Zero journey.

	Several initiatives encourage that organizations embed climate aims into a company's purpose. One initiative urges organisations to change their articles of association to reflect their board's responsibility to stakeholders in addition to shareholders as a means of formalising sustainability commitments on equal terms with fiduciary duty[viii].
Pace-setters: Management	Pace-setters discuss the need to provide training and embed climate accountability with decisionmakers and management across the functions and departments of organizations (not just with a dedicated sustainability team).

	Does the resource recommend **public acknowledgement** of climate change as a crisis/problem? (✓/-)	Does the resource recommend **oversight from leadership**? (✓/-)	Does the resource recommend the need for a **designated team to deliver its climate strategy**? (✓/-)	Does the resource recommend executive remuneration to be tied to climate targets?
ORCHESTRATION CAMPAIGNS				
Race to Zero (3.0) (RTZ3)	-	✓	-	-
SME Climate Hub (SMECH)	-	✓	-	-
GUIDANCE INITIATIVES				
1.5 Business Playbook (1.5BP)	✓	✓	✓	✓
Assessing Low-Carbon Transition (ACT)	✓	✓	-	✓
B Corp (BCORP)	✓	✓	-	-
Cambridge Institute for Sustainability Leadership (CISL)	✓	✓	✓	✓
Carbon Neutral Now (CNN)	-	-	-	-
Carbon Trust (CART)	-	-	-	-
Carbone 4 (CAR4)	-	-	-	✓
Chapter Zero (CHA0)	-	✓	-	✓
Ecovadis (ECOV)	-	✓	-	-
Integrity Council for the Voluntary Carbon Market (ICVCM)	-	-	-	-
Nature-Based Solutions Initiative (NBSI)	-	-	-	-
Oxford Offsetting Principles (OOP)	-	-	-	-
Science-Based Target Initiative (Corporate Net Zero Standard Criteria) (SBTIC)	-	-	-	-
Science-Based Targets Initiative (Criteria and Recommendations) (SBTI)	-	-	-	-
SOS 1.5 (SOS15)	-	✓	-	-
Voluntary Carbon Market Initiative (VCMI)	-	-	-	-
World Wide Fund for Nature (WWF)	-	✓	-	-
INVESTOR FRAMEWORKS				
CERES (CERES)	✓	✓	✓	-
CDP General Questionnaire (CDPGQ)	-	✓	-	✓
CDP Supply Chain Module (CDSPC)	-	-	-	✓
Climate Action 100+ (CA100)	-	✓	✓	-
Future Fit Foundation (FFF)	-	-	-	-
Taskforce on Climate-Related Financial Disclosures (TCFD)	-	✓	-	✓
UN Principles for Responsible Investment (UNPRI)	-	-	✓	-
STANDARDS				
Greenhouse Gas Protocol Corporate (GGPC)	-	✓	-	✓
Greenhouse Gas Protocol (Scope 3) (GGPS3)	-	-	-	✓
GRI 305: Emissions 2016 (GRI)	-	-	-	-
ISSB/IFRS (ISSB)	✓	✓	✓	✓
INDEPENDENT TRACKER				
Net Zero Tracker/Oxford Net Zero (NZT)	-	✓	✓	-
New Climate Institute (NCI)	-	-	-	-
Transition Pathway Initiative (TPI)	-	✓	-	✓

Figure 4 Visualisation of criteria for corporate strategies for the "Prepare" stage of a Net Zero strategy

MEASUREMENT

Guidance on the measurement of emissions, mainly related to what Scopes and emissions should be measured by the actor.

This section reviews criteria on the measurement of emissions, including coverage as to what should be measured, how emissions might need to be accounted for and methods for accounting.

Scope coverage	**25/33 (76%) of initiatives recommend measuring emissions in Scopes 1, 2 and 3**[ix], though there is recognition of the difficulties and complexities of Scope 3 calculation methodology. All the initiatives that mention Scope coverage stipulate that Scope 3 ought to be measured. However, **of the 25 initiatives that encourage some portion of Scope 3 emissions to be measured, just under half (12/25, or 48%) encourage organisations to account fully for their Scope 3 emissions in their targets**[x]. 5/25, or 20%, did not specify how much of their Scope 3 emissions an organisation should account for[xi], even though they encourage the measurement of Scope 3 emissions.
Greenhouse gas coverage	While some initiatives, especially those aimed at smaller companies, only require carbon or a subset of GHGs to be measured, **roughly half of initiatives (18/33, 55%), including those most looked to provide guidance on measurement,** recommend measurement of all GHGs[xii] in preparation for tracking progress to net zero. These typically refer to the GHG Protocol[xiii] on emissions measurement.
Pace-setters: Negative emissions or credits	Pace-setters recommend that negative emissions in the organisation's value chain (i.e. removals within the value chain) and negative emissions by project financing (i.e. credits) be **reported separately** (Carbone 4). Investing in credits is a degree of separation from the actual activity within the value chain. It is preferable to focus firstly on actions within a company's governance. In this model, the same concerns around the additionality and verifiability of removals can arise regardless.

Historical emissions (gap)	Historical emissions are those which might pre-date a company's base year emissions (see Appendix A) for their net zero target. Organisations can use these estimates to make fair share considerations about their targets or to compensate these emissions. However, there is a **deficit of guidance on the handling of historical emission**s across voluntary initiatives[xiv].
	Only 21% (7/33) specified guidance, suggesting that historical emissions are less widely considered as a high priority among voluntary initiatives and standards, which instead are more focused on emissions reduction opportunities today. In the context of equity concerns about the net zero frame, the lack of guidance on the use of historical emissions represents a gap. From a fair share perspective, historical emissions may be an important metric to help organisations set timing and ambition of targets in the context of the principle of fair share (e.g., organisations with large historical emissions might consider increasing the ambition of their targets[xv]).

	Encourage organisations to measure **Scopes 1, 2 and 3?**	**Portion of Scope 3 emission** suggested to measure?	Encourage the measurement of **historical emissions?** (✓/-)	Permit the **inclusion of offsets and/or avoided emissions** in the measurement of an organisation's **GHG inventory?** (✓/No/ -)	**Which GHGs** does the resource recommend measuring?
ORCHESTRATION CAMPAIGNS					
Race to Zero 3.0 (RTZ3)	-	-	-	-	-
SME Climate Hub (SMECH)	✓	Fully	-	No	-
GUIDANCE INITIATIVES					
1.5 Business Playbook (1.5BP)	✓	Fully	✓	No	All according to the GHG Protocol
Assessing Low-Carbon Transition (ACT)	-	-	-	-	All according to the GHG Protocol
B Corp (BCORP)	✓	Partially	-	No	All according to the GHG Protocol
Cambridge Institute for Sustainability Leadership (CISL)	✓	Fully	✓	-	All according to the GHG Protocol
Climate Neutral Now (CNN)	✓	Partially	-	-	All according to the GHG Protocol
Carbon Trust (CART)	✓	-	-	-	All according to the GHG Protocol
Carbone 4 (CAR4)	✓	Fully	-	No	All according to the GHG Protocol
Chapter Zero	-	-	-	-	Some
Ecovadis (ECOV)	✓	-	-	-	All according to the GHG Protocol
Integrity Council for the Voluntary Carbon Market (ICVCM)	-	-	-	-	-
Nature-Based Solutions Initiative (NBSI)	-	-	-	-	-
Oxford Offsetting Principles (OOP)	✓	Fully	-	-	All according to the GHG Protocol
Science-Based Target Initiative (Corporate Net Zero Standard Criteria) (SBTIC)	✓	Fully	-	No	All according to the GHG Protocol
Science-Based Targets Initiative (Criteria and Recommendations) (SBTI)	✓	Fully	-	No	-
SOS 1.5 (SOS15)	✓	-	✓	-	-
Voluntary Carbon Market Initiative (VCMI)	✓	Fully	✓	-	All according to the GHG Protocol
World Wide Fund for Nature (WWF)	-	-	-	-	All according to the GHG Protocol
INVESTOR FRAMEWORKS					
CERES (CERES)	✓	Partially	-	-	-
CDP – General Questionnaire (CDPGQ)	✓	Partially	-	-	-
CDP Chain Module (CDSPC)	-	-	-	-	-
Climate Action 100+	✓	-	-	-	-
Future Fit Foundation (FFF)	✓	Partially	-	-	-
Taskforce on Climate-Related Financial Disclosures (TCFD)	✓	-	✓	-	All according to the GHG Protocol
UN Principles for Responsible Investment (UNPRI)	✓	Partially	-	No	All according to the GHG Protocol
STANDARDS					
Greenhouse Gas Protocol Corporate (GGPC)	✓	Partially	✓	No	All according to the GHG Protocol
Greenhouse Gas Protocol (Scope 3) (GGPS3)	✓	Fully	-	No	All according to the GHG Protocol
GRI 305: Emissions 2016 (GRI)	✓	Fully	-	No	All according to the GHG Protocol
ISSB/IFRS (ISSB)	✓	Fully	-	-	All according to the GHG Protocol
INDEPENDENT TRACKERS					
Net Zero Tracker/Oxford Net Zero (NZT)	✓/-for Scope 3	-	✓	-	-
New Climate Institute (NCI)	✓	Fully	✓	-	-
Transition Pathway Initiative (TPI)	✓	Partially	-	-	-

Figure 5 Visualisation of criteria for corporate strategies for the "Measure" stage of a Net Zero strategy

TARGET-SETTING

Guidance on the way targets are set e.g. base year, interim targets, target year and type.

This section analyses the criteria used to establish best net zero target setting practice. This includes indicators on the timeline, such as the base year and target year, the inventory, such as the scope of emissions included, and the type of targets (i.e., absolute or intensity targets).

GHG coverage	There is broad agreement that targets should include all Scopes (**73%, or 24/33 recommend Scopes 1-3 be included in net zero target setting**)[xvi]. It is common practice that all GHGs (not just carbon) should be included in net zero target setting[xvii] (67% or 22/33 align with GHG Protocol guidance to include all GHGs).
	According to the IPCC, global temperature will stabilise when carbon dioxide emissions reach net zero. For 1.5°C, this means achieving net zero carbon dioxide emissions globally in the early 2050s and achieving net zero for other GHGs in the decades after. However, for practical reasons, **several leading standards and voluntary initiatives have elected to require that net zero be targeted across all GHGs by 2050**[xviii].
	The updated Race to Zero criteria recommends inclusion of all portfolio/financed/facilitated and insured emissions. Where relevant, pace-setters such as the New Climate Institute recommend that a target includes non-GHG climate forcers[xix].

Base year	A minority of initiatives (5/33, or 15%) specify a base year and offer guidance on how to determine baseline emissions for reductions targets, however those that do recommend that base years be representative and recent. SBTi recommends a base year no earlier than 2015, and UNPRI recommends 2019 as a base year (which is a similar time frame to SBTi, given the date of review). It is important to avoid choosing a base year that may not reflect a normal emissions profile, such as during the COVID-19 pandemic lockdowns. The GHG Protocol recommends choosing a base year for which verifiable emissions data are available, also allowing companies to choose an average of annual emissions over several consecutive years as the base year[xx]. **Pace-setters recommend that a company's selected baseline be independently audited and endorsed by a third party specialist expert**[xxi].
Interim targets and net zero dates	**Just over half (18/33, or 55%) ask entities to set an interim target**[xxii]**.** Many voluntary initiatives recommend intervals of a minimum of five years and a maximum of 10 years for interim targets. TCFD does not stipulate an interim target window but rather tells organisations to define time frames according to the life of their assets & the profile of climate-related risks they face[xxiii]. There is some variation on recommended Net Zero target dates. **Close to 50% (16/33, or 48%) recommend Net Zero by 2050 at the latest**[xxiv]**,** meaning sooner than 2050 is preferable. Only 1 initiative (B Corp) asks organisations to set a target of achieving Net Zero by 2030. **The majority (17/33, or 52%) do not stipulate a specific date for Net Zero.** Pace-setters specify **an ambition for interim targets in line with the carbon law** (i.e. 50% of emission reductions by 2030[xxv]), as appropriate to context.
Absolute and intensity targets	**11/33 (33%) of initiatives** allow organisations to declare absolute *or* intensity targets. TCFD stipulate that organisations declare whether their target is absolute or intensity-based, without stipulating which of these it should be. However, lead convening initiatives such as Race to Zero and the ISO Net Zero Guidelines specify a need for absolute targets, stipulating that where possible actors should aim to go further towards negative emissions. **7 initiatives stipulate the need for both absolute *and* intensity targets on the path to net zero**.

