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Net Zero Aligned Organizations

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Foreword

ISO (the International Organization for Standardization) is a worldwide federation of national standards bodies (ISO member bodies). The work of preparing International Standards is normally carried out through ISO technical committees. Each member body interested in a subject for which a technical committee has been established has the right to be represented on that committee. International organizations, governmental and non-governmental, in liaison with ISO, also take part in the work. ISO collaborates closely with the International Electrotechnical Commission (IEC) on all matters of electrotechnical standardization.

The procedures used to develop this document and those intended for its further maintenance are described in the ISO/IEC Directives, Part 1. In particular, the different approval criteria needed for the different types of ISO documents should be noted. This document was drafted in accordance with the editorial rules of the ISO/IEC Directives, Part 2 (see www.iso.org/directives).

Attention is drawn to the possibility that some of the elements of this document may be the subject of patent rights. ISO shall not be held responsible for identifying any or all such patent rights. Details of any patent rights identified during the development of the document will be in the Introduction and/or on the ISO list of patent declarations received (see www.iso.org/patents).

Any trade name used in this document is information given for the convenience of users and does not constitute an endorsement.

For an explanation of the voluntary nature of standards, the meaning of ISO specific terms and expressions related to conformity assessment, as well as information about ISO's adherence to the World Trade Organization (WTO) principles in the Technical Barriers to Trade (TBT), see www.iso.org/iso/foreword.html.

An earlier document setting out Net Zero Guidelines for Organizations, IWA 42 was approved at a workshop held in September 2022 and launched at COP27. An International Workshop Agreement can exist for a maximum of six years, following which it is either withdrawn or converted into another ISO document.

Any feedback or questions on this document should be directed to the user's national standards body. A complete listing of these bodies can be found at www.iso.org/members.html.

Introduction

0.1 General

The urgency of addressing climate change necessitates ambitious and science-based targets for greenhouse gas (GHG) emissions reductions. Scientific assessments through the Intergovernmental Panel on Climate Change (IPCC) reports (such as AR6 WGII SPM) have shown that many of the worst consequences of climate change can be avoided by limiting global warming to 1,5 °C above pre- industrial levels. The global temperature is already well over 1 °C above pre-industrial levels, and scenarios assessed by the IPCC indicate that limiting warming to 1,5 °C, with no or limited temperature overshoot, requires achieving at least net zero global anthropogenic carbon dioxide (CO_2) in the early 2050s, along with deep and sustained global reductions in other greenhouse gas emissions (GHGs) [15][16]. These scenarios also show that the earlier and faster emission reductions occur, the lower peak warming and the lower the likelihood of overshooting warming limits. To limit the damage caused by climate change, following these pathways for deep, rapid and sustained reductions in GHGs only becomes more urgent if global temperature increase breaches the 1.5C limit.

The 2015 Paris Agreement[17] states the aim of achieving a global balance between anthropogenic greenhouse gas emissions and anthropogenic removals in the second half of the 21 st century, by countries committing and adhering to NDCs, taking into account equity, common but differentiated responsibilities, and respective capabilities in different parts of the world, and in the context of sustainable development and efforts to eradicate poverty. This document therefore also includes recommendations for organizations on equity and wider impact.

0.2 Net zero for organizations

This document provides guiding principles and specifies requirements for organizations, aligned with the Paris Agreement and latest climate science, to enable an ambitious, verifiable approach, driving organizations to achieve net-zero GHG emissions as rapidly as possible and by 2050 at the latest. It emphasizes deep emissions reductions in the near-term, while promoting a just and equitable transition. It is intended to be a common reference for all types of organizations taking action to contribute to global net zero, with guidance provided specifically for SMEs.

This document should be interpreted and used in line with its purpose and scope to maintain and promote the highest possible ambition for organizations to deliver credible net zero targets.

This document promotes and sets out requirements, recommendations and guidance for determination of net zero pathways and achievement of organisational net zero covers direct and indirect GHG emissions and GHG removals within the whole value chain of the organization, including upstream and downstream processes.

0.3 Alignment with other standards and requirements for net zero

This document builds on progress by voluntary initiatives, campaigns and governance, supporting their purpose of progressing to a net zero future, increasing their reach and enabling a more consistent approach for future interventions and deliverables, including ISO standards. It also supports the objectives of the "High-Level Expert Group on the Net Zero Emissions Commitments of Non-State Entities", formed at the request of the United Nations (UN) Secretary General (see [1]UN Integrity Matters report), and aims to be compatible with the aims of other global net zero initiatives.

Legal and other obligations may also impose requirements relating to climate action.

This document is designed to build upon existing International Standards addressing GHG quantification, reporting, validation and verification, such as ISO 14064-1, ISO 14064-3 and ISO 14068-1. Figure 1 illustrates the relationship with documents within the ISO 14060 family of GHG standards as well as with the requirements of other schemes.

A FIGURE TO BE ADDED TO EXPLAIN THE RELATIONSHIPS BETWEEN AND ROLES OF OTHER ISO GHG STANDARDS

0.4 Use of this document

In this document, the following verbal forms are used:

— “shall” indicates a requirement;

— “should” indicates a recommendation;

— “may” indicates a permission;

— “can” indicates a possibility or a capability.

Information marked as “NOTE” is intended to assist the understanding or use of the document. “Notes to entry” used in Clause 3 provide additional information that supplements the terminological data and can contain provisions relating to the use of a term.

In order to help readers understand the relationship between approaches in different standards and schemes for GHG quantification and related matters, Annex C provides a comparison between International Standards on quantification and GHG Protocol Accounting and Reporting Standards, including the approaches to categorizing emissions.

This standard will be subject to periodic review, so it can be update as necessary to respond to changes in climate science and subsequent international agreements.

Net Zero Aligned Organizations

1 Scope

This standard sets out the principles, requirements and guidance for how an organization of any type can demonstrate that its net zero strategy, including targets, plans and progress towards these targets, is compatible with reaching net zero at organizational level, and that it is making credible and verifiable progress towards contributing to global net zero.

It is applicable to a wide range of organizations (including companies, corporations, firms, partnerships, charities or institutions) in the public or private sectors.

It is not intended to be used for territories (such as regions, countries, states or cities) or by sectors, as the basis for establishing frameworks applicable at those levels. Also, it is not intended to be used for products or services, or claims relating to them.

Where considerations and methodologies differ for SMEs in the main body of the standard, these differences are described in a separate Annex B dedicated to SME users.

This document is GHG programme neutral. If a GHG programme is applicable, the requirements of that GHG programme are additional to the requirements of this document.

2 Normative references

The following documents are referred to in the text in such a way that some or all of their content constitutes requirements of this document. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

ISO 14064-1, *Greenhouse gases — Part 1: Specification with guidance at the organization level for quantification and reporting of greenhouse gas emissions and removals*

3 Terms and definitions

For the purposes of this document, the following terms and definitions apply.

ISO and IEC maintain terminology databases for use in standardization at the following addresses:

— ISO Online browsing platform: available at https://www.iso.org/obp

— IEC Electropedia: available at https://www.electropedia.org/

3.1 Terms related to climate action

3.1.1
net zero
net zero GHG
condition in which anthropogenic *residual emissions* (3.2.9) within the organizational boundaries are balanced by anthropogenic *GHG removals* (3.3.3) over a specified period of time

Note 1 to entry: In this standard the term is applied at the organizational level.

Note 2 to entry: In this standard the organizational boundaries include the *organization* (3.4.1)'s *value chain* (3.4.2).

3.1.2
global net zero
global net zero GHG
condition in which anthropogenic *greenhouse gas (GHG) emissions* (3.2.2) are balanced by anthropogenic *GHG removals* (3.3.3) over a specified period at global level

[SOURCE: [2]IPCC AR6 Working Group III Annex 1, definition of "net zero greenhouse gas emissions", modified]

3.1.3
net zero aligned
property of an organization that will reach *net zero* (3.1.1) within its boundaries, and will do so within a time frame that supports the achievement of *global net zero* (3.1.2), considering this organization's level of emissions, capability and responsibility for emission reductions consistent with the principles of urgency, high ambition and equity and justice

3.1.4
interim target
GHG emissions reduction (3.3.2) target until an *organization* (3.4.1) reaches their net-zero target

Note 1 to entry: Interim targets are derived from the organization's long-term net zero target and take into account all GHG emissions to enable achievement of *net zero* (3.1.1) at organizational level.

3.1.5
net zero pathway
trajectory to achieve a net-zero goal based on scientific evidence

Note 1 to entry: An organizational net-zero pathway is an *emissions reduction* (3.3.2) trajectory to achieve the organization's net zero goal

Note 2 to entry: A sectoral net-zero pathway is an *emissions reduction* (3.3.2) trajectory to reach residual emissions consistent with the contribution of the sector to *global net zero* (3.1.2)

3.1.6
biodiversity
biological diversity
variability among living organisms on the earth, including the variability within and between species, and within and between ecosystems

Note 1 to entry: Further information on biodiversity is provided by the [3]Convention on Biological Diversity, the Kunming-Montreal Global Biodiversity Framework and ISO/DIS 13208 Biodiversity.

[SOURCE: ISO 14050[4], 3.8.22, modified — Note 1 to entry has been added.]

3.1.7
renewable energy
energy collected from a source that is naturally replenished at a rate that is equal or faster to the rate at which it is extracted or used

Note 1 to entry: Sources of renewable energy include sunlight, sun heat, wind, rain, water flows, tides, waves, biomass, and geothermal heat.