	Which **type of target** does the resource specify organisations set? (Absolute Targets, Absolute or Intensity Targets, Absolute and Intensity Targets, -)	Target to be set for **Scope 1 and 2?** (✓/No/-)	Target to be set for **Scope 3?** (✓/-)	Specific requirements on a **baseline year** for emissions reduction targets? (✓/-)	**What year** recommended to target net zero?	Does the resource recommend entities to **set Interim Target** (✓/-)
ORCHESTRATION CAMPAIGNS						
Race to Zero 3.0 (RTZ3)	Absolute Targets	✓	✓	-	by 2050 at the latest	✓
SME Climate Hub (SMECH)	Absolute and Intensity Targets	✓	✓	✓	by 2050 at the latest	-
GUIDANCE INITIATIVES						
1.5 Business Playbook (1.5BP)	Absolute and Intensity Targets	✓	✓	-	by 2050 at the latest	✓
Assessing Low-Carbon Transition (ACT)	Absolute and Intensity Targets	✓	✓	-	-	✓
B Corp (BCORP)	-	✓	✓	-	2030	✓
Cambridge Institute for Sustainability Leadership (CISL)	Absolute or Intensity Targets	✓	✓	-	2050	✓
Climate Neutral Now (CNN)	-	✓	✓	-	by 2050 at the latest	✓
Carbon Trust (CART)	-	✓	✓	-	2050	✓
Carbone 4 (CAR4)	Absolute or Intensity Targets	✓	✓	-	by 2050 at the latest	-
Chapter Zero	-	✓	✓	-	-	✓
Ecovadis (ECOV)	-	-	-	-	-	No
Integrity Council for the Voluntary Carbon Market (ICVCM)	-	-	-	✓	-	No
Nature-Based Solutions Initiative (NBSI)	-	-	-	-	-	-
Oxford Offsetting Principles (OOP)	-	-	-	-	-	No
Science-Based Target Initiative (Corporate Net Zero Standard Criteria) (SBTIC)	Absolute and Intensity Targets	✓	✓	✓	by 2050 at the latest	✓
Science-Based Targets Initiative (Criteria and Recommendations) (SBTI)	Absolute and Intensity Targets	✓	✓	✓	2050	✓
SOS 1.5 (SOS15)	-	✓	✓	✓	-	No
Voluntary Carbon Market Initiative (VCMI)	Absolute and Intensity Targets	✓	✓	✓	by 2050 at the latest	✓
World Wide Fund for Nature (WWF)	-	✓	✓	-	by 2050 at the latest	✓
INVESTOR FRAMEWORKS						
CERES (CERES)	-	✓	✓	-	2040	✓
Climate Action 100+	-	✓	✓	-	by 2050 at the latest	✓
CDP General Questionnaire (CDPGQ)	Absolute or Intensity Targets	✓	✓	-	by 2050 at the latest	-
CDP Supply Chain Module (CDSPC)	Absolute or Intensity Targets	✓	✓	-	by 2050 at the latest	-
Future Fit Foundation (FFF)	-	-	-	-	-	No
Taskforce on Climate-Related Financial Disclosures (TCFD)	Absolute or Intensity Targets	-	-	-	-	No
UN Principles for Responsible Investment (UNPRI)	Absolute or Intensity Targets	✓	✓	✓	2050	✓
STANDARDS						
Greenhouse Gas Protocol Corporate (GGPC)	Absolute or Intensity Targets	✓	✓	-	-	No
Greenhouse Gas Protocol (Scope 3) (GGPS3)	Absolute or Intensity Targets	✓	✓	-	-	✓
GRI 305: Emissions 2016 (GRI)	-	-	-	-	-	No
ISSB/IFRS (ISSB)	Absolute or Intensity Targets	-	-	-	-	No
INDEPENDENT TRACKERS						
Net Zero Tracker/Oxford Net Zero (NZT)	Absolute or Intensity Targets	✓	✓	-	-	✓
New Climate Institute (NCI)	Absolute or Intensity Targets	✓	✓	-	-	✓
Transition Pathway Initiative (TPI)	Absolute and Intensity Targets	✓	-	-	-	-

Figure 6 Visualisation of criteria for corporate strategies for the "Target" stage of Net Zero strategy

REDUCTION

Guidance on emissions reduction measures outlined across operations and the organisation's supply chains.

This section focuses on the guidance for decarbonisation or transition plans, including criteria regarding emissions abatement (e.g., the implementation plan, use of quantitative or qualitative targets, or description of initiatives implemented).

Decarbonisation strategy or transition plans	**85% (26/33) of initiatives ask for a decarbonisation or transition strategy**[15]. There are different types of decarbonisation plans depending on the sector, e.g., CDP Supply Chain module is focused on product-related emissions reduction initiatives, whereas CERES is focused on working with asset owner clients on decarbonisation goals across all Assets Under Management (AUM). What exactly should be included within the decarbonisation strategy is not stipulated by most initiatives reviewed. For instance, Climate Action 100+ asks if a company has a "decarbonisation strategy to meet its long and medium-term GHG reduction targets"[xxvi] but does not specify what this strategy must include.
Climate risk analysis	Climate risks are composed of both physical and transitional risks and should be considered across the entire value chain. Several standards and voluntary initiatives, particularly those aimed at helping investors with decision making, expect companies to **conduct risk analysis to inform a corporation's climate strategy**. The **TCFD** requires the identification, description and management of climate-related risks and opportunities within an organisation's disclosures to inform investors[xxvii]. Nature-related risk is also beginning to enter the discussion as the **TNFD** (Task force for Nature Related Financial Disclosure) is developed.

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[15]Due to the different focus of voluntary initiatives, the absence of a complete figure (e.g., 100% coverage) should not be read as the absence of consensus. See Section 1 for more detail.

References to global climate scenarios (gap)	Only 33% (11/33) make **explicit reference to different global climate scenarios, like those presented by the IPCC or the IEA, when recommending a particular pace of recommendation**[xxviii]. This presents a gap that points to the need for deeper engagement between climate scientists and actors setting reduction recommendations. In particular, global models, (such as the IEA's) only represent a part of the picture, and sectoral and regional models are needed to augment them. While there is wide acknowledgement of global 1.5 pathways with reference to the latest IPCC report, there is yet, **little consensus amongst standards and voluntary initiatives regarding what constitutes "Paris-aligned" ambition at the corporate level**, with even less specification on the exact pace of reduction and the share of efforts across sectors.

	Recommended that organisations to have a **decarbonisation strategy or transition plan?** (✓/-)	Recommended to follow the **Carbon Law** (50% by 2030 / 7% decrease year on year)? (✓/No/-)	Recommend a particular **pace of reduction** by making reference to **climate scenario**s (eg. IEA or IPCC)? (✓/-)
ORCHESTRATION CAMPAIGNS			
Race to Zero 3.0 (RTZ3)	✓	✓	✓
SME Climate Hub (SMECH)	✓	✓	-
GUIDANCE INITIATIVES			
1.5 Business Playbook (1.5BP)	✓	✓	✓
Assessing Low-Carbon Transition (ACT)	✓	-	-
B Corp (BCORP)	✓	No	-
Cambridge Institute for Sustainability Leadership (CISL)	✓	No	-
Climate Neutral Now (CNN)	-	-	✓
Carbon Trust (CART)	✓	✓	-
Carbone 4 (CAR4)	✓	-	✓
Chapter Zero	✓	-	-
Ecovadis (ECOV)	✓	-	-
Integrity Council for the Voluntary Carbon Market (ICVCM)	-	-	-
Nature-Based Solutions Initiative (NBSI)	✓	-	-
Oxford Offsetting Principles (OOP)	✓	-	-
Science-Based Target Initiative (Corporate Net Zero Standard Criteria) (SBTIC)	✓	-	✓
Science-Based Targets Initiative (Criteria and Recommendations) (SBTI)	✓	✓	✓
SOS 1.5 (SOS15)	✓	-	✓
Voluntary Carbon Market Initiative (VCMI)	✓	-	-
World Wide Fund for Nature (WWF)	✓	-	-
INVESTOR FRAMEWORKS			
CERES (CERES)	✓	✓	-
Climate Action 100+	✓	-	✓
CDP General Questionnaire (CDPGQ)	✓	-	-
CDP Supply Chain Module (CDSPC)	✓	-	-
Future Fit Foundation (FFF)	-	-	-
Taskforce on Climate-Related Financial Disclosures (TCFD)	-	-	✓
UN Principles for Responsible Investment (UNPRI)	-	-	✓
STANDARDS			
Greenhouse Gas Protocol Corporate (GGPC)	✓	-	-
Greenhouse Gas Protocol (Scope 3) (GGPS3)	✓	-	-
GRI 305: Emissions 2016 (GRI)	-	-	-
ISSB/IFRS (ISSB)	✓	-	-
INDEPENDENT TRACKERS			
Net Zero Tracker/Oxford Net Zero (NZT)	-	-	-
New Climate Institute (NCI)	✓	✓	✓
Transition Pathway Initiative (TPI)	-	-	-

Figure 7 Visualisation of criteria for corporate strategies for the "Reduce" stage of a Net Zero strategy

OFFSETTING

Guidance on the use of carbon credits, and any explanation of their extent of use, measurement, and communication.

The use of removals and/or credits as admissible strategies for achieving net zero has emerged as one of the most controversial topics for standard setters, committers, and the climate concerned public (Friends of the Earth International, 2021). There is even strong variation across initiatives as to the appropriate terminology for describing the treatment of residual emissions, which are GHG emissions that remain after taking all possible actions (i.e., all technically and scientifically feasible actions) to implement GHG emissions reductions. As outlined below, there is a lack of clarity on the threshold for residual emissions across the voluntary initiative landscape.

Some organisations (like SBTi) avoid the term 'offset' all-together due to the contentious nature of the term, instead opting for the term 'neutralising' to refer to the treatment of residual emissions. Offsetting, defined as "purchased credits representing a certified unit of emission reduction or carbon removal carried out by another actor", is a common component of many net zero strategies due to the presence of hard-to-abate emissions within corporate value chains (Allen *et al.*, 2020, p. 3). Nearly 40% of companies in the Forbes 2,000 with net zero targets intend to use external offsets (carbon credits) to achieve net zero, with less than 2% explicitly ruling out their use (NewClimate Institute *et al.*, 2022, p. 26).

Despite this debate, we find overall agreement that offsets, or investments to deal with residual emissions may play an important but *limited* role on the path to net zero. There is also growing convergence on the conditions on the use of offsets or neutralizing activities.

The role of offsetting	**76% (25/33) of standards recognised the role of offsetting in an organisation's climate strategy[xxix].** Only a few standards (Carbone 4 and New Climate Institute) discourage the incorporation of offsets into a climate strategy, maintaining that they should remain independent from any emissions reduction targets. The SBTI prohibits the use of carbon credits as emissions reductions towards near-term science-based targets while allowing the use of credits for a restricted portion of emissions in long-term net zero targets[xxx]. The Climate Action 100+ investor framework states that the use of offsetting or carbon credits should be avoided or limited if applied[xxxi], a widely held sentiment.
Conditions on the use of offsets	Many voluntary standards assert that there ought to be conditions on the use of offsets, namely: **Emissions reduction as a priority:** offsets should not be used as a decarbonisation delay tactic. For instance, Race to Zero stipulates in their Leadership Practice that companies should "prioritise reducing emissions, limiting any residual emissions to those that are not feasible to eliminate" [xxxii]. **Separate reporting** for emissions reductions, offsets, and credits. Standards and voluntary initiatives have converged on the importance of reporting offsets separately in emissions inventory or reduction progress reporting. These are reflected in the GHG Protocol, GRI 305, and ISO, amongst others. **Permanence** and the use of removals with long-term storage have also emerged among all initiatives specifically focused on the use of offsets or credits. This is noted across initiatives to be particularly important at the net zero target date, while investment in shorter-term removals and avoided emissions may be

	appropriate on the path to net zero (e.g., towards a carbon neutrality claim).
High-quality offsets	**"Quality"** is often related to verification, additionality, transparency, and consideration of wider impacts, like ecosystem health and equity. Many initiatives defined "high-quality" as certified third-party projects with co-benefits, or offset products approved by relevant expert, governmental or intergovernmental entities (BCORP). However, there remains a lack of guidance on what "high-quality" means, as this term can be ambiguous.
Defining residuals	**Though nearly half (15/33, or 45%) recommend restricting the use offsets to residual emissions**, there is a lack of guidance or specific criteria as to how to define residual emissions. For example, while several initiatives stipulate that residual emissions are "remaining hard-to-mitigate" emissions (CISL) or emissions that remain after "absolute emissions [have] been reduced as much as possible" (BCORP), few define a numerical threshold. The SBTi offers an economy-wide emissions reduction threshold of at least 90% by 2050 to inform the level of residual emissions for companies, and SMECH recommends a threshold of 10% for residual emissions. **It will be essential to define what emissions can be considered as "not feasible to eliminate", especially when financial criteria are used to determine this feasibility.**
Removals for residuals	Initiatives most focused on the issue of net zero-aligned offsetting, like SBTi, ICVCM, VCMI, ISO, and Race to Zero, stipulate that offsets for residual emissions at the net zero target date should be based on removals with a high likelihood of sufficient permanence (low risk of reversal) to meet net zero.
Buffer for calculating emissions to offset	B Corp recommended a very wide buffer for calculating how many emissions should be offset, suggesting that companies double their estimated emissions to identify how much to offset. The intention of this stipulation is to prioritise reduction strategies in the first instance.

	Recognise the **role of offsetting, credits or sinks** in climate strategy? (✓/No/-)	Any **criteria/restrictions** for the use of offsetting, credit or sinks in an organisation's climate strategy? (✓/No/-)	**Restriction of offsets** to residual emissions? (✓/No/-)	Any criteria recommended on **additionality** in governing the use of offsets, credits or sinks? (✓/No/-)	Any wider **social considerations and equity measures** in the practice of offsetting (✓/No/-)	Any wider **environmental / nature measures, biodiversity considerations** in the practice of offsetting (✓/-)
ORCHESTRATION CAMPAIGNS						
Race to Zero 3.0 (RTZ3)	✓	✓	✓	✓	✓	✓
SME Climate Hub (SMECH)	✓	✓	✓	-	-	-
GUIDANCE INITIATIVES						
1.5 Business Playbook (1.5BP)	✓	✓	✓	-	✓	-
Assessing Low-Carbon Transition (ACT)	-	-	-	-	-	-
B Corp (BCORP)	✓	✓	✓	✓	✓	-
Cambridge Institute for Sustainability Leadership (CISL)	✓	✓	✓	-	-	-
Climate Neutral Now (CNN)	✓	-	-	-	-	-
Carbon Trust (CART)	-	-	-	-	-	-
Carbone 4 (CAR4)	✓	✓	✓	-	-	-
Chapter Zero	✓	✓	-	-	-	-
Ecovadis (ECOV)	-	-	-	-	-	-
Integrity Council for the Voluntary Carbon Market (ICVCM)	✓	✓	-	✓	✓	✓
Nature-Based Solutions Initiative (NBSI)	✓	✓	-	-	✓	✓
Oxford Offsetting Principles (OOP)	✓	✓	✓	✓	✓	✓
Science-Based Target Initiative (Corporate Net Zero Standard Criteria) (SBTIC)	✓	✓	✓	-	-	-
Science-Based Targets Initiative (Criteria and Recommendations) (SBTI)	No	✓	✓	-	-	-
SOS 1.5 (SOS15)	✓	-	-	-	-	-
Voluntary Carbon Market Initiative (VCMI)	✓	✓	-	✓	✓	✓
World Wide Fund for Nature (WWF)	✓	✓	✓	-	-	-
INVESTOR FRAMEWORKS						
CERES (CERES)	✓	✓	✓	-	-	-
Climate Action 100+			✓			
CDP General Questionnaire (CDPGQ)	✓	✓	✓	-	-	-
CDP Supply Chain Module (CDSPC)	-	-	-	-	-	-
Future Fit Foundation (FFF)	✓	✓	-	-	-	-
Taskforce on Climate-Related Financial Disclosures	-	-	-	-	-	-
UN Principles for Responsible Investment (UNPRI)	-	-	-	-	-	-
STANDARDS						
Greenhouse Gas Protocol Corporate (GGPC)	✓	✓	✓	✓	-	-
Greenhouse Gas Protocol (Scope 3) (GGPS3)	✓	✓	-	-	-	-
GRI 305: Emissions 2016 (GRI)	✓	✓	-	-	-	-
ISSB/IFRS (ISSB)	✓	✓	-	-	-	-
INDEPENDENT TRACKERS						
Net Zero Tracker/Oxford Net Zero (NZT)	✓	✓	-	✓	✓	✓
New Climate Institute (NCI)	No	✓	✓	✓	-	✓
Transition Pathway Initiative (TPI)	-	-	-	-	-	-

Figure 8 Visualisation of criteria for corporate strategies for the "Offsets" stage of a Net Zero strategy

REPORTING

Guidance on disclosure of climate-related information, including reporting frequency, emissions, and progress on targets.

In this section, we assess requirements for disclosure, including information to be disclosed, frequency and reporting methodologies.

Published reports	**79% (26/33) recommend a published report on progress**, and 67% (22/33) of initiatives stipulate this is done on an annual basis[xxxiii].
Third party verification of data	**A third (12/24 or 36%) mandate quality assurance through third party verification**, and the GHG Protocol offers guidance on how to develop a verifiable inventory[xxxiv]. Often voluntary initiatives require a minimum level of reporting quality e.g., "Bronze" according to their methodology for organisations to remain as members[xxxv]. However, there is variation as to auditing, ranking and verification methods across initiatives, including: Verification by an expert panel which provides detailed attention, but it is difficult to scale; Verification of policies and public information (e.g. independent trackers), which offers scalable coverage of a wide set of organisations but does not replace an in depth audit by an expert panel, as organisations may publish commitments which are not backed by action, or may fail to publish details; Certified commercial third-party verification (e.g. for ISO standards) scales well but operates independently experts designing the guidance, which may translate to a lag in adopting emergent thinking.
Pace setters: Disclosure of carbon price & association membership	Pace-setters recommend that companies disclose their internal carbon price and disclose memberships of trade associations that engage on climate-related issues (Cambridge Institute for Sustainability Leadership).

Separated emissions report	Only 33% (11/33) recommend a **separated emissions report, i.e., a report separated by greenhouse gases**[xxxvi]. Though many advocate for breakdown by Scope, this lack of visibility at a GHG-specific level could hamper comparability further down the line.
Report on limitations of data	**90% (30/33) do not specify reporting on the limitations of the data,** unknowns, known errors or discrepancies. The Greenhouse Gas Corporate Protocol stipulates that where errors are identified, "companies may be required to recalculate their baseline emissions, and this recalculation must be reported."[xxxvii]

	Recommend climate targets include a published plan (✓/-)	Recommend climate targets include a published report on progress? (✓/-)	Reporting frequency (Annual, Other, -)	What type of data **collection method** does the resource outline? (Criteria specific self-reporting/Criteria specific self-reporting with verification/ (N/A) / Public Disclosure/ Self disclosure/Other)	Recommend reporting on **limitations** of the data, **unknowns, or known errors or discrepancies** (✓/-)	Recommend measurements reported be **quality assured?** (✓/-)	Recommend **climate risk analysis** and reporting? (✓/-)
ORCHESTRATION CAMPAIGNS							
Race to Zero 3.0 (RTZ3)	✓	✓	Annual	Criteria specific self-reporting with verification	-	-	-
SME Climate Hub (SMECH)	-	-	-	Criteria specific self-reporting			
GUIDANCE INITIATIVES							
1.5 Business Playbook (1.5BP)	✓	✓	Annual	Self disclosure	-	✓	✓
Assessing Low-Carbon Transition (ACT)	✓	-	-	Other	-	-	✓
B Corp (BCORP)	✓	✓	Annual	Criteria specific self-reporting	-	-	-
Cambridge Institute for Sustainability Leadership (CISL)	✓	✓	-	Criteria specific self-reporting	-	✓	✓
Climate Neutral Now (CNN)	✓	✓	Annual	Criteria specific self-reporting	-	✓	-
Carbon Trust (CART)	✓	✓	Annual	N/A	-	-	-
Carbone 4 (CAR4)	-	✓	Annual	Other	-	✓	-
Chapter Zero	✓	✓	-	N/A	-	-	✓
Ecovadis (ECOV)	✓	✓	Other	Public disclosure	-	-	-
Integrity Council for the Voluntary Carbon Market (ICVCM)	-	✓	Other	Criteria specific self-reporting with verification	-	✓	-
Nature-Based Solutions Initiative (NBSI)	-	-	-	N/A	-	-	-
Oxford Offsetting Principles (OOP)	-	-	-	N/A	-	-	-
Science-Based Target Initiative (Corporate Net Zero Standard Criteria) (SBTIC)	✓	✓	Annual	Self disclosure	-	-	-
Science-Based Targets Initiative (Criteria and Recommendations) (SBTI)	-	✓	Annual	Self disclosure	-	-	-
SOS 1.5 (SOS15)	✓	✓	Annual	Self disclosure	-	-	✓
Voluntary Carbon Market Initiative (VCMI)	✓	✓	Annual	Self disclosure	✓	✓	✓
World Wide Fund for Nature (WWF)	✓	✓	Other	Self disclosure	-	-	✓
INVESTOR FRAMEWORKS							
CERES (CERES)	✓	✓	Annual	Other	-	✓	✓
Climate Action 100+	✓	-	Annual	Public disclosure	-	-	✓
CDP Questionnaire (CDPGQ)	✓	✓	Annual	Criteria specific self-reporting	-	-	✓
CDP Supply Chain Module	✓	-	Annual	Criteria specific self-reporting	-	-	✓
Future Fit Foundation (FFF)	-	-	-	Criteria specific self-reporting	✓	-	-
Taskforce on Climate-Related Financial Disclosures (TCFD)	✓	✓	Annual	Criteria specific self-reporting	-	-	✓
UN Principles for Responsible Investment (UNPRI)	-	✓	Annual	Self disclosure	✓	✓	-
STANDARDS							
Greenhouse Gas Protocol Corporate (GGPC)	-	✓	Annual	Criteria specific self-reporting	✓	-	-
Greenhouse Gas Protocol (Scope 3) (GGPS3)	-	✓	Annual	Criteria specific self-reporting	-	-	-
GRI 305: Emissions 2016 (GRI)	-	✓	Annual	Criteria specific self-reporting	-	-	-
ISSB/IFRS (ISSB)	✓	✓	-	Self disclosure	-	✓	✓
INDEPENDENT TRACKERS							
Net Zero Tracker/Oxford Net Zero (NZT)	✓	✓	-	Public disclosure	-	-	-
New Climate Institute (NCI)	-	✓	Annual	Self disclosure	-	-	-
Transition Pathway Initiative (TPI)	-	-	-	Other	-	-	✓

Figure 9 Visualisation of criteria for corporate strategies for the "Report" stage of a Net Zero strategy

Guidance on engagement with stakeholders when setting net-zero targets, including equity impacts, lobbying and advocacy.

Considerations for impact describes the way equity and climate justice concerns are incorporated and represented within corporate net zero strategies. Net Zero standards are not simply scientific assessments, but political in nature, and are a product of dynamically shifting and differing priorities between stakeholders. Many equity and justice considerations arise with discussions of corporate climate contributions. These centre around the concepts of "fair share" and climate justice, which emphasise "addressing climate change [by] safeguarding the rights of the most vulnerable people and sharing the burdens and benefits of climate change and its impacts equitably and fairly"[xxxviii]. There are also important considerations as to how guidance for companies on net zero could create unjust dynamics by encouraging land grabs for carbon offsets[xxxix]. While questions are arising on how to measure and target these expectations, the voluntary initiatives and standard landscape has only scraped the surface in defining measures to improve equity and climate justice within corporate net zero strategies.