[SOURCE: ISO/IEC 13273-2[5],3.1.5 and 3.1.6, modified]

3.1.8
adaptation
adaptation to climate change

climate change adaptation
process of adjustment to actual or expected climate and its effects

Note 1 to entry: In human systems, adaptation seeks to moderate or avoid harm or to exploit beneficial opportunities opportunities.

Note 2 to entry: In some natural systems, human intervention can facilitate adjustment to expected climate and its effects.

[SOURCE: ISO 14050[4] 3.8.5 with notes from ISO 14090[6] added.]

3.2 Terms related to greenhouse gases

3.2.1
greenhouse gas
GHG
gaseous constituent of the atmosphere, natural or anthropogenic, that absorbs and emits radiation at specific wavelengths within the spectrum of infrared radiation emitted by the earth's surface, the atmosphere and clouds

Note 1 to entry: For a list of GHGs, see the latest Intergovernmental Panel on Climate Change (IPCC) Assessment

Note 2 to entry: The most common anthropogenic GHGs are carbon dioxide (CO2), methane (CH4), nitrous oxide (N2O), oxide(N2O), hydrofluorocarbons (HFCs), nitrogen trifluoride (NF3), perfluorocarbons (PFCs), (PFCs) and sulphur hexafluoride (SF6) and nitrogen trifluoride (NF3). Emissions from these gases are often reported as carbon dioxide equivalents using global warming potentials.

[SOURCE: ISO 14050[4], 3.9.1, modified — The words "both natural and anthropogenic" have been replaced with "natural or anthropogenic" in the definition. Notes 1 and 2 added, from ISO 14064-1.]

3.2.2
greenhouse gas emission
GHG emission
release of a *greenhouse gas* (3.2.1) into the atmosphere

[SOURCE: ISO 14050[4] 3.9.8]

3.2.3
direct GHG emission
scope 1 emission
greenhouse gas emission (3.2.2) from a *greenhouse gas source* (3.2.7) owned or controlled by the *organization* (3.4.1)

[Direct GHG/Scope 1] emissions do not include those occurring from natural ecosystems owned or controlled by the *organization* (3.4.1).

[SOURCE: ISO 14050[4] 3.9.9 modified - "source" changed to singular and note 1 added.]

3.2.4
energy indirect greenhouse emission
indirect GHG emission from imported energy
Scope 2 emission
greenhouse gas emission (3.2.2) from the generation of imported electricity, heat, cooling or steam, consumed by an *organization* (3.4.1)

This category includes only *GHG emissions* (3.2.2) due to the fuel combustion associated with the production of final energy and utilities, such as electricity, heat, steam, cooling and compressed air. It excludes all upstream emissions (from

cradle to power plant gate) associated with fuel, emissions due to "imported" the construction of the power plant, and "facility" changed emissions allocated to "organization" transport and distribution losses.

[SOURCE: ISO 14050[4] 3.9.11 modified - "cooling" added]

3.2.5
other indirect greenhouse gas emission
Scope 3 emission
greenhouse gas emission (3.2.2) other than *energy indirect greenhouse gas emissions* (3.2.4), that is a consequence of an *organization's* (3.4.1) activities, but arises from *greenhouse gas sources* (3.2.7) that are owned or controlled by other organizations

Scope 3 emissions include all attributable *value chain* (3.4.3) GHG emissions not included in *Scope 1 emissions* (3.2.3) or *Scope 2 emissions* (3.2.4). These emissions are referred to as categories 3-6 in Annex B of ISO 14064-1 .

[SOURCE: ISO 14050[4]3.9.12]

3.2.6
avoided emission
avoided GHG emission
*NB The definition below is temporary and will be subject to consultation within SC7 since there is another definition under consultation in amended version of ISO14064-1.*potential effect on *greenhouse gas emission* (3.2.2) that occurs outside the boundaries of the *organization* (3.4.2) and its *value chain* (3.4.2), but arising through the use of its products or servicesNB: *"avoided greenhouse gas emission" is defined in ISO 14050 3.9.16 as "greenhouse gas emission reduction that occurs outside the organizational boundaries of the reporting organization as a direct consequence of the use of its products"*

3.2.7
greenhouse gas source
GHG source
process that releases a *greenhouse gas* (3.2.1) into the atmosphere

[SOURCE: ISO 14050[4] 3.9.4.]

3.2.8
greenhouse gas inventory
GHG inventory
list of *GHG sources* (3.2.7) ,*GHG sinks* (3.3.8), and their quantified *greenhouse gas emissions* (3.2.2) and greenhouse gas *removals* (3.3.3) over a specified period of time and within the established boundary

[SOURCE: ISO 14050[4]3.9.29, modified — The words “over a specified period of time and within the established boundary” have been added.]

3.2.9
residual emission
residual GHG emission
unabated anthropogenic *greenhouse gas emission* (3.2.2) remaining at the net zero target date after implementing all technically feasible activities to achieve GHG emission reductions across the value chain.

Note 1 to entry: Technically feasible means that an activity is commercially available.

[SOURCE: IWA 42[7]3.1.5, modified: "anthropogenic", "at the net zero target date" and "across the value chain" added, "and economically" removed as this is addressed by the new note, which replaces the original.]

3.3 Terms related to climate change mitigation

3.3.1
climate change mitigation
GHG mitigation
human intervention to reduce *greenhouse gas emissions* (3.2.2) or enhance *greenhouse gas removals* (3.3.3)

[SOURCE: ISO 14050[4] 3.8.6]

3.3.2
greenhouse gas emission reduction
GHG emission reduction
emissions reduction
quantified decrease in *greenhouse gas emissions* (3.2.2) specifically related to or arising from an activity between two points in time.

[SOURCE: ISO 14050[4], 3.9.17, modified: "emissions reduction" added as an admitted term. "Between a baseline scenario and the project" has been replaced with "specifically related to or arising from an activity between two points in time."]

3.3.3
GHG removal

withdrawal of a *greenhouse gas* (3.2.1) from the atmosphere by a greenhouse gas sink

[SOURCE: ISO 14050[4] 3.9.22.]

3.3.4
carbon dioxide removal and storage
CO_2 removal
carbon dioxide removal
removal
withdrawal of carbon dioxide (CO_2) from the atmosphere as a result of deliberate human activities, and subsequent durable storage in geological, terrestrial, or ocean reservoirs, or in products

Note 1 to entry: anthropogenic removals include existing and potential anthropogenic enhancement of biological or geochemical sinks and direct air capture, but excludes natural CO_2 uptake not directly caused by human activities

Note 2 to entry: the term "CO_2 removal" applies only to withdrawals from the atmosphere, not to CO_2 captured from concentrated waste streams such as exhaust pipes, unless this comes from biogenic sources

Note 3 to entry: If in future, other greenhouse gases are equivalently withdrawn from the atmosphere then this may also count as a GHG removal.

Note 4 to entry: In this document, the term "removal" includes both the *sink* (3.3.8) and storage processes, including the durable storage of CO_2.

[SOURCE: [8] IPCC AR6 Annex VII Glossary modified. "Anthropogenic activities removing carbon dioxide (CO2) from the atmosphere and durably storing it" replaced with "withdrawal of carbon dioxide (CO_2) from the atmosphere as a result of deliberate human activities, and subsequent durable storage."]

3.3.5
removal enhancement
GHG removal enhancment
quantified increase in *greenhouse gas removals* (3.3.3) specifically related to or arising from an activity between two points in time or relative to a baseline.

[SOURCE: ISO 14050[4] 3.9.23 modified : "between a baseline scenario and the greenhouse gas project replaced with "specifically related to or arising from an activity between two points in time or relative to a baseline"]

3.3.6
counterbalancing
Carbon dioxide removal (3.3.4) used to take responsibility for *residual emissions* (3.2.9) from the point of net zero in order to achieve and maintain *net zero* (3.1.1) at organizational level. This requires the amount of carbon dioxide removal in any given year from the point of net zero to be equal to or greater than the residual emissions in that same year.

Note 1 to entry: counterbalancing residual emissions from the point of net zero is a specific use-case that allows durable carbon removals to be used for a limited amount of emissions that cannot be reduced at that time. It requires specific quality criteria to ensure that the removals will be an effective counterbalance

Note 2 to entry: on the pathway to net zero, an organization reports progress through counterbalancing milestones, accounted for and reported separately from reduction targets

Note 3 to entry: once net zero is achieved, the organization must counterbalance residual emissions as necessary each subsequent year to at least maintain net zero at organizational level.

3.3.7
offsetting
counterbalancing all or part of the *GHG inventory* (3.2.8), by retiring *carbon credit(s)* (3.3.10)

Note 1 to entry: The process of offsetting includes retiring the carbon credits in a public registry by, or on behalf of, the *organization* (3.4.1). Some registries use "to cancel" as synonymous with "to retire". The two terms "retire" and "cancel" result in the same outcome of ensuring that the carbon credits cannot be used again or be further traded.

Note 2 to entry: Only carbon credits from removals or direct financing of removals shall be used to counterbalance *residual emissions* (3.2.9) to achieve *net zero* (3.1.1) at organizational level.

[SOURCE: ISO 14068-1[9] modified: "carbon footprint" replaced with "all or part of the GHG inventory."]

3.3.8
sink
GHG sink
process that removes a *greenhouse gas* (3.2.1) from the atmosphere

[SOURCE: ISO 14050:2020, 3.9.5, modified — The preferred term "greenhouse gas sink" has been replaced with "sink".]

3.3.9
base year

specific historical period identified for the purpose of comparing the inputs or outputs of a process or other information over time

SOURCE: ISO 14050 3.9.19

OR

specific, historical period identified for the purpose of comparing greenhouse gas (GHG) emissions (3.2.2) or GHG removals (3.2.7) or other GHG-related information over time

SOURCE: ISO 14064-1, 3.2.10,

Note 1 to entry: The GHGP Corporate Accounting and Reporting Standard provides further information on base years.

[SOURCE: ISO 14050[4] 3.9.19 or ISO 14064-1, 3.2.10]

3.3.10
carbon credit

tradeable intangible instrument issued by a GHG/carbon-crediting program, representing a GHG emission reduction to, or removal from, the atmosphere equivalent to one metric tonne of carbon dioxide equivalent

Note 1 to entry: Carbon credits can be retired without being used for *offsetting* (3.3.7), as a contribution to global climate action or *global net zero* (3.1.2). Credits and offsets are not interchangeable terms.

Note 2 to entry: Carbon credits can be of different types: avoidance/reduction credits or removal credits.

Note 3 to entry: Carbon credit projects are validated and their impacts verified by carbon-crediting programs. Carbon credits are uniquely serialised, issued, tracked and retired or administratively cancelled by means of an electronic registry operated by an administrative body, such as a carbon-crediting program.

[SOURCE: ISO 14068-1[9], modified - "removal enhancements" replaced with "removals". Alternative term "GHG credit" not used. Note 1 modified.]

3.4 Terms relating to organizations seeking to achieve net zero

3.4.1
organization
person or group of people that has its own functions with responsibilities, authorities and relationships to achieve its objectives

Note 1 to entry: The concept of organization includes, but is not limited to, sole-trader, company, corporation, firm, enterprise, authority, partnership, association, charity or institution, or part or combination thereof, whether incorporated or not, publicly-owned or private.

Note 2 to entry: A group of organizations can also be considered as one organization that has collectively its own objectives.

[SOURCE: ISO 14050[4] 3.1.1 / ISO 14064-1, 3.4.2 modified — Note 2 to entry has been added.]

3.4.2
value chain
entire sequence of activities or parties that provide or receive value

Note 1 to entry: Value chain *greenhouse gas emissions* (3.2.2) include *Scope 1 emissions* (3.2.3), *Scope 2 emissions* (3.2.4) and *Scope 3 emissions* (3.2.5).

Note 2 to entry: The value chain includes other organizations (e.g. suppliers, retailers, service providers) as well as end-users of products and services such as customers or the public.

[SOURCE: ISO 14068-1[9] 3.4.7 Notes 1 and 2 modified.]

3.4.3
top management
person or group of people who direct and control an *organization* (3.4.1) at the highest level

Top management has the power to delegate authority and provide resources within the organization.

[SOURCE: ISO 14050[4]]

3.4.4
competent
able to apply knowledge and skills to achieve intended results (no source) OR suitably trained or qualified by knowledge and practical experience to enable the required task or tasks to be carried out properly.

[SOURCE: ISO 22846-1:2003(en), 2.6]

3.4.5
competence
ability to apply knowledge and skills to achieve intended results

[SOURCE: ISO 14050[4]3.1.10]

3.4.6
documented information
information required to be controlled and maintained by an *organization* (3.4.1) and the medium on which it is contained

Note 1 to entry: Documented information can be in any format and media and from any source.

[SOURCE: ISO 14050[4] 3.1.11 modified - Note 1 added.]

3.4.7
indicator
quantitative, qualitative or binary variable that can be measured, calculated or described, representing the status of operations, management, conditions or impacts

[SOURCE: ISO 14050[4] 3.2.24]

3.4.8
verification
process to evaluate a statement of historical data and information to determine if the statement is materially correct and conforms to criteria

Note 1 to entry: Verification is applied to claims regarding events that have already occurred or results that have already been obtained (confirmation of truthfulness).

[SOURCE: ISO 14050[4] 3.9.35]

3.4.9
validation
process to evaluate the reasonableness of the assumptions, limitations and methods that support a statement about the outcome of future activities

[SOURCE: ISO 14050[4] 3.9.36]

3.5 Abbreviated terms

CO_2	Carbon dioxide
GHGP	Greenhouse Gas Protocol
IPCC	Intergovernmental Panel on Climate Change
ICVCM	Integrity Council for the Voluntary Carbon Market
ISO	International Organization for Standardization

OECD	Organization for Economic Cooperation and Development
SBTi	Science Based Targets Initiative
SDGs	Sustainable Development Goals
UN	United Nations
UNFCCC	United Nations Framework Convention on Climate Change
VCMI	Voluntary Carbon Markets Integrity Initiative

4 Principles

4.1 General

The principles in 4.2 to 4.10 are the foundation for organizations to demonstrate net zero alignment. These principles are the basis for the requirements and guidance in this document.

Application of these principles is fundamental to ensure that the achievement and demonstration of organizational net zero is undertaken in a robust, fair and verifiable manner, and is communicated in an accurate and non-misleading way. The principles are the basis for the requirements and guidance in this document.

4.2 Urgency

Immediate and ongoing action is taken to contribute effectively to the global efforts to limit the increase in average temperature to 1,5°C above pre-industrial levels. Organizations do this by achieving net zero GHG emissions at organizational level as soon as possible.

NOTE A common date for long-term targets is 2050.

4.3 High Ambition

The organization sets targets to achieve *net zero* (3.1.1) at organizational level as soon as possible, and makes early deep, rapid and sustained reductions (front loading). Organizations with higher technical and economic capacity, historical responsibility or high current emissions take additional and ambitious action to reduce emissions faster than the global average and to achieve net zero significantly in advance of 2050.

NOTE The global average reduction of CO_2 required by 2030 compared to 2019 in order for a fair chance at limiting warming to 1.5C according to the pathways modelled in IPCC AR6 WGIII is - 48%, with substantial reductions of other GHGs (such as methane) by 2030.

4.4 Prioritization

GHG emissions reductions and *GHG removal enhancements* (3.3.5)within the organizational boundaries are prioritized, in line with the mitigation hierarchy.

4.5 Decision-making based on scientific evidence and a broad knowledge base

Decision-making by organizations in relation to their achievement of net zero, to actions to contribute to limiting temperature rise, and to the protection and restoration of nature, is based on current scientific evidence and indigenous and local knowledge. Organizations' decisions are reviewed regularly, and organizations' targets, policies and actions are adapted as knowledge and science evolves.

4.6 Conservativeness

Assumptions, values and procedures involved in achieving and demonstrating net zero at organizational level ensure that the current status and progress on the pathway to net zero are not overstated.

4.7 Avoiding adverse impacts

Measures or activities contributing to net zero minimize adverse impacts on the environment and society.

4.8 Credibility

The reasonableness of the assumptions, limitations, and methods (including planned GHG mitigation actions) to support a claim of net zero alignment at organizational level can be validated and their subsequent results can be demonstrated to be real and verifiable, using internationally accepted accounting standards.

4.9 Equity and justice

Decision-making supports equity and justice and takes into account fair share and just transition (see 12.2)

Targets and actions take account of sustainable development and align with the United Nations Sustainable Development Goals (SDGs)[22] to support equity and global transition to a net zero economy, and any subsequent UN global goals that supersede the 2030 SDGs.

GHG mitigation actions safeguard the rights of the most vulnerable people and communities. They take into account:

a) the burdens and benefits of climate change and ensure that responses, including responsibility for costs, are equitably shared;

b) the need to preserve, restore or enhance ecosystem functionality and resilience and *biodiversity* (3.1.6)thereby supporting people and communities; and

c) the urgent need to transition away from activities that generate significant climate risks such as GHG emissions, rather than perpetuating "business as usual".

NOTE 1 This principle is based on the IPCC definitions of equity and justice, the [10]Paris Agreement principles on equity and common but differentiated responsibilities and respective capabilities, and the IPCC Intergovernmental Science-Policy Platform on Biodiversity and Ecosystem Services research on nature and climate change linkage[23].

NOTE 2 In order to make a fair contribution towards *global net zero* (3.1.2), some organizations, such as those with high current or historical GHG emissions and/or high capacity to act, will need to achieve net zero well before 2050.

4.10 Transparency

Sufficient and adequate information is disclosed publicly to enable stakeholders to understand all statements concerning a commitment to, progress towards and achievement of net zero at organizational level, and to make decisions with reasonable confidence.

4.11 Continuation of net zero

On achieving net zero, actions are taken to maintain net zero, and towards reaching net negative GHG emissions.

5 General Approach

5.1 Framework

This standard sets requirements to be fulfilled by organizations including in the following areas:

a) *Net zero aligned* (3.1.3) targets: emissions reductions, *removals enhancements* (3.3.5) and counter-balancing of residual emissions

b) Net-zero aligned pathways: emissions and removals trajectories from today to the net zero targets

c) Net-zero aligned transition plans: how net zero interim and long term GHG emissions and removals targets will be met, and what other climate actions will be taken

d) Net-zero aligned progress: progress towards achievement of targets in accordance with the organization's net zero pathway and transition plan

It establishes a framework for organizations to work towards and achieve net zero at organizational level, by following the steps in Figure 1

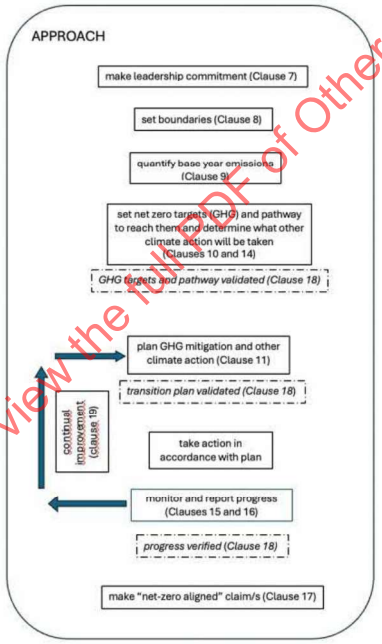

Figure 1 — Framework showing the actions to be taken by organisations to fulfil this standard

5.2 Mitigation hierarchy

Information for WG experts: The text in this subclause has been modified based on text submitted by AHG6 and taking account of comments from experts.