Climate justice and equity	**Only 12/33 (36%) of initiatives, including those with offsetting guidance, hold any mention of provisions for climate justice or equity.**
	Those that do, such as the 1.5 Business Playbook, stipulate that the company can work to accelerate climate action in line with 1.5C ambition[xl]. The Future Fit Foundation stipulates that companies should work to safeguard community and employee health and ensure that operations do not encroach on ecosystems or communities[xli].
Pace-setters: Alignment with other sustainability initiatives	Pace-setters advocate for **alignment with other sustainability initiatives** like the SDGs, the **consideration of the impact of transition** within an organisation's operations and **establishing partnerships** outside of an organisation's operations.

	For example, the CDP questionnaire[xlii] and the SOS 1.5 standard[xliii] emphasise the interrelations between emissions reduction strategies and several key SDGs. A handful of standards and voluntary initiatives invoke climate justice in relation to transition risks for employees and marginalised communities. For example, Climate Action 100+[xliv] is developing an indicator to assess whether companies consider the impacts of a just transition and how moving towards a lower-carbon business model may affect workers and communities.
Biodiversity or nature target (gap)	There is a growing view that companies need to set a separate nature target (with some emergent guidelines from the Science-based Targets for Nature initiative). The NBSI[xlv] and the Oxford Offsetting Principle[xlvi] encourage companies to conceptualise natural ecosystems outside a narrow view of carbon storage. Race to Zero, also recommends corporates immediately contribute to the preservation and restoration of natural ecosystems, irrespective of greenhouse gas neutralisation claims[xlvii]. This acknowledges the many adaptation and resilience benefits of nature beyond mitigation and allows for adaptive governance and experimentation among NbS projects. Overall, only 36% (12/33) stipulate that organisations should set a **biodiversity or nature target[xlviii].** This demonstrates an emerging best practice that will increasingly become important as other initiatives, e.g., the Task Force for Nature-related Financial Disclosure (TNFD) gains traction.
Lobbying and advocacy	52% (17/33) of initiatives encourage organisations to **align lobbying and advocacy with their climate target[xlix]**. Methods include mobilising and building capacity across an organisation's value chain, influencing policy and regulation and joining memberships and alliances to engage and collaborate across regions, sectors and markets to drive climate action. Going further on this would involve guidance on disclosing policy positions on climate lobbying. These specifically relate to ensuring that the company has a wider engagement beyond just the requirements of a net zero standard to uphold and advocate for wider adoption of these standards in their industry, through engagement with local and national policymakers.

	Encourage organisations to include **provisions for climate justice or equity** in their net zero strategies? (✓/-)	Encourage organisations to **align lobbying and advocacy** with their climate goals? (✓/-)	Encourage organisations to set a **biodiversity or nature target?** (✓/-)
ORCHESTRATION CAMPAIGNS			
Race to Zero 3.0 (RTZ3)	✓	✓	✓
SME Climate Hub (SMECH)	-	✓	-
GUIDANCE INITIATIVES			
1.5 Business Playbook (1.5BP)	✓	✓	-
Assessing Low-Carbon Transition (ACT)	-	✓	-
B Corp (BCORP)	-	-	-
Cambridge Institute for Sustainability Leadership (CISL)	✓	✓	✓
Climate Neutral Now (CNN)	-	-	-
Carbon Trust (CART)	-	-	-
Carbone 4 (CAR4)	-	-	-
Chapter Zero	-	✓	-
Ecovadis (ECOV)	-	-	-
Integrity Council for the Voluntary Carbon Market (ICVCM)	✓	-	✓
Nature-Based Solutions Initiative (NBSI)	✓	-	✓
Oxford Offsetting Principles (OOP)	-	✓	✓
Science-Based Target Initiative (Corporate Net Zero Standard Criteria) (SBTIC)	✓	✓	✓
Science-Based Targets Initiative (Criteria and Recommendations) (SBTI)	-	✓	-
SOS 1.5 (SOS15)	-	✓	-
Voluntary Carbon Market Initiative (VCMI)	✓	✓	✓
World Wide Fund for Nature (WWF)	-	-	-
INVESTOR FRAMEWORKS			
CERES (CERES)	✓	-	✓
Climate Action 100+	✓	✓	-
CDP General Questionnaire (CDPGQ)	✓	✓	✓
CDP Supply Chain Module (CDSPC)	-	-	-
Future Fit Foundation (FFF)	✓	✓	✓
Taskforce on Climate-Related Financial Disclosures (TCFD)	-	-	-
UN Principles for Responsible Investment (UNPRI)	-	✓	✓
STANDARDS			
Greenhouse Gas Protocol Corporate (GGPC)	-	-	-
Greenhouse Gas Protocol (Scope 3) (GGPS3)	-	-	-
GRI 305: Emissions 2016 (GRI)	-	-	-
ISSB/IFRS (ISSB)	-	-	-
INDEPENDENT TRACKERS			
Net Zero Tracker/Oxford Net Zero (NZT)	✓	-	-
New Climate Institute (NCI)	-	-	-
Transition Pathway Initiative (TPI)	-	✓	-

Figure 10 Visualisation of criteria for corporate strategies for the "Impact" stage of Net Zero strategy

INTERCONNECTION

Cross-referencing in the voluntary initiative landscape

We find strong interconnection between initiatives in the voluntary landscape. Guidance and standards frequently refer to the work of other organisations (as visualised in Figure 11). Though this is not a comprehensive map of the landscape, it indicates the high level of interconnection between key actors. On the one hand, the high level of cross-referencing could indicate some degree of consensus about key principles, that knowledge spreads effectively across the ecosystem, and/or that organisations working together to fill gaps in guidance. Indeed, many of the reviewed organisations have collaborated, are offshoots of, or formally recognise one another, and there is a high-level of reference to well-established standards such as the SBTi and the Greenhouse Gas Protocol, and the orchestration campaign, the Race to Zero. This indicates some consensus about key initiatives for non-state actors to use. However, it is possible that high levels of crossover, redundancy or 'noise' in the ecosystem are obscuring this underlying consensus, or at least making it more difficult for those operating outside of the ecosystem to identify points of agreement and points of disagreement. This question presents a need for further research to understand whether and to what extent existing resources are meeting the needs of user organisations.
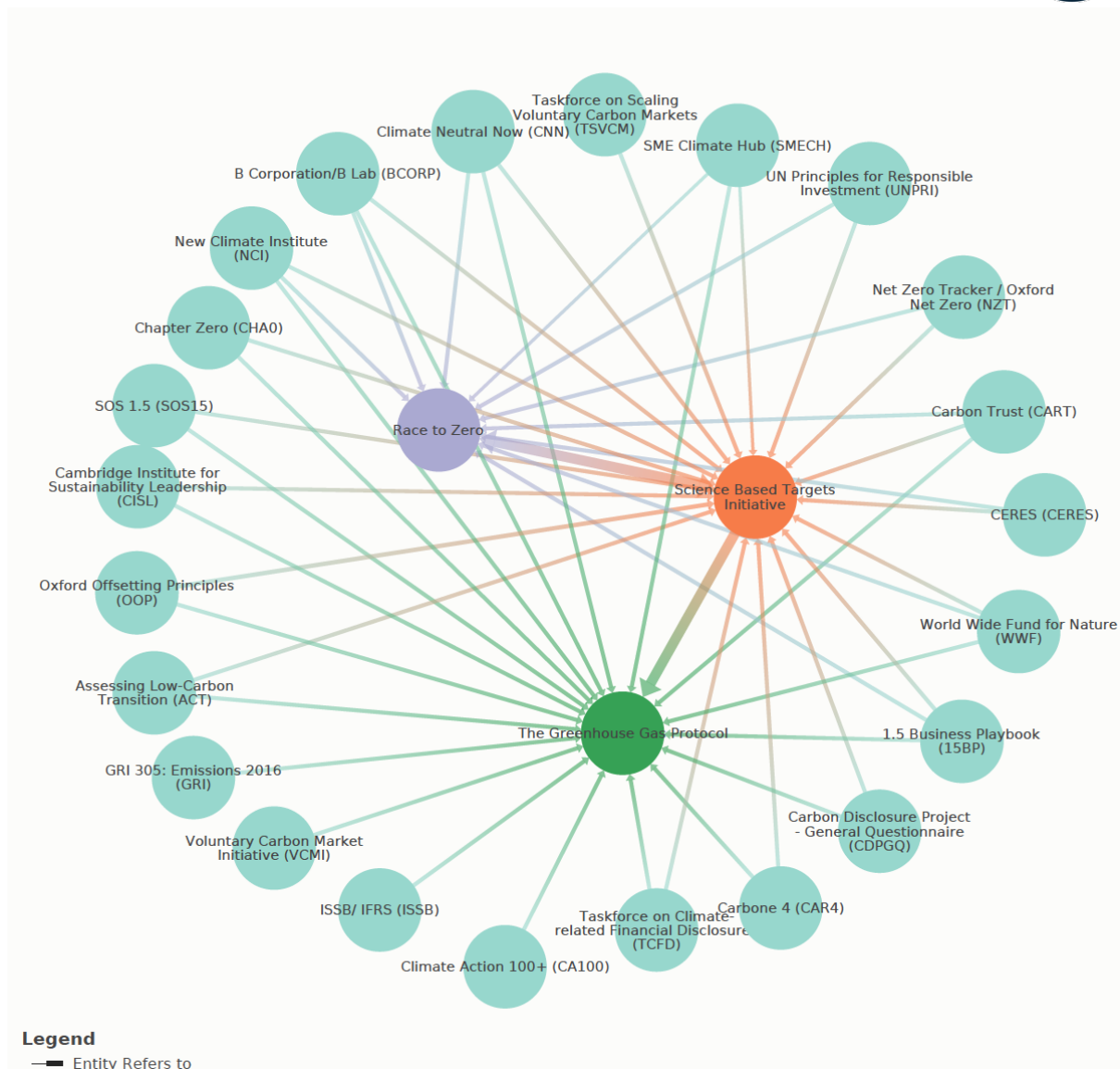
Figure 11 Interactions between organisations active in the voluntary net zero landscape. We counted an interaction where one initiative made a unilateral reference to another initiative's methodology or guidance practices.

Conclusion

The landscape of voluntary initiatives for organisational climate integrity has matured significantly since the first disclosure framework was developed in 2000 (CDP), with guidance on organisational climate targets across all stages of a climate journey (from measurement to reporting). Since the Paris Agreement, net zero targets have burst onto the landscape, and key criteria have coalesced specifically on the meaning of and pathway to net zero. The focus of this report has been to review these criteria and their areas of convergence, divergence, and gaps. Our findings demonstrate robust convergence and cross-referencing between initiatives despite a functionally diverse voluntary landscape.

The most striking findings are:

- **Interconnection in the landscape:** We find a high amount of referencing of trusted standards and voluntary initiatives like the SBTi, Race to Zero and GHG Protocol. This demonstrates substantive alignment on core criteria. Divergence in the landscape may appear from the different focuses of initiatives. Going forward, it would be useful for initiatives to contextualise their work within the wider landscape and include reference to which initiatives they align.

- **Leadership:** Over a third (12/33, or 36%) of voluntary initiatives call for executive remuneration to be tied to the achievement of climate targets. This represents nascent best practice for leadership practices to be formalised through internal incentive levers.

- **Coverage:** There is wide consensus (76% of initiatives) that net zero targets should cover all Scopes and GHGs. However, of the 25 initiatives that encourage some portion of Scope 3 emissions to be measured, just under half encourage (12/25, or 48%) encourage organisations to account fully for their Scope 3 emissions in their targets.

- **Historical emissions:** Few initiatives (7/33, or 21%) gave guidance on how to handle historical emissions. From a fair share perspective, historical emissions should be used as a metric to help organisations set timing and ambition of targets in the context of the principle of fair share (e.g., organisations with large historical emissions might consider increasing the ambition of their targets[l]).

- **Verification:** There is emerging best practice guidance on net zero strategies being independently audited and endorsed by a third party. This demonstrates a move towards transparency and accountability for non-state actors.

- **Offsets**: There is common agreement offsetting should be reserved for limited residual emissions and should follow a set of conditions to ensure quality and permanence if being counted towards a net zero target. More detailed guidance is needed to define a numerical threshold for residual emissions using science-based pathways specific to sector and geography.

- **Impact**: Non-carbon impacts are poorly defined within net zero strategies, and initiatives provide limited guidance on how organisations should manage biodiversity or nature implications in their strategies.