The organization shall establish and disclose its mitigation hierarchy, taking account of its capacity and ability to take effective action.

Priority shall be given to GHG emissions reductions and GHG removal enhancements within the organizational boundaries (which includes value chain emissions) over removals elsewhere that are used to counterbalance residual emissions.

The organization shall not delay taking urgent GHG mitigation actions to achieve interim or long-term targets.

While priority should be given to reducing emissions, organizations should implement plans to enable them to counterbalance their anticipated residual emissions as soon as possible, for example by undertaking removals within their value chain, by buying removals credits and investing in technology for future removals. Priority should be given to removals with the organization's boundary over removals elsewhere.

While on the pathway to,and before reaching, net zero, an organization may choose to purchase additional carbon credits, but such credits shall not be used to claim progress towards reduction targets. Such credits may be used for beyond value chain mitigation.

NOTE ISO 14068-1[9] sets out an approach for organizations to use carbon credits to make claims of carbon neutrality based on *offsetting* (3.3.7).

5.3 Net zero pathway

An illustrative example of an organization's net zero pathway is shown in Figure 2. Requirements for target and pathway setting are found in Clause 10.

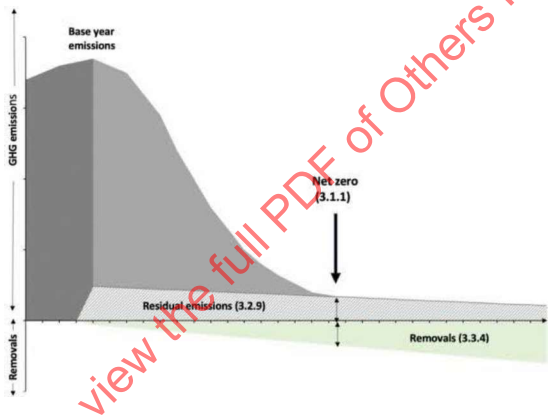

Figure 2 — Illustrative example of net zero pathway for an organization

NOTE The entire shaded area represents remaining GHG emissions, of which a proportion are forecast to be residual emissions at net zero.

5.4 Documented information

The organization shall establish and maintain processes for document retention and record keeping. Documented information that is to be retained shall be stored and preserved in an appropriate format or medium.

The organization shall establish the documented information necessary to support its transition to, and achievement of, net zero, including documents that set out processes, targets, pathways and plans, together with records that demonstrate achievement. Documented information shall be regularly updated, controlled and managed by the organization.

The entity shall maintain documented information supporting any claim following from fulfilment of the requirements in this standard.

Specific requirements for documented information can be found in the relevant clauses.

6 Just transition

6.1 Fair share

The organization shall take into account the principles of equity and justice (see 4.10) when determining fair share and how it should contribute to a just transition to *global net zero.* (3.1.2)

Large organizations and those based in developed countries, with greater capacity and resources, should aim to achieve net zero at organizational level earlier (well before 2050) than those in low-emitting countries.

In determining what a fair share of the needed global climate change mitigation is for the organization, it should consider its context and take into account:

— resources and technology;

— its historical GHG emissions;

— historical GHG emissions of the territories it operates in;

— historical and current GHG emissions of the sector(s) it operates in;

— current socio-economic situation of the territories it operates in.

To support a just transition, organizations with greater resources and greater historical responsibility should collaborate with those organizations with less capability or capacity to act.

Organizations in territories or sectors with greater historical responsibility for GHG emissions and greater resources should make a proportionately greater contribution towards achieving *global net zero* (3.1.2).

The organization should utilize its full capacity to contribute with urgency towards its fair share, regardless of specific targets that are based on historic and socio- economic factors.

To support achievement of global net zero, organizations with greater capability or capacity should set more ambitious *interim targets.* (3.1.4)

EXAMPLE An example of a more ambitious interim target is the commitment to reduce GHG emissions by 50 % from a 2018 base year earlier than 2030.

If the organization has the capability or capacity to contribute beyond its fair share, it should take additional action to achieve its own targets earlier and to assist others in achieving their targets as early as possible by investing in emissions reductions and removals beyond its own boundaries.

To achieve this, the organization should take into account:

a) equitable distribution of GHG emissions reduction responsibility, including within countries or regions at different stages of development;

b) different impacts of climate change and GHG mitigation activities on more or less vulnerable populations;

c) the need to integrate climate action thinking and related activities into operational resilience planning across communities and societies;

d) allocation of resources to mitigate GHG emissions and to adapt to climate impacts;

e) the need to address injustices and build a more equitable future.

The organization shall report information on processes to ensure equity and fair share and why they have been adopted.

6.2 Just transition

The organization shall assess and mitigate the potential social and economic impacts of their net-zero transition on workers and communities. This includes providing support for job retraining and skills development, ensuring equitable access to new opportunities, and engaging with affected stakeholders in a transparent and inclusive manner.

If an organization is operating in a territory with comparatively less resources (e.g. emerging economies), it should consider the need to balance actions towards net zero with the need to protect communities, society and the economy.

Organizations should take into account

a) the need for *adaptation* (3.1.8) and resilience measures, and finance to support the most affected communities, areas and vulnerable people affected by both climate impacts and the climate transition and strengthen their participation in achieving global goals; and

b) the need to fully and effectively inform and consult with indigenous people and vulnerable communities prior to and when formulating, adopting or implementing decisions involving their lands, territories or resources and the need to obtain consent before taking any action which affects them.

6.3 Empowerment

The organization shall determine whether it has the necessary capacity and, if so, establish, implement and maintain processes to empower communities and organizations which have fewer resources. Processes for supporting these communities and organsiations in contributing to the global transition to net zero can include:

a) training and capacity building events;

b) transfer of resources;

c) supporting access to financial support;

d) knowledge sharing;

e) representation of member organizations and under-represented groups in decision-making.

7 Leadership and commitment

7.1 Top management commitment

Top management shall demonstrate leadership and commitment to the achievement of the organization's interim targets and its long-term net zero targets, and to supporting achievement of global net zero.

Top management are accountable for achieving and demonstrating net zero, and for any related claims.

7.2 Top management responsibilities

Top management of the organization shall demonstrate commitment to net zero and the principles provided in Clause 4 by:

a) providing strategic direction, oversight and support, ensuring that corporate strategies are aligned with delivering the organization's net zero commitments;

b) ensuring alignment between its policies and actions including public policy engagement and advocacy;

c) ensuring the provision of adequate resources to enable the organization to set and achieve its net zero targets;

d) disclosing any shareholder voting records on climate-related issues, if appropriate to the organization or required by legislation;

e) publicly committing to achieving net zero targets;

f) clearly defining leadership responsibilities for working towards net zero;

g) appointing competent members of the organization’s leadership to take responsibility for actions;

h) ensuring competent persons are appointed to relevant roles;

i) considering the implementation of incentives for delivering net zero targets;

j) ensuring actions needed to transition to net zero are prioritized throughout the organization;

k) reviewing the organization’s net zero pathway and transition plan, at planned intervals but at least annually, to ensure its continuing suitability, adequacy and effectiveness, and that adequate progress has been achieved; and

l) publicly and regularly communicating transition plans and progress (see Clause 16).

Additionally, top management may demonstrate commitment by:

m) ensuring the establishment and development of relationships with organizations in its value chain to facilitate and support net zero;

n) promoting the use of effective net zero strategies, including innovative business models, products, and solutions;

o) advocacy of net zero action and for climate policy and regulation, in support of the [10]Paris Agreement;

p) ensuring the integration of climate risk management indicators, measures and controls into its normal organizational processes and core risk management processes and policies, and

q) incorporating net zero targets into core governance documents (e.g. articles of association, charters).

8 Establishing boundaries

The organization shall establish the boundary for the purposes of quantifying its GHG inventory, determining targets, for monitoring, and for assessment and reporting of progress towards net zero at organizational level. The boundary shall be established in accordance with ISO 14064-1 Section 5.

In this document, the term “boundary” is equivalent to “reporting boundary” in ISO 14064-1.

The boundary shall take into account all activities, locations, products and services of the organization.

All [Scope 1/direct], [Scope 2/indirect energy] and significant [Scope 3/other indirect] GHG emissions shall be included in the boundary.

PLACEHOLDER: *text may be needed on the level at which an "organization" is defined.*

NOTE 1 For requirements on consolidation approaches see ISO 14064-1.

NOTE 2 The PCAF Global Accounting and Reporting Standards provide guidance on boundary setting for financial institutions.

9 Quantification

9.1 General

The organization's *GHG emissions* (3.2.2) and *removals* (3.3.4) shall be quantified following the principles, requirements and guidance set out in ISO 14064-1 (sections 4, 6, 8 and normative Annex E) or other principles and requirements which are consistent with that standard.

All direct GHG emissions and all significant indirect emissions shall be included in the quantifications. For sources where activity data is not available, emissions shall be estimated.

Where the organization operates in multiple territories, it shall quantify its GHG emissions using a consistent approach across all territories where possible. Any differences in calculation approaches should be disclosed. Country- or region-specific (or measured) emission factors shall be used where available.

NOTE 1 Further guidance for organizations on quantifying greenhouse gas removals and emissions reductions is provided by the Annexes to ISO 14064-1 and the Greenhouse Gas Protocol standards. Annex E (normative) of ISO 14064-1 covers the use of contractual instruments for market-based reporting of emissions from imported electricity.

NOTE 2 Depending on the current versions, the GHG Protocol standards may be consistent with ISO 14064-1.

NOTE 3 PCAF provides standards for quantifying scope 3 category 15 emissions for FIs.

9.2 Base year emissions

The organization shall select and establish the base-year GHG inventory (see ISO 14064-1 clause 6.4) from which to set GHG emissions reduction targets and to measure progress against those targets.

The organization shall develop, document, apply and disclose a base year emissions review and recalculation procedure (see ISO 14064-1 clause 6.4.2).

9.3 Scope 2/indirect emissions from purchased energy

Quantification of emissions from imported electricity shall be in accordance with ISO 14064-1 normative Annex E.

9.4 Methods and tools

The organization shall determine the methods and tools needed for the quantification of its GHG emissions and removals, ensuring that these are consistent with the approaches specified in ISO 14064-1 Clause 2 ISO 14064-1

9.5 Continual improvement of GHG quantification

The organization shall implement processes to continually improve the quality and comprehensiveness of data gathered to quantify *GHG emissions* (3.2.2) and *removals.* (3.3.4)

a) identify data gaps and develop and report an action plan to reduce these; and

b) increase the use of primary activity data on significant GHG sources where possible.

9.6 Indicators

The organization shall select and establish indicators to provide the necessary data for reporting in accordance with Clause 16.

The organization shall select quantifiable indicators that minimize uncertainty and yield accurate, consistent and verifiable results, taking into account technical feasibility.

10 Target- and pathway-setting

10.1 General

The organization shall develop a *net-zero pathway* (3.1.5) consistent with objectives defined by the [10]Paris Agreement and any relevant sectoral net-zero pathways (see 10.2), appropriate for its context, achieving net zero by 2050 at the latest.

When such relevant sectoral net-zero pathways do not exist or are not appropriate, the organization should derive its net zero pathways from either an absolute contraction approach or one that reflects its own documented highest possible ambition to emissions reductions.

NOTE 1 An absolute contraction approach applies a constant annual reduction rate consistent with reaching the net zero target.

NOTE 2 Credible climate modelling allocates the global carbon budget across time and to different region and sectors, typically via an integrated assessment model.

When establishing its pathway, the organization shall:

— set reduction targets that are based on a credible and verifiable base year GHG inventory

— set reduction targets for all *direct GHG emissions* (3.2.3) (category 1).

— set reduction targets that cover all significant indirect GHG emissions categories (categories 2, 3, 4, 5, 6).

— set separate targets for direct GHG emissions, *energy indirect GHG emissions* (3.2.4) and other indirect GHG emissions.

— calculate the anticipated volume of residual emissions

— set targets to phase out the use of and support for fossil fuels.

These targets shall include all relevant types of GHGs.

NOTE 3 As required by ISO 14064-1 GHG emissions are converted to CO_2 equivalents using Global Warming Potentials (GWPs) over a 100-year time horizon using the characterization factors published in latest IPCC report. The targets are then set on an aggregated basis for total CO_2 equivalents.

Organizations having direct GHGs emissions of methane, nitrous oxide or HFCs in their category 1 should set separate methane, nitrous oxide and HFC reduction targets that each reflect the highest possible ambition for reductions available to that organization (see also Clause XX7) .

NOTE 4 See for instance IPCC latest working group 3's report on the mitigation of climate change.

NOTE 5 For example, IPCC AR6 WG3 1.5C pathways all include deep cuts in other greenhouse gases, such as a 35% in methane emissions below 2010 levels by 2050.

The organization shall set a long-term target for its indirect emissions from imported energy (category 2) using the quantification approach described in ISO14064-1 or equivalent (see Annex X for comparison of ISO14064-1 and GHG Protocol).

The organization shall set interim targets for supporting renewable/low-carbon energy deployment in locations where it consumes imported energy (see section 11.4 for other targets).

An organization that has already transitioned to net zero shall ensure that it remains at least at net zero or achieves net negative emissions (see Clause 13 for counterbalancing and Clause 14 for action for global net zero).

Organizations that produce climate solutions for net zero transition shall set their targets and pathways using relevant metrics in physical units (or functional units).

NOTE 6 Climate solutions are technologies covered in selected pathways, for example the IEA net-zero report and IPCC AR6 discusses various technologies to help transition away from fossil fuel use without abatement.

NOTE 7 See ISO14040/14044 for functional unit definition.

10.2 Selecting relevant sectoral net-zero pathways

When selecting relevant sectoral pathways, the organization shall use applicable sector-specific net-zero pathways which are consistent with a carbon budget that limits the global average temperature to 1.5 °C above pre-industrial level.

NOTE 1 Sectoral pathways for 1.5°C apply irrespective of whether global average temperatures rise above 1.5°C, as they provide a decarbonization pathway for rapid, deep and sustained emissions reductions to 2050.

NOTE 2 Sectoral pathways should provide absolute GHG emissions reduction pathways with relevant physical intensity pathways that account for the carbon budget.

The organization shall only use sectoral net-zero pathways:

— that have been developed by an independent third party, with climate science expert input to the process

— that have been subject to peer review or similar independent review

— for which assumptions and hypothesis are publicly available.

10.3 Setting GHG emissions reduction targets

The organization shall set:

— a long-term target to reach net-zero by 2050 with only residual emissions remaining.

— interim targets, for which the first interim target shall be no more than 5 years from the target setting year (when target is set). Subsequent interim targets shall be set at intervals of no more than 10 years.

NOTE 1 5 years is recommended as this is a common business planning period.

When setting targets, the organization shall use a base year GHG inventory that is representative of the organization's activities.

NOTE 2 Many organizations set a base year around 2020.

Organizations which set intensity targets shall use product or physical emissions intensity only (e.g. kg CO2e/kg of cement) not economic intensity (e.g. kg CO2e/$ revenue) since the latter is subject to price volatility.

The organization should also establish GHG emission budget(s) for its interim targets and long-term target. The GHG emission budget for each target can be calculated as cumulative emissions under the organization's GHG emission reduction trajectory consistent with the sectoral pathway drawn between base year and target year GHG emissions of the organization. The organization's cumulative emissions between base year and target year should be equal or less than the GHG emission budget. See more details in Annex H.

10.4 Other targets

The organization shall set interim targets for supporting renewable/low-carbon energy deployment in locations where it consumes the imported energy (see section 11.4 for non-GHG targets).

When setting interim targets for supporting low-carbon energy deployment, the organization may use contractual instruments. If using such instruments for renewable intermittent electricity generation sources, (such as solar, wind), the organization shall ensure that these are from installations matching the organization's load in the same electricity grid and should match the organization's load at the same hour.

For all other imported energy that uses contractual instruments, the organization should invest in instruments and other interventions demonstrated to have additionality.

NOTE 1 For example, an organization states that it aims to purchase 30% by 2030 and 70% by 2040 of its imported energy from renewable/low carbon sources via power purchase agreements.

The organization may set targets for building and using on-site renewable/low-carbon energy production, to replace imported energy.

Targets that will contribute to reducing scope 2 emissions should be set for switching to the use of renewable and low carbon (non-fossil) energy, leading to the use of only low carbon *renewable energy.* (3.1.7)

The organization should also set targets to improve its energy efficiency considering the functional unit of its products.

NOTE 2 For example, organization commits to reduce the amount of energy consumed per manufactured product that perform the same functional unit.

The organization shall, if relevant, set commitments to ensure operations and supply chains do not cause or contribute to deforestation.

The organization can consider setting targets for beyond value chain mitigation.

When setting targets the organization should:

— consider the lifetime of their assets to prevent locked 'in emissions" and/or potential stranding of its assets;

— account for national decarbonization pathways developed for the location where it operates when setting its direct emission targets; and

— take into account the need to invest in durable removals to address the volume of anticipated residual emissions included in its net zero target (see Clause 13).

11 Transition planning

11.1 Transition planning

The organization shall establish a plan for GHG mitigation actions to enable achievement of its interim targets and long-term net zero target that:

a) is based on reliable, quantified data;

b) addresses [direct/Scope 1], [indirect energy/Scope 2] and [other indirect GHG/Scope 3] emissions;

c) sets timelines for actions to be taken;

d) describes how progress against targets will be managed, monitored, reported and verified by a competent party;

e) takes into account and mitigates the potential risk of a consequent rise in emissions beyond its boundaries;

f) ensures safeguards against social or environmental harm, or negative impacts that arise as a consequence of GHG mitigation actions

g) includes details for any external validation of the plan or verification of its results;

h) includes justification of the assumptions made and the decisions taken in establishing the plan;

i) is updated at least every five years; and

j) is publicly available.

11.2 Content of transition plan

The organization's plan for transition to net zero shall include at least information on the themes outlined in 12.2.1 – 12.2.9.

The organization shall develop a roadmap towards the achievement of targets on these themes, including milestones and a final delivery.

Information to WG experts: the original list in this subclause has been restructured by an ad hoc group into separate sections 12.2.1-12.2.6

11.2.1 General

The organization's plan for transition to net zero shall include how the organization will:

a) meet interim and long-term targets;

b) contribute to, and set targets on, the development and/or adoption of solutions for climate action and sustainability, where possible;

c) develop, fund and implement low-carbon solutions;

d) source renewable and low-carbon energy;

e) address key dependencies and externalities that may impact the organization's ability and effort to execute on its plan; and

f) support a just transition.