There are, of course, many more areas where further guidance is needed in the voluntary landscape, namely:

- Recommendations on fossil fuel financing within a net zero strategy

- Verification and quality assurance processes for targets and strategies

- Reporting impacts on people or land/nature outside of an offset context

- Guidance on ending fossil fuel investments/projects as part of a net zero strategy

- Critical engagement on how to define equitable target-setting.

As these key criteria become used as the basis for new policy, the criteria and consensus areas outlined in this summary report may begin to pop up in policy documents and regulatory mechanisms for ensuring net zero integrity; providing an opportunity for further research as to how these criteria change or become adopted as they meet rule-making processes. While this summary represents only a snapshot of current consensus in an emerging policy landscape, our hope is that this document (and our dataset) can provide clarity to policymakers, voluntary initiatives, and organisations themselves as they set out rules and strategies towards organisational net zero commitments. Overall, remarkable consensus has emerged across a wide array of initiatives on key net zero requirements, offering organisations greater certainty and a clear template for setting out their net zero roadmaps.

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Appendix A - Key Terms and Concepts

Key Term/Concept	Definition
Absolute and intensity targets	According to the GHG Protocol, "an absolute target is usually expressed in terms of a reduction over time in a specified quantity of GHG emissions to the atmosphere, the unit typically being tonnes of CO2-e. An intensity target is usually expressed as a reduction in the ratio of GHG emissions relative to another business metric. To facilitate transparency, companies using an intensity target should also report the absolute emissions from sources covered by the target[li]."
Base year emissions	"A base year is a reference point in the past with which current emissions can be compared"[lii].
Independent trackers	are led by experts who help develop net zero criteria based on research and evidence. They are based within think tanks and universities and are independent - separate from the entities that enact climate commitments. However, independent trackers can become valuable investor tools or mechanisms for public advocacy if the data is publicly available, such as TPI which also functions as the data supplier for the CA100+.
Indicators	What data/piece of information is needed to fulfil the criteria stipulated by a voluntary initiative
Investor frameworks	Coordination efforts that seek to embed longer-term climate change risks into short-term investment decision-making.

Membership initiatives and pledges	The least binding end of the governance conveyor belt, have no legal status and tend to foster the most ambitious commitments. They provide an opportunity to experiment, test, and develop new thought leadership on pathways to net zero. Crucially, they also help demonstrate best practices and gaps in key criteria for net zero regulation to policymakers.
Net Zero	At a global level, net zero is the condition in which human-caused greenhouse gas emissions are balanced by like-for-like human-led greenhouse gas removals over a specified period.
Net Zero Commitment	A declaration made by an organisation or a non-state actor to contribute to a state of net zero by a specific date.
Offsetting	"Purchased credits representing a certified unit of emission reduction or carbon removal carried out by another actor" (Allen *et al.*, 2020, p. 3)
Orchestration campaigns	are multi-stakeholder alliances and networks that provide space to co-ordinate and consolidate business practices, such as the Race to Zero. They are voluntary as well, but the reputational pressure they exert tends to increase uptake and compliance. They also improve the inclusivity of the policy development process by engaging a wider range of stakeholders as they consolidate best practice, which can then feed into new standards.
Pace-Setter	initiatives that are going above and beyond the status quo, encouraging action that is at a faster speed or requires higher ambition than other initiatives.
Residual emissions	Residual emissions are GHG emissions that remain after

	taking all possible actions (i.e., all technically and scientifically feasible actions) to implement GHG emissions reductions.
Standards	Exert a stronger market pressure, and often go through valuable global consensus processes. As stakeholders in these processes include a range of actors, decision making on criteria tends to be a long process and outcomes may be less stringent compared to private/orchestrated initiatives. However, standards also incorporate strong consideration for the feasibility of the requirements and have a global scale and influence regulation and trading rules.

Appendix B – Full List of Organisations, Type and Sources

Organisation Full Name (Organisation Code)	Source Document	Link to Source Document	Summary Description of Organisation	Organisation type	Format of Resource
1.5 Business Playbook (15BP)	THE 1.5°C BUSINESS PLAYBOOK V.1.1.1, 2020	https://exponentialroadmap.org/wp-content/uploads/2020/11/1.5C-Business-Playbook-v1.1.1pdf.pdf	The 1.5 degrees Playbook is developed by the Exponential Roadmap Initiative for companies and organisations of all sizes seeking to align with the 1.5°C and net-zero ambition and halving emissions by 2030. It contains guidelines on targets-setting strategy and actions. The Exponential Roadmap "brings together innovators, disruptors and transformers" to drive 1.5 ambition, membership includes a small list of ambitious member companies mostly representing the tech and consumer goods sectors. The initiative draws on scientific insights on	Voluntary Initiative	Guide or Principles

			planetary boundaries from the Potsdam institute.		
Assessing Low-Carbon Transition (ACT)	Assessing low-Carbon Transition, Version 1.1, 2021	https://actinitiative.org/wp-content/uploads/pdf/act-generic-methodology.pdf	The objective of the ACT initiative is to determine the extent to which companies are in line with a transition towards a low-carbon economy. A maturity assessment (ranked from basic, standard, advanced, next practice to low carbon aligned) and aiming towards accountability for the many actions that organisations are proposing to tackle climate change. Sector-specific methodologies for auto, electric utility, retail, cement, transport, oil and gas, real estate, property development, aluminium, chemicals, iron, and steel. The objective of the ACT initiative is to provide an international climate accountability system for companies. By benchmarking against science-based metrics the ACT initiative aligns climate transition strategies with low-carbon pathways and defines the level of ambition required from each sector. The ACT initiative gives companies access to tools to support them towards an approach compatible with the Paris Agreement and publishes high-impact methodologies for individual sectors using the SBTi's Sectorial Decarbonisation approach. Companies' emissions targets are assessed against climate change scenarios and reported on to enable forward progress.	Voluntary Initiative	Reporting Tool

B Corporation/ B Lab (BCORP)	[1] B Corp Climate Action Commitment Definition of Terms (Version 2), 2021 [2] "Measure What Matters" A guide for B Corps, 2020	[1] https://www.bcorpclimatecollective.org/s/B-Corp-Climate-Collective-Definition-of-Terms-for-B-Corp-Net-Zero-by-2030-Commitments-February-2021.pdf [2] https://static1.squarespace.com/static/5db888480800f10dfca7c683/t/5e3195620fffb84a49179b8c/1580307811165/B+Corp+2019+Measure+What+Matters+Climate+Action+Guide+200120.pdf	B Corporations are companies that have been certified by B Lab to voluntarily meet high standards of social and environmental performance. The B Impact Assessment contains an environmental 'Impact Area' that covers the environmental management system, recycling materials, water waste and energy usage. B Corps are required to have a "material positive impact on society and the environment, taken as a whole".	Voluntary Initiative	Membership Requirement
Cambridge Institute for Sustainability Leadership (CISL)	Targeting Net Zero: A strategic framework for business action, 2020	https://www.cisl.cam.ac.uk/resources/low-carbon-transformation-publications/targeting-net-zero/targeting-net-zero-	CISL is a global Institute developing leadership and solutions for a sustainable economy. They have published 'Targeting Net Zero: A Strategic Framework for Business Action'. The framework has four key stages: -Align organisational purpose, strategy and business models	Voluntary Initiative	Independent Tracker

| | | framework | - Set business goals and evidence-based targets, measure and report progress
- Embed Net Zero practices in operations and value chains
- Engage, collaborate and advocate change across regions, sectors and markets
There is relatively little detail in the framework on the specifics of target setting, measurement and reporting. However, the framework includes links to a wide range of external sources of information and standards. It leans heavily on the GHG Protocols. | | |
| Carbon Neutral Now (CNN) | Climate Neutral Now - Guidelines for Participation (website) | https://unfccc.int/sites/default/files/resource/CNN%20Guidelines.pdf | Climate Neutral Now is an initiative run by the UNFCCC and aims to promote voluntary action to achieve climate neutrality and provide recognition for this. By signing the Climate Neutral Now Pledge and reporting annually organisations, events or individuals can participate in the scheme. The CNN Pledge is a commitment to estimate GHG emissions, act to reduce them and report on a yearly basis (offsetting is optional). Participants are supported with tools, resources, support, and guidance to align themselves with the Paris Agreement. There are three levels of recognition: Bronze, Silver, or Gold, with Bronze a minimal requirement and Gold involving third-party verification of a GHG inventory, 5% yearly emissions reduction and full scope 3 emissions coverage. | Voluntary Initiative | Membership Requirement |

Carbon Trust (CART)	Introductory Guide - The journey to Net Zero for SMEs, 2022	https://prod-drupal-files.storage.googleapis.com/documents/resource/public/The%20journey%20to%20Net%20Zero%20for%20SMEs%20guide.pdf	Carbon Trust offers support services in climate impact reduction, providing guidance to businesses, governments, and organisations on the route to Net Zero. They support organisations through target setting, Net Zero pathways, assurance and foot printing, policy advice, strategy setting and programme delivery. They also support companies in setting science-based targets (based on SBTi).	Voluntary Initiative	Guide or Principles
Carbone 4 (CAR4)	Net Zero Initiative, A Framework for Collective Carbon Neutrality, 2020	https://www.carbone4.com/wp-content/uploads/2020/04/Carbone-4-NZI-Guidelines-april-2020-1.pdf	Carbone 4 is a consulting firm which assists the transformation of organisations in their decarbonization and adaptation to climate change. They provide a public framework called the Net Zero Initiative. Their guidance to organisations breaks down decarbonisation efforts into three pillars. Pillar A is reducing emissions inside and outside their value chain (all 3 scopes). Pillar B is reducing other's emissions (avoided emissions) by producing or funding low carbon projects. Pillar C is developing carbon sinks, both in and outside the value chain.	Voluntary Initiative	Guide or Principles
Carbon Disclosure Project - General Questionnaire (CDPGQ)	CDP Climate Change 2022 Questionnaire, v1.4, 2022	https://guidance.cdp.net/en/guidance?cid=18&ctype=theme&idtype=ThemeID&incchild=1&microsite=0&otype=ScoringMethodology	CDP is a not-for-profit charity that runs the global disclosure system for investors, companies, cities, states, and regions to manage their environmental impacts. There are now companies, cities, states, and regions from over 90 countries that disclose to CDP. "CDP's climate change questionnaire collects	Voluntary Initiative	Reporting Tool

		&tags=TAG-605%2CTAG-646	climate-related data from the world's largest companies on behalf of over 590 institutional investor signatories with a combined US$110 trillion in assets and 200+ major purchasers with over US$5.5 trillion in procurement spend.".		
Carbon Disclosure Project Supply Chain Module (CDPSC)	CDP Climate Change 2022 Questionnaire, v1.4, 2022,	https://guidance.cdp.net/en/guidance?cid=18&ctype=theme&idtype=ThemeID&incchild=1&microsite=0&otype=ScoringMethodology&tags=TAG-605%2CTAG-646	CDP is a not-for-profit charity that runs the global disclosure system for investors, companies, cities, states, and regions to manage their environmental impacts. There are now companies, cities, states, and regions from over 90 countries that disclose to CDP. "CDP's climate change questionnaire collects climate-related data from the world's largest companies on behalf of over 590 institutional investor signatories with a combined US$110 trillion in assets and 200+ major purchasers with over US$5.5 trillion in procurement spend.". This questionnaire is a module embedded in the CDP climate change questionnaire. It is presented only to organisations responding to a customer request from one or more CDP Supply Chain Members.	Voluntary Initiative	Reporting Tool
CERES (CERES)	[1] The Net Zero Asset Managers Commitment [2] Ceres Company Network	[1] https://www.netzeroassetmanagers.org/media/2021/12/NZAM-Commitment.pdf [2] https://www.cere	CERES is a non-profit organisation trying to transform the economy to build a just and sustainable future. By making a financial business case, the organisation seeks to promote sustainability goals by working with the most influential capital market leaders. Through their networks and global	Investor Framework	Membership Requirement