11.2.2 Skills and capacity building

The organization's plan for transition to net zero shall include how the organization will:

a) build capability, including competence;

b) take actions to enable and empower organizations within the value chain to achieve net zero themselves, and

c) engage suppliers, customers and interested parties to collaborate to reduce Scope 3 emissions.

NOTE Organizations with the capacity to do so should support those organizations with less capability or capacity to act.

11.2.3 Governance and finance

The organization's plan for transition to net zero shall include how the organization will:

a) align broader organizational strategy, including investments and management of assets (including decommissioning) with the organization's commitment to net zero;

b) provide sufficient financial, human, technical and other resources to meet its net zero target; and

c) define and assign roles, ensuring roles include defined responsibility for delivering on different parts of the net zero strategy (e.g. a person or team clearly responsible for engaging suppliers in the supply chain).

NOTE The forthcoming ISO 32212 Sustainable finance — Net zero transition planning for financial institutions, is aimed at the financial sector, but its provisions may also be helpful to other organisations making investment decisions.

11.2.4 Monitoring, evaluation and reporting

The organization's plan for transition to net zero shall include how the organization will:

a) monitor progress towards its targets;

b) communicate information to interested parties on expected GHG emission reductions, including the reporting frequency;

c) validate targets and verify progress; and

d) determine risks related to the planned GHG mitigation actions and ensure that controls are put in place to address them.

11.2.5 Removals at net-zero

The organization's plan for transition to net zero shall include how the organization will:

a) build its capacity to counterbalance anticipated residual emissions through investment in durable removals;

b) exclusively use removals (including credits representing removals outside the value chain) to counterbalance residual emissions at net zero;

c) ensure that removals used to counterbalance residual emissions are reliably demonstrated to be in secure storage for at least 100 year, with negligible risk of reversal;

d) ensure removals within value chain or investments in removals credits are not double counted or double claimed by multiple parties and are retired in public registries after single use (see Counterbalancing clause 13.213.1);

e) ensure removals do not lead to a rise in GHG emissions in other locations due to efforts to reduce GHG emissions in one location (avoiding leakage); and

f) continue to innovate and reduce emissions over time after achieving net zero.

11.2.6 Advocacy

The organization's plan for transition to net zero shall include how the organization will

a) identify policy dependencies;

b) advocate and support climate policy and legislation, and

c) take action to ensure it is not involved (directly or indirectly) in lobbying against climate ambition.

12 GHG Mitigation action

The organization shall not delay taking action to reduce GHG emissions due to incomplete data or measurement. The organization shall take actions likely to reduce GHG emissions based on estimates while it works to improve quantification.

The organization can collaborate with other organizations to determine responsibility and actions to address indirect GHG emissions over which no single organization exercises direct control.

Examples of GHG mitigation actions are provided in Clause A.1

13 Counterbalancing residual emissions

13.1 General

To reach net zero at organizational level, the organization shall achieve its net zero reduction target and it shall counterbalance[1] its residual emissions in that year, and each year following, using high quality, durable carbon removals.

NOTE Counterbalancing residual emissions at net zero allows a limited amount of ongoing emissions in exchange for durable removals. It is a specific use-case and requires particular care to ensure that the removals will be an effective counterbalance. Since counterbalancing is not equivalent to zero, organizations should aim to continually reduce residual emissions, after reaching net zero, through further innovation and transformation.

A net-zero aligned organization shall prioritize reduction of all the GHG emissions within its boundaries, including its value chain emissions. In parallel, during the aligning period, it shall demonstrate its capacity to counterbalance its residual emissions to achieve and maintain net zero, by starting to invest in durable carbon removals (13.3).

The location of the removals is not important, as long as they satisfy the quality and integrity criteria listed below. This means companies can utilize removal credits or units both within or outside of their value chain.

If an organization generates durable removals within its value chain, it shall pick a single purpose for their use. The removals shall not be used both for value chain mitigation claims or selling to third parties and counterbalancing.

To avoid mitigation deterrence and to increase transparency, the organization shall report progress towards reduction targets and counterbalancing milestones separately in the aligning period, and after reaching net zero. Emissions reductions, avoided or mixed credits cannot be used for the purpose of counterbalancing residual emissions, but may be used to take action for global net zero (Clause 14).

13.2 Quality and integrity criteria

These criteria aim to ensure that carbon removals used to counterbalance residual emissions represent real, additional, and lasting carbon removals with minimal negative side effects.

When counterbalancing residual emissions the organization shall ensure that removals are:

1) durable, which means reliably demonstrating secure CO2 storage for at least 100 years, with a negligible risk of reversal. Specifically: 1) the removal /storage type shall be expected to have a physical duration of more than 100 years; 2) the reversal risks inherent to the specific CO_2 storage mechanism (e.g. living, geological, chemical) shall have been assessed and be addressed through a robust monitoring and remediation programme in case reversal occurs. To make a counterbalancing claim, the risk assessment and monitoring plan shallbe validated by a third party.

2) accurately measured and quantified using the best available industry standards and methodologies that incorporate the cradle to grave concept. All upstream and downstream GHG emissions associated with and resulting from the process to remove and store atmospheric CO2 shall be comprehensively estimated and accounted for and subtracted from the removals quantum.

   NOTE 1 See ISO 14064-2[11]ISO 14064-2

3) disclosed publicly using latest reporting guidelines and current standards on climate change mitigation. The measurements and the methodologies must be verified by a competent third party.

4) additional, meaning the removal goes beyond what would have happened in the absence of the specific investment or project,

5) based on realistic and credible base year GHG inventories;

6) avoid or limit the risk of a consequent rise in GHG emissions in other locations due to the removal project, also referred to as carbon leakage or consequential emissions;

7) not double-counted, meaning counted by more than one party, or credited under more than one registry or carbon credit programme;

8) consider co-benefits and trade-offs, in particular aiming to do no social or environmental harm;

9) provide social safeguards, promote equity and benefit both ecosystems and local communities.

NOTE 2 Standards and guidelines for high-quality carbon removals are being developed by a number of voluntary, national and supranational bodies, such as the [12]ICVCM's Core Carbon Principles, the UN's Article 6.4 of the Paris Agreement, and the EU's Carbon Removal and Carbon Farming certification framework. These are valuable guides, but not specifically designed to define requirements for durable removals that can be used to counterbalance residual emissions.

To protect social and environmental integrity, the organization shall take reasonable actions to ensure the removals activities it governs, invests in or purchases credits from:

— are governed inclusively, through participation, consultation and consent of the people and groups impacted by them, particularly indigenous peoples, local communities and vulnerable groups (e.g. women, children, elderly people, people with disabilities);

— are managed in an adaptive way, using flexible decision-making to adjust to uncertainties as outcomes change.

— maximize co-benefits that contribute to sustainability outcomes beyond the removal of carbon dioxide from the atmosphere (e.g. improved crop yield, increase in local biodiversity, access to *renewable energy,* (3.1.7) jobs, reduced air pollution etc).

— balance trade-offs, particularly social trade-offs (e.g. people's need to use land for subsistence farming, use of resources such as water and renewable energy);

— support the regeneration of nature and prevent land degradation.

13.3 Counterbalancing activities before reaching net zero

The organization shall estimate its currently anticipated residual emissions at net zero and annually thereafter, derived from its *net zero aligned* (3.1.3) reduction target (e.g. if its reduction target is 90% from a given base year GHG inventory, anticipated residual emissions are 10%).

Recognizing that the actual volume of residual emissions cannot be precisely calculated many years in advance of the net zero target date, the organization shall review its anticipated residual emissions at least every five years.

In the aligning period to net zero, the organization shall define interim counterbalancing milestones and an appropriate trajectory to ensure it can reach the volume, quality and durability of carbon removals it anticipates needing at its net zero target date.

Counterbalancing milestones for purchasing durable removals will be shaped by the organization's target date, sector, size, strategy and location, but shall be set at 10 year intervals or less, starting no later than 5 years after setting the anticipated residual emissions target. Based on the anticipated volume of durable removals needed to counterbalance anticipated residual emissions at net zero, the organization shall explain in its transition plan how it intends to meet that requirement.

The first milestone shall include measures to scale-up of durable carbon removals to ensure their availability at scale.

The organization shall consider:

a) building a portfolio of durable carbon removals to understand the market, engage with removal suppliers and spread risk, ramping up year by year to meet future needs.

b) including both ex-post removals to speed impact and advance offtake agreements to help ensure new facilities are built and secure access to future supply.

c) including innovative nature-based removal projects that are working to increase durability.

d) exploring whether carbon removal could be integrated into business operations.

14 Taking action for global net zero

14.1 General

In addition to prioritizing immediate action to reduce its emissions within its value chain, the organization shall implement strategies and actions to contribute towards global net zero across its following spheres of influence:

a) Products and services, by supporting climate solutions enabling reductions beyond the value chain;

b) Portfolio of climate finance, through financing of high-quality GHG mitigation projects, including but not limited to high quality voluntary carbon credit retirement, and other market mechanisms; and

c) Policy engagement and partnerships, by engaging with, for example, trade associations, suppliers, customers and investors, in aligning targets, internal and external advocacy to the public, capacity building, and broader partner engagement.

Organizations should work holistically across each of these spheres of influence to advance additional sustainable development goals related to social wellbeing, nature, adaptation and innovation. These actions and their impacts shall be separately reported and accounted from actions taken within the organization's value chain.