	member expectations	s.org/sites/defaul t/files/Membersh ip%20Expectatio ns.pdf	collaborations of investors, companies and non-profits, they drive action and inspire equitable market-based and policy solutions throughout the economy.		
Chapter Zero (CHA0)	Chapter Zero: A climate change boardroom toolkit, Version 2, 2020	https://www.cha pterzero.org.uk/c hapter-zero-board-toolkit-2020/	Chapter Zero is a global network of board directors who are equipping themselves to deal with the impacts of climate change, and to ensure that global net zero ambitions are transformed into plans and measurable action. They have a 'knowledge hub' of resources which they point their members towards. Their focus is on how to initiate discussions about climate change in the boardroom and how to embed climate action within company strategies.	Voluntary Initiative	Guide or Principles
Climate Action 100+ (CA100)	Climate Action 100+ Net Zero Company Benchmark, 2021	https://www.clim ateaction100.org/ wp-content/uploads/ 2021/10/V1.1-Disclosure-Framework-assessment-methodology-Oct21.pdf	The Climate Action 100+ Net-Zero Company Benchmark assesses the world's largest corporate greenhouse gas emitters on their progress in the transition to the net zero future.	Investor Framework	Investor Assessment
Ecovadis (ECOV)	EcoVadis Carbon Methodolog y Overview and Principles	https://resources. ecovadis.com/ec ovadis-solution-materials/ecovadi s-carbon-methodology-	EcoVadis is a business sustainability rating body and has established a global network of more than 90,000 rated companies since its founding in 2007. The Carbon Methodology evaluated here outlines the framework EcoVadis uses to	Voluntary Initiative	Reporting Tool

		overview-principles?no-gate=	benchmark a company's Carbon Rating through a maturity framework (Insufficient, Beginner, Intermediate, Advanced, Leader). There is no comprehensive metric available on the website as it is only made available to rated companies. In addition to ratings of companies, EcoVadis provide services such as Scorecards, which enable companies to see the structure and extent of their emissions. Their "Carbon Action Solution" is a service that claims to enable companies to understand the full extent of their supply chain emissions, and to engage with their suppliers to improve carbon performance.		
Future Fit Foundation (FFF)	Break Even Goals (website)	https://benchmark.futurefitbusiness.org/be.html	Future-fit Foundation is a UK-registered charity promoting economic, social and environmental sustainability. Their Future-Fit Foundation Business Benchmark includes the 23 Break-Even Goals which have been assessed in this mapping. The Benchmarks marks the line in the sand that all companies must strive to reach to ensure that they are in no way slowing down society's transition to future-fitness.	Investor Framework	Investor Assessment
Greenhouse Gas Protocol (Corporate) (GGPC)	The Greenhouse Gas Protocol: A Corporate Accounting and	https://ghgprotocol.org/sites/default/files/standards/ghg-protocol-revised.pdf	Published in 2004, The GHG Protocol Corporate Standard focuses only on the accounting and reporting of emissions, providing a standard to develop a verifiable inventory	Standard	Guide or Principles

	Reporting Standard, 2004					
Greenhouse Gas Protocol (Scope 3) (GGPS3)	Corporate Value Chain (Scope 3) Accounting and Reporting Standard, 2011	https://ghgprotocol.org/sites/default/files/standards/Corporate-Value-Chain-Accounting-Reporing-Standard_041613_2.pdf	Published in 2011, the GHG Protocol Scope 3 Standard is a supplement to the GHG Protocol Corporate Accounting and Reporting Standard (2004) and should be used in conjunction with it. This new standard promotes and builds upon the Corporate Standard to promote additional completeness and consistency in the way companies account for and report on indirect emissions from value chain activities (i.e. Scope 3 emissions).	Standard	Guide or Principles
GRI 305: Emissions 2016 (GRI)	GRI 305: Emissions 2016, 2018	https://www.globalreporting.org/standards/media/1012/gri-305-emissions-2016.pdf	The GRI Emissions 2016 Standard is part of the set of GRI Sustainability Reporting Standards (GRI Standards). These Standards are designed to be used by organisations to report about their impacts on the economy, the environment, and society. GRI is governed by a set of bodies (boards, committees, and groups) made up of experts and stakeholders who perform their work on a voluntary basis. The Global Sustainability Standards Board (GSSB) sets out a new work program every three years to update their standards. Standards are developed "in the public interest", "regarding authoritative intergovernmental instruments and widely held expectations of organisations relating to social, environmental, and economic	Standard	Reporting Tool

			responsibilities". GRI is based in Amsterdam but has a network of seven regional hubs to allow them to carry out their work worldwide (in over 100 countries).		
ISSB/ IFRS (ISSB)	[Draft] IFRS S2 Climate-related Disclosures, 2022	https://www.ifrs.org/content/dam/ifrs/project/climate-related-disclosures/issb-exposure-draft-2022-2-climate-related-disclosures.pdf	IFRS Sustainability Disclosure Standard SX Climate-related Disclosures (IFRS S2) sets out the requirements for the identification, measurement, and disclosure of climate related financial information. It promotes these standards through the International Accounting Standards Board (IASB), which is oversees. The standards set out how companies should describe their financial performance and risks. IFRS Standards are required in over 140 jurisdictions worldwide. At COP26, the IFRS Foundation announced the formation of the International Sustainability Standards Board, which will produce new standards for sustainability reporting. A Technical Readiness Working Group has published prototypes of the upcoming standards.	Standard	Reporting Tool

Nature-Based Solutions Initiative (NBSI)	[1] Guidelines for Successful, Sustainable, Nature-based Solutions, 2021 [2] Ensuring Nature-based Solutions support both biodiversity and climate change adaptation	[1] https://kleinmanenergy.upenn.edu/wp-content/uploads/2021/10/KCEP-Guidelines-for-Nature-Based-Solutions.pdf [2] https://www.naturebasedsolutionsinitiative.org/wp-content/uploads/2021/10/Biodiversity_Paper_Report_NBSI.pdf	Founded in 2017, the Nature-based Solutions Initiative is an international and interdisciplinary team of natural and social scientists, seeking to apply impactful research to shape policy and practice on nature-based solutions through research, teaching and engagement with policymakers and practitioners.	Voluntary Initiative	Guide or Principles
Net Zero Tracker/ Oxford Net Zero (NZT)	Net Zero Tracker Codebook, Source		The Net Zero Tracker aims to increase transparency and accountability of net zero targets pledged by nations, states and regions, cities and companies. The organisation collect data on targets set and on many factors that indicate the integrity of those targets. The Tracker is a partnership between Oxford Net Zero, Energy & Climate Intelligence Unit, Data Driven EnviroLab and the New Climate Institute.	Independent Tracker	Independent Tracker
New Climate Institute (NCI)	[1] Corporate Climate Responsibility, Guidance	https://newclimate.org/wp-content/uploads/2022/02/NewClimate_CCRM202	The Corporate Climate Responsibility Monitor evaluates the transparency and integrity of companies' climate pledges. This is an initiative led by the New Climate Institute for Climate Policy and	Independent Tracker	Independent Tracker

	and Assessment Criteria for Good Practice Corporate Emission Reduction and Net Zero Targets, Version 1.0, 2022	2_Methodoloy.pdf	Global Sustainability whose mission is to generate ideas on climate change, drive their implementation, and raise ambition through research, policy design and knowledge sharing.		
Oxford Offsetting Principles (OOP)	The Oxford Principles for Net Zero Aligned Carbon Offsetting, 2020	https://www.sustainabilityexchange.ac.uk/files/oxford_offsetting_principles.pdf	The Oxford Principles for Net Zero Aligned Carbon Offsetting were designed to help clarify the roles of non-state actors who want to design and deliver rigorous voluntary net zero commitments and develop high quality carbon markets. These were developed by interdisciplinary researchers at the University of Oxford.	Voluntary Initiative	Independent Tracker
Race to Zero (3.0) (RTZ3)	Race To Zero Starting Line and Leadership Practices 3.0, 2022	https://climatechampions.unfccc.int/wp-content/uploads/2022/06/Race-to-Zero-Criteria-3.0-4.pdf	The Race to Zero 3.0 is the latest criteria published by the United Nation-backed Race to Zero Campaign, outlining both 'starting line' minimum requirements and 'leadership practices'. These new criteria replaces the Race to Zero 2.0, taking effect on 15 June 2022. Over 200 independent experts ranging from scientists, academics, practitioners as well as campaign members and Partners were involved in developing these new criteria. In addition to the 'Four Ps' in	Orchestration Campaign	Membership Requirement

			Race to Zero 2.0, 3.0 includes a new criterion 'Persuade' to align members on policy lobbying and advocacy as a key pillar of a net zero strategy.		
Science-Based Target Initiative (Corporate Net Zero Standard Criteria) (SBTIC)	SBTi Corporate Net-Zero Standard Criteria, Version 1.0, 2021	https://sciencebasedtargets.org/resources/files/Net-Zero-Standard.pdf	Science Based Targets initiative (SBTi), goes beyond near-term science-based targets (5-10 year) to include long-term net zero targets (up till 2050), becoming the first global science-based standard for companies to set net-zero targets.	Voluntary Initiative	Guide or Principles
Science-Based Targets Initiative (Criteria and Recommendations) (SBTI)	SBTi Criteria and Recommendations, TWG-INF-002, Version 5.0, 2021	https://sciencebasedtargets.org/resources/files/SBTi-criteria.pdf	The SBTi is a partnership between CDP, the United Nations Global Compact, World Resources Institute (WRI) and the World Wide Fund for Nature (WWF). The SBTi call to action is one of the We Mean Business Coalition commitments. In addition to setting out guidance on near term targets, Science Based Targets initiative (SBTi) has developed the first global science-based standard for companies to set net-zero targets, developing a standard for near-term (5-10 year) targets in line with the 1.5-degree vision of the Paris Agreement, to reach the emission reductions required by 2030.	Voluntary Initiative	Guide or Principles

SME Climate Hub (SMECH)	[1] SME Climate Hub Report Page - https://smechstaging.wpengine.com/report/ (last accessed, 10 June 2022) [2] About the SME Climate Commitment	[1] https://smechstaging.wpengine.com/report/ [2] https://smeclimatehub.org/wp-content/uploads/2020/09/About-the-SME-Climate-Commitment-v1.0.pdf	The SME Climate Hub is a global initiative that empowers small to medium sized companies to take climate action and build resilient businesses for the future. The 'Report' page is a form with fields aligned with the R2Z Minimum Criteria. This information that is input by companies will eventually be published on the SME Climate Hub website to track the company's progress towards their targets/goals/ambitions. The Climate Disclosure Framework for small and medium enterprise published in Nov 2021 was developed by CDP and SME Climate Hub.	Orchestration Campaign	Membership Requirement
SOS 1.5 (SOS15)	SOS 1.5 The road to a resilient, net-zero carbon future, 2020	https://www.wbcsd.org/contentwbc/download/9499/144264/1	The World Business Council for Sustainable Development (WBCSD) brings together CEOs and leaders from major companies and business organisations. WBCSD provides guidance on sustainability, target setting, standards, and protocols, and develops tools and platforms to drive climate action. WBCSD also functions as a network for members to learn from each other and interact. Membership is open to businesses in all sectors and major economies. WBCSD have published "SOS 1.5", which sets out a framework for businesses to reach Net Zero.	Voluntary Initiative	Membership Requirement
Taskforce on Climate-related Financial	Implementing the Recommendations of the	https://assets.bbhub.io/company/sites/60/2021/07/2021-TCFD-	The TCFD recommendations on climate-related financial disclosures are widely adoptable and applicable to organisations across sectors and jurisdictions. In 2022,	Investor Framework	Reporting Tool