NOTE Many of these actions are essential to meet an organization's own transition plan and manage climate related risks and opportunities reported to investors.

14.2 Net zero aligned portfolio of climate finance

To contribute to immediate action towards global net zero, *net zero aligned* (3.1.3) organizations shall:

a) Secure a financial allocation for climate mitigation activities proportional to their remaining annual emissions. The organization should reflect this allocation as a provision in its balance sheet and profit and loss statement.

NOTE 1 The organization shall have a published rationale for how its financial allocation has been established. This may be by means of an internal carbon price to incentivize internal decarbonisation. If so, the organization should consider increasing the carbon price over time and evaluate it with reference to the social cost of carbon by 2050.

NOTE 2 Annex A includes a series of good practice GHG mitigation options organizations could adopt.

b) Use this allocation to finance:

— GHG mitigation activities internally, taking additional measures to decarbonize across the value chain; and/or

— high quality climate action with measurable GHG mitigation outcomes through different types of financing, capital or market mechanisms. These can include high-quality carbon credits, local community climate projects, pre-financed offtake agreements, etc.;

c) Verify, measure, and disclose impact following current available third-party best practice for measuring and verifying GHG mitigation outcomes as part of sustainability reporting; and

d) Disclose the impacts of its climate finance portfolio, separate from its organizational emissions reductions and targets.

NOTE 3 If buying and retiring credits, organizations can refer to the [13]VCMI Claims Code of Practice.

14.3 Net zero aligned policy and engagement

Organizations shall align their policy engagement with science-based net zero pathways.

NOTE High Level Expert Group's Integrity Matters report (chapter 6), We Mean Business Coalition's Framework for Responsible Policy Engagement and AAA Framework for Climate Policy Leadership's Business Case and Race to Zero's 5th P (Persuade) Handbook.Further guidance on Net Zero Aligned Policy engagement is outlined in the

The organization shall:

a) Publicly commit to align its climate policy engagement and assign oversight structures;

b) Undertake proactive climate policy engagement, where the organization has the capability, by:

— directly engaging with local and national policymakers, advocating appropriate policy and regulation to support organizations around the world achieve net zero;

— engaging with third parties (and industry counterparts and partners including industry associations, professional service providers, customers, clients, suppliers, and employees, to align their activities and take positions aligned with net zero pathways;

— taking steps to support organizations whose specific purpose is to undertake climate policy engagement that is aligned with net zero pathways; and

c) Assess and address any misalignment between its commitment to a net zero transition and:

— its direct climate policy engagement; and

— its indirect climate policy engagement through third parties, such as industry associations, of which it is a member or to which it provides support; and

d) Report publicly on its annual climate policy engagement positions and activities, following best practices for disclosure and meeting the requirements for reporting.

In order to have a credible net zero transition plan, organizations shall identify the specific policies required to meet its transition plan targets, and advocate and engage with government and partners to manage external dependencies.

14.4 Net zero alignment of products and services

A net zero aligned organization shall, wherever relevant, integrate emission reduction targets into its research and development, products and product design, services, and logistics, considering the implications for its business model.

NOTE 1 Targets and efforts on enabled emissions reduction in society (sometimes called avoided emissions) go beyond the organization's efforts to reduce its scope 3 emissions through changes to products and services. WBCSD offers relevant Guidance on Avoided Emissions Helping Businesses drive Innovations and Scale Solutions Towards Net Zero'.

NOTE 2 When making claims about enabled emissions reductions, organizations should apply an assessment method that demonstrates a lifecycle approach, a robust counterfactual scenario, methodological guardrails and impact monitoring that ensure the credibility and quality of the enabled emissions reductions.

To align products and services to net zero companies should:

a) Set clear and measurable goals and KPIs for accelerating the development and scaling of net zero aligned products and services;

b) Demonstrate spending towards climate related research and development;

c) Update its products and services to enable the sustainable circular flow of resources and encourage sustainable lifestyles and purchase decisions by customers in line with global net zero goals; and

d) Educate and empower employees to integrate climate and related sustainability aims into processes, decisions, and daily work.

Professional Service Providers shall measure serviced emissions and set out how they will align serviced emissions to their climate targets. They should demonstrate that climate targets have been integrated into the development of new and existing relationships.

NOTE 3 The Race to Zero guidance for the Professional service sectors provides more information.]

The organization should make and disclose qualitative and quantitative assessments of the climate impact of its products and services, as evidence of a shift in its portfolio towards solutions that help avoid and reduce emissions., Organizations may seek independent third-party assessment.

14.5 Actions related to sustainable development

A credible net zero aligned organization shall consider how its net zero strategy aligns with the United Nations SDGs and also have separate targets and plans related to environmental and social issues such as:

a) mitigating harm from its climate actions to the environment and ecosystems;

b) supporting and enhancing biodiversity;

c) supporting conservation, restoration and protection of natural and semi-natural ecosystems in their own right;

d) making immediate contributions to the preservation and restoration of natural sinks (e.g. forests, wetlands);

e) eliminating deforestation (if relevant);

f) conservation and protection of water, oceans and natural resources;

g) enhancing social wellbeing including improving prosperity, eliminating poverty, and upholding human rights; and

h) providing support for job retraining and skills development, ensuring equitable access to new opportunities, and engaging with affected stakeholders in a transparent and inclusive manner.

NOTE For guidance on contributing to the SDGs see ISO/UNDP PAS 53002:2024 Guidelines for contributing to the United Nations Sustainable Development Goals (SDGs).

15 Monitoring progress

The organization shall undertake regular monitoring of changes in its *GHG emissions* (3.2.2) and *removals* (3.3.3)in comparison to the base year GHG inventory, applying the methods and tools established for quantification (see Clause 9.

The frequency of monitoring shall be sufficient to:

a) meet the requirements for reporting and communication

b) provide timely information on its performance, so that the need for any further action to meet targets can be determined.

Avoided emissions (3.2.6) cannot be included in claims of progress towards targets for the reduction of [direct/Scope 1] emissions, [indirect energy/Scope 2] emissions, and [*other indirect GHG/Scope 3] emissions* (3.2.5).

The organization shall not use *offsetting* (3.3.7) towards achievement of interim GHG emissions reduction targets.

16 Reporting

16.1 General

The organization shall implement processes to ensure transparent communication and reporting of progress towards net zero to relevant interested parties and make information on progress publicly available.

The organization shall report its progress on its transition plan and all applicable items in Clause 11

The organization shall fulfil the requirements for GHG reporting in ISO 14064-1 clause 9.

The organization should report qualitative and quantitative progress against targets at least annually using relevant public reporting platforms. If appropriate, the organization may report in line with accepted financial reporting timeframes, if this is equally or more frequent.

Organizations are recomended to report via digital platforms where possible.

16.2 Scope of reporting and information to include

16.2.1 Scope of reporting

The organization shall define the scope of each report taking into account any relevant guidance from applicable standards and frameworks. The organization may choose to create separate reports to communicate different types of information.

The organization shall report publicly, and include the following when reporting progress towards meeting its net zero targets:

a) scope of reporting;

b) GHG quantification standard used;

c) most recent GHG inventory;

d) details of previously published reports and how these can be accessed;

e) changes in emissions and removals compared to base year and to most recent report;

f) progress towards emissions reduction and removal targets, including the extent of any underperformance against its targets, with details of the causes, proposed actions to address the underperformance and any resultant adjustment to future targets;

g) improvements and solutions implemented since the previous reporting period and their impacts to date;

h) planned new initiatives or actions and their expected future impacts;

i) review of anticipated residual emissions and progress towards anticipated counterbalancing target;

j) details of durable carbon removals credits used to make specific counterbalancing claims (see 13.2) including details of how their quality has been determined;

k) other carbon credits purchased beyond the organization's boundaries, including details of how their quality has been determined;

l) details of the liability and impermanence risks of carbon storage related to removals and actions taken to mitigate these;

m) any advocacy activities and collaborative partnerships (e.g. lobbying, participation in voluntary initiatives, trade associations, membership networks);

n) engagement with initiatives and trade associations in working towards interim and long-term targets, where relevant; and

o) details of any verification activities and results.

If *avoided emissions* (3.2.6) are quantified, they shall not be counted towards the achievement of the organization's interim or long-term net zero targets and shall be reported separately from [direct/Scope 1], [indirect energy/scope 2] and [other indirect GHG/scope 3] emissions.

The following information related to transition planning shall also be reported.

p) a transition plan, including information on actions planned, with estimated timeframes, to reduce current GHG emissions (see Clause 11) consistent with achieving interim GHG emissions targets;

q) climate-related risks and opportunities relevant to the organization;

r) information on expected residual emissions (3.2.9) and how these have been estimated;

s) plans for counterbalancing residual emissions (3.2.9) including details of any carbon credits used and how their quality has been determined;

t) allocation of material, financial and human resources to achieve interim and long-term targets;

u) details of any validation activities and results.

Additionally, the organization may include further relevant information in its report; examples are provided in Annex G.

16.3 Limitations of reporting

The organization shall communicate the limitations of reports, including:

a) any sources of GHG emissions which are excluded and justification for the exlusions;

b) use of GHG emissions proxies, averages, or gaps in knowledge within value chains;

c) proportion of total disclosed data which is estimated, and methods used for the estimations, when proxies are used to cover lack of data;

NOTE A GHG emissions proxy uses aggregated data from a range of sectors and sources to estimate GHG emissions from a complex process. Proxies usually relate to Scope 3/indirect emissions.