Disclosures (TCFD)	Task Force on Climate-related Financial Disclosures, 2021	Implementing_Guidance.pdf	the UK became the first G20 country to make mandatory the Recommendations of the Task Force on Climate-related Financial Disclosures (TCFD framework).		
Transition Pathway Initiative (TPI)	[1] Methodology and Indicators report, Version 3.0, 2019, [2] TPI's Methodology report: Management Quality and Carbon Performance, Version 4.0, 2019,	[1] https://www.transitionpathwayinitiative.org/publications/65.pdf [2] https://www.transitionpathwayinitiative.org/publications/90.pdf?type=Publication	Launched in 2017, the TPI is a global initiative led by asset owners and supported by asset managers. Aimed at investors and free to use, it assesses companies' preparedness for the transition to a low-carbon economy. TPI aims to evaluate what the transition to a low-carbon economy looks like for companies with a high impact on climate change, such as electricity utilities and oil and gas producers. The TPI uses publicly disclosed company information sourced by its data partner, FTSE Russell.	Independent Tracker	Independent Tracker
Integrity Council for the Voluntary Carbon Market (ICVCM)	Taskforce on Scaling Voluntary Carbon Markets Phase II Report, 2021	https://icvcm.org/wp-content/uploads/2022/03/TSVCM_Phase_2_Report.pdf	The Taskforce on Scaling Voluntary Carbon Markets (TSVCM) is a private sector-led initiative, formed by the Institute of International Finance (IIF) in Sept 2020, working to scale an effective and efficient voluntary carbon market to help meet the goals of the Paris Agreement. They are in charge of developing the Core Carbon Principles (CCPs) and Assessment Framework (AF) around the voluntary carbon	Voluntary Initiative	Guide or Principles

			market. They will set new threshold standards for high-quality carbon credits, provide guidance on how to apply the CCPs, and define which carbon-crediting programs and methodology types are CCP-eligible. These are due in Q3 2022. The TSVCM is also known as the Integrity Council on Voluntary Carbon Markets (ICVCM) now.		
UN Principles for Responsible Investment (UNPRI)	[1] The investor guide to climate collaboration [2] Inaugural 2025 Target Setting Protocol	[1] https://www.unpri.org/download?ac=12724 [2] https://www.unepfi.org/wordpress/wp-content/uploads/2021/01/Alliance-Target-Setting-Protocol-2021.pdf	PRI is the 'world's leading proponent of responsible investment' and was established by UNEP FI (United Nations Environment Programme Finance Initiative). It seeks to make transparent the investment implications on ESG and support its signatories in embedding these considerations into investment decisions. Their signatories (asset owners and investors) are expected to publicly report their efforts to transition their investment portfolios. With UNEP FI, they have published a Net Zero target setting protocol for members of the Asset-Owner alliance. The document is aimed at asset owners (i.e. financial sector) and cover actions within portfolios, sector-specific actions, engagement actions and climate positive actions.	Investor Framework	Membership Requirement
Voluntary Carbon Market Initiative (VCMI)	[1] Propositions on Carbon Credit Use and Claims,	[1] Not available publicly [2] https://vcmintegrity.org/wp-	The VCMI's provisional Claims Code of Practice comprises four components or steps, all of which companies must adhere to in order to make credible claims about their voluntary use of	Voluntary Initiative	Guide or Principles

	Key Recommendations V2, 2022, [2] Provisional Claims Code of Practice, 2022,	content/uploads/ 2022/06/VCMI-Provisional-Claims-Code-of-Practice.pdf	carbon credits. The components are as follows: (1) Meet the Prerequisites; (2) Identify Claim(s) to make; (3) Purchase High-Quality Credits; (4) Report Transparently on the Use of Carbon Credits.		
World Wide Fund for Nature (WWF)	Turning Blue Chips Green: A Review of FTSE100 Net Zero Commitments, 2021	https://www.wwf.org.uk/sites/default/files/2021-10/Net_zero_scorecard_report_0.pdf	WWF UK conducted a review of publicly available information on the Net Zero commitments of the UK's FTSE 100 between August and September 2021. WWF's research builds on criteria from the 'starting line' and 'leadership practices' for participation in the UN-backed Race to Zero Campaign. The results provide a first quantitative analysis of all the FTSE 100 firms commitments to, and plans for achieving, Net Zero based on these Race to Zero criteria. The findings provide a sobering 'snapshot' of the Net Zero landscape among the UK's leading blue-chip companies.	Voluntary Initiative	Independent Tracker

Appendix C – Full list of questions in coding

CONTEXT

Is there any certification/audit that accompanies this resource?

PREPARE

Does the resource encourage organisations to make public acknowledgement of climate change as a crisis/problem? (Yes/Not specified)

Does the resource recognise the need for oversight from leadership? (Yes/Not Specified)

Does the resource recognise the need for a designated team to deliver its climate strategy? (Yes/Not specified)

Does the resource call for executive remuneration to be tied to the achievement of climate targets? (Yes/Not Specified)

MEASURE

Does the resource encourage organisations to measure scopes 1 and 2? (Yes/Not specified)

Does the resource encourage organisations to measure any Scope 3 emissions (Yes/Not specified)

What portion of Scope 3 emissions does the resource suggest the organisation to measure (Fully/Partially/Not specified)

Does the resource encourage the measurement of historical emissions? (Yes/Not specified)

Does the resource permit the inclusion of offsets and/or avoided emissions in the measurement of an organisation's GHG inventory? (Yes/No/Not specified)

Which GHGs does the resource recommend measuring? (All according to the GHG Protocol /Some/CO2 Only/Not specified)

TARGET

Which type of target does the resource specify organisations set? (Absolute Targets, Absolute or Intensity Targets, Absolute and Intensity Targets, Not specified)

Does the resource recommend a target to be set for Scope 1 and 2? (Yes/No/Not specified)

Does the resource recommend a target to be set for Scope 3? (Yes/Not specified)

What portion of Scope 3 emissions does the resource suggest targets to cover? (Partially/Fully/Not applicable/Not specified)

Does the resource have specific requirements on how to set a baseline year for emissions reduction targets? (Yes/Not specified)

What year does the resource recommend organisations target net zero?

What does the resource say about net zero? (Direct Quotation/Not specified)

Does the resource ask entities to set Interim Target (Yes/Not specified)

Which GHGs does the resource recommend the target cover? (All according to the GHG Protocol /Some/CO2 Only/Not specified)

Remove / offset / handling of residual emissions
Does the resource recognise the role of offsetting, credits, or sinks in climate strategy? (Yes/No/Not Specified)

Does the resource suggest any criteria/restrictions for the use of offsetting, credit or sinks in an organisation's climate strategy? (Yes/No/Not Specified)

What criteria has been suggested by the resource in terms of the use of offsetting, credits or sinks in an organisation's climate strategy? (Explanation/NA)

Does the resource restrict offsets to residual emissions? (Yes/No/Not Specified)

Does the resource recommend any criteria on additionality in governing the use of offsets, credits or sinks? (Yes/No/Not Specified)

Does the resource recommend any wider social considerations and equity measures in the practice of offsetting (Yes/No/Not Specified)

Does the resource recommend any wider environmental / nature measures, biodiversity considerations (Yes/Not Specified)

REDUCE

Does the resource recommend organisations to have a decarbonisation strategy? (Yes/Not specified)

Does the resource recommend the strategy to follow the Carbon Law (50% by 2030 / 7% decrease year on year)? (Yes/No/Not specified)

Does the resource recommend a particular pace of reduction by making reference to climate scenarios (e.g. IEA or IPCC)? (Yes/No/Not Specified)

IMPACT

Does the resource encourage organisations to include provisions for climate justice or equity in their net zero strategies? (Yes/Not specified)

Does the resource encourage organisations to align lobbying and advocacy with their climate goals? (Yes/Not specified)

Does the resource encourage organisations to set a biodiversity or nature target? (Yes/Not specified)

REPORT

Does the resource recommend climate targets include a published plan (Yes/Not specified)

Does the resource recommend climate targets include a published report on progress? (Yes/Not specified)

Does the resource suggest a reporting frequency? (Yes/Not specified)
What reporting frequency does the resource recommend? (Annual, Other, Not Specified)

Does the resource recommend some types of emissions be reported separately from others? (Yes/No/Not Specified)

Which types of emissions should be reported separately and should offsets be reported? (Explanation and Direct Quotation)

What type of data collection method does the resource outline? (Self disclosure/Not specified/Other)

Does the resource recommend reporting on limitations of the data, unknowns, or known errors or discrepancies (Yes/No/Not specified)

Does the resource recommend measurements reported be quality assured? (Yes/Not Specified)

How, by whom and in what format does the resource recommend measurements reported be quality assured? (text)

Does the resource recommend climate risk analysis and reporting? (Yes/No/Not specified)

Appendix D – Full Dataset

Our full dataset can be found here: https://bit.ly/3SpWbCq

End Notes –Text References from Voluntary Initiatives

[i] BCorp guidance: "Publicly commit to Net Zero by 2030 through a communication from the highest level executive in the company".

[ii] Chapter Zero guidance: "The board should ensure that executive incentives are aligned to promote the long-term prosperity of the company. The board may want to consider including climate-related targets and indicators in their executive incentive schemes, where appropriate. In markets where it is commonplace to extend variable incentives to non-executive directors, a similar approach can be considered."

[iii] Assessing Low-Carbon Transition guidance: ""The Board's compensation committee has included metrics for the reduction of GHG emissions in the annual and/or long-term compensation plans of senior executives; the company provides monetary incentives for the management of climate change issues as defined by a series of relevant indicators.""

[iv] Transition Pathway Initiative guidance: "Has the company nominated a board member or board committee with explicit responsibility for oversight of the climate change policy? (Q6)"

[v] Climate Action 100+ guidance: "Metric a): The company discloses evidence of board or board committee oversight of the management of climate change risks via at least one of the following:
• There is a C-suite executive or member of the executive committee that is explicitly responsible for climate change (not just sustainability performance) and that executive reports to the board or a board level committee, and/or;
• The CEO is responsible for climate change AND he/she reports to the board on climate change issues, and/or;
• There is a committee (not necessarily a board-level committee) responsible for climate change (not just sustainability performance) and that committee reports to the board or a board-level committee."

[vi] Cambridge Institute for Sustainability Leadership guidance: "Establish leadership and governance with the necessary capabilities, remit, time and structures. Develop board capacity to raise awareness of impacts (using the assessment) and rapidly shifting stakeholder expectations."

[vii] SOS 1.5 guidance: "Given the complexity of the climate topic, it is key to increase carbon literacy and understanding of company executive and boards to raise awareness on major emissions buckets, actions needed to mitigate them and overall understanding of climate targets."

[viii] BCorp (2022) The legal requirement for Certified B Corporations

[ix] New Climate Institute guidance: "Disclose full details on their GHG emissions on an annual basis, with a breakdown of the data to specific emission sources (including scope 1, 2, 3 and non-GHG climate forcers) and the presentation of historical data for each emission source."

[x] CERES guidance: "Take account of portfolio Scope 1 & 2 emissions and, to the extent possible, material portfolio Scope 3 emissions. This encourages partial measurement of Scope 3 emissions justified by logistical and technical limitations.
Voluntary Carbon Market Initiative guidance: "Maintain a publicly available greenhouse gas emissions inventory that: Covers all Scope 1, 2, and 3 emissions (as defined in the company's targets)."

[xi] UN Principles for Responsible Investment guidance: "Scope 3 to be included wherever possible".
Greenhouse Gas Protocol (Corporate) guidance: "Emissions data from relevant scope 3 emissions activities for which reliable data can be obtained."

[xii] Carbone 4 guidance: "Measure: (usually annually) the emissions, all scopes combined, using standard reporting frameworks: ISO 14064/14069, Carbon Footprint, GHG Protocol, etc."

ISSB/IFRS guidance: "The seven greenhouse gases listed in the Kyoto Protocol–carbon dioxide (CO_2); methane (CH_4); nitrous oxide (N_2O); hydrofluorocarbons (HFCs); nitrogen trifluoride (NF_3); perfluorocarbons (PFCs); and sulphur hexafluoride (SF_6)."

Science-Based Target Initiative (Corporate Net Zero Standard Criteria): "Both the emissions inventory and target boundary should cover all seven GHGs or classes of GHGs covered by the UNFCCC/Kyoto Protocol."

[xiii] This highlights the centrality of the GHG Protocol in defining corporate climate contributions and the need for the Protocol to stay up to date, given that many initiatives companies use guidance from the GHG Protocol directly rather than making their own decision about greenhouse gas coverage.
Additional guidance on emissions measurement is set out by ISO 14067: 2018 Greenhouses gases - Carbon footprints of products - Requirements and guidelines for quantification. (https://www.iso.org/news/ref2317.html)

[xiv] Task Force for Climate-Related Financial Disclosure: "GHG emissions and associated metrics should be provided for historical periods to allow for trend analysis. In addition, where not apparent, organisations should provide a description of the methodologies used to calculate or estimate the metrics."

[xv] Greenhouse Gas Protocol Corporate guidance: "Companies also need to ensure the quality of their historical emission estimates and trend data. They can achieve this by employing inventory quality measures to minimise biases that can arise from changes in the characteristics of the data or methods used to calculate historical emission estimates, and by following

the standards and guidance of chapter 5."

New Climate Institute guidance: "Disclose full details on their GHG emissions on an annual basis, with a breakdown of the data to specific emission sources (including scope 1, 2, 3 and non-GHG climate forcers) and the presentation of historical data for each emission source."

TCFD guidance: "GHG emissions and associated metrics should be provided for historical periods to allow for trend analysis. In addition, where not apparent, organisations should provide a description of the methodologies used to calculate or estimate the metrics."

[xvi] BCorp Guidance: "Participating companies commit to achieving net zero emissions by 2030. Net zero emissions applies to their Scope 1, Scope 2, and most relevant Scope 3 emissions and is achieved by reducing emissions wherever possible and using verified offsets, emphasising carbon removal projects, to balance emissions that cannot be eliminated."

CERES Guidance: "Have and disclose Scope 1, 2 and 3 greenhouse gas emission reduction targets (including short and mid term milestones) aligned with the most current science"

[xvii] SBTI Corporate Standard guidance: "The targets must cover all relevant GHGs as required per the GHG Protocol Corporate Standard."

Taskforce for Climate-Related Financial Disclosure: "GHG emissions should be calculated in line with the GHG Protocol methodology to allow for aggregation and comparability across organisations and jurisdictions. As appropriate, organisations should consider providing related, generally accepted industry-specific GHG efficiency ratios."

[xviii] The ISO Net Zero Guidelines state 'A single target for organisations of net zero for all GHGs, as soon as possible, or by 2050 at the latest, is used in this document to provide a common, understandable and ambitious target, in line with scientific consensus on the global effort needed to limit warming to 1,5°C with no or limited temperature overshoot. This organisational target aligns with the target stated in the Race to Zero Criteria.

[xix] NCI defines non-GHG climate forcers "to include the emission of gases and aerosols, and processes that change cloud abundance, leading to radiative forcing. (...) non-GHG climate forcers are estimated to increase the climate impact of GHG emissions from the aviation industry by a factor of approximately 3." (NCI, p.36)

[xx] GHG Protocol Corporate guidance: "Companies must choose a base year for which verifiable emissions data are available and must specify their reasons for choosing that particular year. It is possible to choose an average of annual emissions over several consecutive years as a base year."

[xxi] ICVCM Guidance: "Baseline setting approach : the Standards must require the estimation and use of conservative baselines for any activity or project aiming to receive CCP credits. Baselines must be independently audited and endorsed by third party specialist experts with the appropriate expertise to do so."

[xxii] NCI Guidance: "Set interim targets that are aligned with the long-term vision in terms of depth and scope, with the first target on a timescale that requires immediate action and accountability (maximum 5 years)."
Race to Zero guidance: "Set an interim target to achieve in the next decade, which reflects maximum effort toward or beyond a fair share of the 50% global reduction in CO2 by 2030."

[xxiii] TCFD Guidance: "The Task Force is not specifying time frames for short, medium, and long term given that the timing of climate-related impacts on businesses will vary. Instead, the Task Force recommends preparers define time frames according to the life of their assets, the profile of the climate-related risks they face, and the sectors and geographies in which they operate."

[xxiv] Carbone4 Guidance: "It is to be ensured that a plan with intermediate, shorter-term targets is in place to achieve net-zero by 2050."

[xxv] BCorp Guidance: "Participating companies commit to achieving net zero emissions by 2030. Net zero emissions applies to their Scope 1, Scope 2, and most relevant Scope 3 emissions and is achieved by reducing emissions wherever possible and using verified offsets, emphasising carbon removal projects, to balance emissions that cannot be eliminated.""

1.5 Business Playbook (Exponential Roadmap Initiative) guidance: "To be aligned with a 1.5 degree ambition, the minimum requirement is to halve your own emissions at least every 10 years, but preferably faster."

[xxvi] "The company has a decarbonisation strategy to meet its long and medium-term GHG reduction targets." : *Climate Action 100+ Net Zero Company Benchmark, March 2021*

xxvii TCFD Guidance: "Organisations should describe how resilient their strategies are to climate-related risks and opportunities, taking into consideration a transition to a low-carbon economy consistent with a 2°C or lower scenario". TCFD Guidance: *Implementing the Recommendations of the Task Force on Climate-related Financial Disclosures, October 2021*

xxviii Climate Action 100+ Guidance: "The intent is for the medium-term target to be aligned with a trajectory to achieve the Paris Agreement goal of limiting global temperature increase to 1.5°C with low or no overshoot (equivalent to IPCC Special Report on 1.5° Celsius pathway P1 or net-zero emissions by 2050)."

UNPRI Guidance: "-16% to -29% CO2e reduction by 2025 (per IPCC 1.5°C SR scenarios)"

xxix BCorp Guidance: "Purchasing credits to balance emissions your business has not avoided or reduced [Renewable Energy Credits (RECs) and carbon offsets]. Carbon offsets can be purchased to balance scope 1, 2, and 3 emissions, while RECs can be purchased to balance scope 2 emissions."

Cambridge Institute for Sustainability Leadership: "Any remaining hard-to-mitigate emissions may need to be addressed via carbon removal or offsetting, However, this should be a last resort, since the technologies and systems needed for this are not yet well proven."

xxx SBTi Guidance: "The use of carbon credits must not be counted as emission reductions toward the progress of companies' near-term or long-term science-based targets. Carbon credits may only be considered to be an option for neutralising residual emissions (see C28) or to finance additional climate mitigation beyond their science-based emission reduction targets (see R10).

Companies shall set one or more targets to reach a state of net-zero emissions, which involves: (a) reducing their scope 1, 2 and 3 emissions to zero or to a residual level that is consistent with reaching net-zero emissions at the global or sector level in eligible 1.5°C scenarios or sector pathways and; (b) neutralising any residual emissions at the net-zero target date and any GHG emissions released into the atmosphere thereafter.

Companies shall remove carbon from the atmosphere and permanently store it to counterbalance the impact of any unabated emissions that remain once companies have achieved their long-term science-based target, and thereafter."

xxxi Climate Action 100+ guidance: "The use of offsetting or carbon credits should be avoided and limited if at all applied. Offsetting or 'carbon dioxide removal' should not be used by companies operating in sectors where viable decarbonisation technologies exist. For example, offsetting would not be considered credible if used to offset emissions for a coal-fired power plant because viable alternatives exist to coal-fired power plants."

xxxii Starting Line and Leadership Practices 3.0, June 2022

xxxiii Race to Zero guidance: "Report publicly progress against both interim and longer-term targets, as well as the actions being taken, at least annually. Report in a standardised, open format, and via platforms that feed into the UNFCCC Global Climate Action Portal."

xxxiv

xxxv Carbon Neutral Now guidance: "To achieve Bronze level under the 'Measure' heading, no third party verification of GHG footprint estimates is required."

xxxvi Future Fit Foundation guidance: "Future Fit Foundation states that: "To be Future-Fit, a company must emit net zero GHGs as a result of its own operational activities and its energy consumption. Net GHG emissions here means total GHG emissions, less any emissions that are permanently sequestered or adequately offset."

SBTi guidance: "The Science-Based Target Initiative recommends that companies report direct biogenic CO2 emissions and removals from bioenergy separately."

xxxvii Greenhouse Gas Protocol "Where errors are identified, companies may be required to recalculate their baseline emissions, and this recalculation must be reported."

xxxviii IPCC (2018) Annex I: Glossary [Matthews, J.B.R. (ed.)]. In: *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* [Masson-Delmotte, V., P. Zhai, H.-O. Pörtner, D. Roberts, J. Skea, P.R. Shukla, A. Pirani, W. Moufouma-Okia, C. Péan, R. Pidcock, S. Connors, J.B.R. Matthews, Y. Chen, X. Zhou, M.I. Gomis, E. Lonnoy, T. Maycock, M. Tignor, and T. Waterfield (eds.)]. Cambridge University Press, Cambridge, UK and New York, NY, USA, pp. 541-562, doi:10.1017/9781009157940.008.

xxxix Nafkote, D. and Aditi, S. (021) *Tightening the Net:.Net Zero climate targets - implications for land and food equity.* Oxfam. DOI: 10.21201/2021.7796. Accessed online: https://policy-practice.oxfam.org/resources/tightening-the-net-net-zero-climate-targets-implications-for-land-and-food-equ-621205/

xl 1.5 Business Playbook: "Becoming a climate leader means using your company network and wider sphere of influence to support and accelerate climate action in line with the 1.5°C ambition. This can be done by influencing and working with customers and suppliers, employees, industry, government, cities, research organisations and NGOs beyond your own business interests. It could include proposing or demanding policy changes that support rapid economic transition and behavioural change, contributing to climate awareness among customers and employees, and sharing best practices with your

industry and community. It also includes influence through investments and membership of different industry organisations and initiatives"

xli Future Fit Foundation guidance: "BE08: Operations do not encroach on ecosystems or communities. Negative impacts must be avoided by Respecting the land rights of communities (e.g. zero tolerance of land grabbing)

BE08: Negative impacts must be avoided by Not encroaching on areas of cultural importance (e.g. oil pipelines running through regions considered sacred by Indigenous Peoples)

BE09: Community health is safeguarded.

BE10: Employee health is safeguarded.

BE15: Product communications are honest, ethical, and promote responsible use."

xlii *CDP Climate Change 2022 Questionnaire, v1.4, 2022*

xliii *SOS 1.5 The road to a resilient, net-zero carbon future, 2020*

xliv *Climate Action 100+ Net Zero Company Benchmark, 2021,*

xlv Nature Based Solutions Initiative; *Guidelines for Successful, Sustainable, Nature-based Solutions, October 2021; Ensuring Nature-based Solutions support both biodiversity and climate change adaptation, no date*

xlvi *The Oxford Principles for Net Zero Aligned Carbon Offsetting, 2020*

xlvii Race to Zero, *Starting Line and Leadership Practices 2.0, 2021*

xlviii CDP General Questionnaire guidance: "(C15.1) Is there board-level oversight and/or executive management-level responsibility for biodiversity-related matters within your organisation?

(C15.2) Has your organisation made a public commitment and/or endorsed any initiatives related to biodiversity?

(C15.3) Does your organisation assess the impact of its value chain on biodiversity?

(C15.4) What actions has your organisation taken in the reporting year to progress your biodiversity-related commitments?

(C15.5) Does your organisation use biodiversity indicators to monitor performance across its activities?

(C15.6) Have you published information about your organisation's response to biodiversity-related issues for this reporting year in places other than in your CDP response? If so, please attach the publication(s)."

xlix Climate Action 100+ guidance: "The company has a Paris-Agreement-aligned climate lobbying position and all of its direct lobbying activities are aligned with this.

The company has Paris-Agreement-aligned lobbying expectations for its trade associations, and it discloses its trade association memberships.

The company has a process to ensure its trade associations lobby in accordance with the Paris Agreement."

Race to Zero guidance: "Activate the ambition loop - Proactively advocate for your peers, stakeholders, and governments to align their goals and actions to 1.5C. Demonstrate how the implementation of your own ambitious targets creates opportunities for others to follow.

Mainstream (net) zero alignment - Advocate for appropriate regulation and facilitating measures to ensure that alignment to 1.5C becomes the default for all actors."

l Greenhouse Gas Protocol Corporate guidance: "Companies also need to ensure the quality of their historical emission estimates and trend data. They can achieve this by employing inventory quality measures to minimise biases that can arise from changes in the characteristics of the data or methods used to calculate historical emission estimates, and by following the standards and guidance of chapter 5."

New Climate Institute guidance: "Disclose full details on their GHG emissions on an annual basis, with a breakdown of the data to specific emission sources (including scope 1, 2, 3 and non-GHG climate forcers) and the presentation of historical data for each emission source."

TCFD guidance: "GHG emissions and associated metrics should be provided for historical periods to allow for trend analysis. In addition, where not apparent, organisations should provide a description of the methodologies used to calculate or estimate the metrics."

li GHG Protocol Guidance: A Corporate Accounting and Reporting Standard, p.77

lii GHG Protocol Guidance: A Corporate Accounting and Reporting Standard, p.35