16.4 Credibility of reports

The organization shall establish processes to ensure:

a) comprehensive data collection and review;

b) the accuracy of GHG emissions and removals data; and

c) reports are free of material discrepancies.

NOTE Third-party validation or verification of data, including targets, pathways and plans and claims is recommended.

Documented information shall be accurate, comprehensive and not overstate achievements.

17 Claims

Information to WG experts: The AHG working on claims will provide text by 31 January. It will not be possible to incorporate that into OSD until the commenting window has closed, so it will be circualted as a separate N-document. In the meantime, the AHG has provided the following structure for the new text.

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17.1 Claims general

17.1.1. General requirements

17.1.2 Principles relevant to Claims

17.1.3 List of Minimum requirements for claims and linkage to the three types of claim, and reporting requirements

17.2 Claims related to the setting of targets, pathway and plans

17.2.1 Minimum requirements for claim related to targets, pathways and plans

17.2.2 Communicating a claim related to targets, pathways and plans

17.2.3 Maintaining a claim related to targets, pathways and plans

17.3 Claims related to ongoing progress towards net zero

17.3.1 Minimum requirements for claim related to ongoing progress towards net zero

17.3.2 Communicating a claim related to ongoing progress towards net zero

17.3.3 Maintaining a claim related to ongoing progress towards net zero

17.4. Claims related to achievement of net zero as an organization

17.4.1 Minimum requirements for claim to achievement of net zero as an organization

17.4.2 Communicating a claim related to achievement of net zero as an organization

17.4.3 Maintaining a claim related to achievement of net zero as an organization

18 Validation and verification

18.1 General

Information to WG Experts: The text in this validation and verification clause has been developed by the convenors based on comments requesting more detail as to what should be validated/verified and how.

Planning of, and progress towards, interim and long-term targets, and associated claims of progress towards or achievement of net zero as an organization shall be validated and verified through a credible and competent party.

Validation/verification objectives shall be established prior to the commencement of the validation/verification activities.

The results of the validation/verification shall include a statement of conclusions and an opinion regarding the accuracy of information provided and the reliability of any net zero claims made.

NOTE All claims shall be validated/verified in accordance with ISO/IEC 17029[14]ISO/IEC 17029, ISO 14065[15], [16]ISO 14064-3 or an equivalent validation/verification standard.

18.2 Validation

Validation objectives shall include reaching a conclusion as to whether the implementation of the transition plan will result in the achievement of the organization's net zero targets and pathway.

18.3 Verification

Verification objectives shall include reaching conclusions concerning:

a) the accuracy of the GHG inventory for the specified period;

b) performance against net zero target(s) for the specified period;

c) conformity of applied GHG quantification processes to applicable criteria;

d) the implications of any deviations from the transition plan; and

e) the validity of claims related to ongoing progress towards or achievement of net zero as an organization.

NOTE 1 The net zero targets include quantified emissions reduction and any removals targets for the period, and any supporting targets such as for energy efficiency, transition to renewable or low carbon energy sources, investment in future removals technologies, etc.

NOTE 2 Criteria related to the GHG quantification processes include: the method for determining GHG inventory scope and boundaries; the GHGs and sources and sinks to be accounted for; the quantification methods; and requirements for disclosures.

19 Continual Improvement

19.1 General

The organization shall determine opportunities for improvement and implement necessary actions to achieve its net zero targets.

The organization shall take into account emerging scientific evidence, best practice and external and internal lessons learned.

Companies shall consider periodically the need to progressively increase the ambition and significance of their investments in interventions that accelerate climate change mitigation both within and beyond their value chains

The organization shall determine opportunities and consider taking action to support and accelerate the speed or extent of:

a) reducing GHG emissions;

b) counterbalancing residual GHG emissions;

c) supporting the preservation and restoration of natural sinks;

d) achieving net zero at organizational level and striving to become net-negative .

The organization should use iterative and adaptive approaches on a regular basis and with an increasing level of ambition, to achieve interim targets and long-term targets and to address wider impacts.

19.2 Adjustments

The organization shall:

a) Determine annually the *GHG inventory* (3.2.8) and the degree to which it aligns with the applicable up-to-date sectoral net zero pathway, including relevant sector-specific pathways and identify any gaps between the inventory and the selected pathway; and

b) Make updates to the organization's GHG emissions reductions and removals targets, and plans to achieve these targets, taking into account any gap arising from its climate underperformance .

Annex A
(informative)

Additional guidance on GHG mitigation action

The organization may apply any or all of the GHG mitigation actions below.

A.1 Generic GHG mitigation actions

The following are examples of generic GHG mitigation actions:

a) considering aligning executive and board compensation with meeting interim and long-term targets (e.g. 20% of long-term compensation plans);

b) implementing internal policies such as carbon pricing ;

c) implementing actions that protect biodiversity and enhance ecosystems, where possible;

d) examining the potential to use alternative processes (e.g. in line with circular economy practices), equipment or facilities with lower GHG emissions;

e) reducing significant GHG sources or GHG emissions "hot spots" (e.g. electric power tools instead of compressed air; public transport or electric bicycles in place of company cars);

f) using innovative solutions to satisfy the core human needs of nutrition, health and shelter

g) removals enhancements through afforestation, building with biomass (plant-based material used in construction), bio-based materials used in long term applications or permanently stored, direct air carbon capture and storage, habitat restoration, soil carbon capture, enhanced weathering, energy production from biomass with carbon capture and storage.

A.1.1 GHG Mitigation actions for Scope 1 and Scope 2

The following are examples of GHG mitigation actions for Scope 1 and Scope 2:

a) accelerating transition to renewable energy for processes, buildings and sites, and setting a target to use only low-emission energy and then renewable energy as soon as possible;

b) implementing an energy management system to improve efficiency of energy consumption and promote continual improvement;

c) prioritizing low carbon (non-fossil) and renewable energy through power purchase agreements;

d) generating own low-emission or renewable energy within the organization (e.g. heat from waste biomass);

e) conducting energy audits on a regular basis to identify areas (hotspots) for futher efficiency improvements

f) align energy consumption with the availability of renewable energy, and minimize consumption when the grid is reliant on high-emission energy;

g) transitioning away from dependence on the use of fossil fuels, including phasing out the use of coal;

h) establish, apply and disclose financing policies to phase out fossil fuels (e.g. halting coal use by 2030 in OECD countries and 2040 in non-OECD countries), both by selling assets and responsibly retiring them, meeting obligations to local ecology and communities;

i) optimizing energy use of buildings (e.g. through repurposing, retrofitting, digital automation, increased use of heat pump technology);

j) minimizing or eliminating the use of emission-producing resources in all operations;

k) implementing low-carbon cooling, heating, ventilation and refrigerants;

l) minimizing waste and reducing consumption of raw materials and energy by repurposing or refitting buildings rather than building new facilities;

m) facilitating working from home to reduce GHG emissions (e.g. GHG emissions from operations or commuting) where this is likely to cause fewer overall GHG emissions;

n) supporting use of low-carbon travel and creating local office hubs to reduce commuting distance;

o) using remote technology for meetings and collaboration, to avoid unnecessary travelling;

p) choosing technology and other service providers and suppliers that have committed to robust organizational net zero targets;

q) requiring lower GHG emission modes of business travel where feasible, if travel is essential (e.g. rail rather than air);

r) transitioning to very low GHG emission vehicles owned or used by the organization;

s) ensuring new facilities and operations are low or zero GHG emission by design;

t) ensuring all buildings, equipment, machinery and vehicles are regularly maintained;

u) integrating climate criteria into research and development and product and service design processes to improve energy performance and develop circular economy solutions;

v) supporting nature-based solutions such as forest protection and restoration, and sustainable land management (e.g. soil carbon sequestration); and

w) systematically reducing energy, resource and material waste in all operations.

NOTE ISO 50001[17]ISO 50001 provides information on implementing an energy management system.

A.1.2 GHG Mitigation actions for scope 3

The following are examples of GHG mitigation actions for Scope 3.

a) developing products and services that contribute to the emergence of alternative value chains (e.g. increase quality and decrease cost of plant-based protein);

b) redesigning and developing products and services to reduce their life cycle emissions;

c) promoting, supporting and facilitating the circular economy (e.g. reuse, repair, refurbishment, repurposing, recycling);

d) requiring suppliers to commit to net zero targets, in line with the recommendations in this document;

e) prioritizing suppliers based on their climate strategy, emissions reduction progress and transparency of emission data;

f) collaborating with other organizations and sector or industry partners to strengthen and align procurement and purchase requirements;

g) extending collaboration with other organizations and the value chain to accelerate adoption of low carbon (non-fossil) and renewable energy and achievement of interim and long-term emissions reduction targets;

h) investing in GHG emissions reduction and removals projects;

i) ensuring financial investments, including assets and pension funds, are aligned with climate strategy and net zero commitments;

j) prioritizing low-carbon mobility solutions (e.g. public transport, electric vehicles with appropriate charging infrastructure) and reducing the need for personal transportation through urban planning;

k) using Sustainable Aviation Fuel for air travel and/or avoiding air travel; and

l) providing and promoting ow-carbon diets, such as plant-based food in staff restaurants or canteens.

NOTE Scope 3 Category 15/Indirect Category 5 emissions from investment of are of particular relevance to financial institutions, which may consider options for reducing impacts of portfolio engagement, portfolio shift, phase-out, green/transition finance, green solutions/offerings, etc.

Annex B
(informative)

For SME users

The AHG working on the SME Annex will provide text by 31 January. It will not be possible to incorporate that into OSD until the commenting window has closed, so it will be circualted as a separate n-document.

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