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Net zero guidelines

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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).

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Introduction

0.1 General

Climate change is one of the most pressing challenges that our world faces. Scientific assessments through the Intergovernmental Panel on Climate Change (IPCC) reports 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 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 carbon dioxide (CO_2) emissions 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. Peak warming depends on cumulative CO_2 emissions from the beginning of the industrial period up to the time they are reduced to net zero, combined with the change in non-CO_2 emissions on the climate system, by the time the temperature peaks.

This document provides guiding principles and recommendations to enable a common approach with a high level of ambition, to drive organizations to achieve net zero GHGs as soon as possible and by 2050 at the latest. It is intended to be a common reference for governance organizations (including voluntary initiatives, adoption of standards, policy and national and international regulation), and can help organizations taking action to contribute to achieving global net zero.

This document should be interpreted and used in line with its purpose and scope to maintain and promote the highest possible climate ambition. This document does not address legal and other obligations relating to climate action.

This document builds on progress by voluntary initiatives, campaigns and governance, supporting their purpose of progressing to a climate positive future, increasing their reach and enabling a more consistent approach for future interventions and deliverables, including ISO standards.

The 2015 Paris Agreement[17] states the importance of achieving a global balance between human-caused emissions by sources and human-led removals by sinks in the second half of the 21st century, taking into account varying capabilities in different parts of the world, on the basis of equity, and in the context of sustainable development and efforts to eradicate poverty. This document therefore includes recommendations on equity and wider impact.

The scope of this document is aligned to 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, and other UN developments, including the United Nations Framework Convention on Climate Change (UNFCCC).

Some initiatives and policies limit actions relating to net zero GHG emissions to those emissions and removals under the direct control of the reporting organization. This document promotes and gives guidance on taking action to address all GHG emissions, direct and indirect, in an organization's value chain.

0.2 Use of this document

In this document, the following verbal forms are used:

— "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.

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Net zero guidelines

1 Scope

This document provides guiding principles and recommendations to enable a common, global approach to achieving net zero greenhouse gas emissions through alignment of voluntary initiatives and adoption of standards, policies and national and international regulation.

This document provides guidance on what governance organizations and other organizations can do to effectively contribute to global efforts to limit warming to 1,5 °C by achieving net zero no later than 2050. It provides guidance on a common and equitable contribution and recognizes the capability of individual organizations in contributing to achieving global net zero. This document, when used in combination with applicable science-based pathways, provides guidance for organizations seeking to set robust climate strategies.

This document provides common terms and definitions, guidance and specific recommendations on:

— net zero guiding principles for all organizations;

— incorporating net zero into strategies and policies;

— what net zero means at different levels and for different types of organization;

— setting and aligning interim and long-term targets based on equity, latest scientific knowledge, evidence, research and agreed good practice;

— actions to take to achieve these targets;

— greenhouse gas emission reductions within the value chain;

— nature protection and restoration;

— avoided emissions and other climate contributions beyond the value chain;

— removals;

— offsets;

— credits;

— claims;

— monitoring, measuring and use of appropriate and consistent indicators;

— equity, empowerment, fair share and wider impact;

— transparent reporting and effective communication.

This document is intended to align territorial approaches to achieving net zero (e.g. by nations, regions, cities) and value chain approaches by organizations.

This document is intended to enable and support all organizations, including governance organizations developing policies, frameworks, standards or other initiatives on net zero for use by others.

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This document is intended to complement voluntary initiatives and facilitate alignment, so that any organization looking to make or support a net zero claim takes a similar approach regardless of the initiative it is associated with.

NOTE 1 A single target for organizations of net zero for all greenhouse gas emissions, as soon as possible or by 2050 at the latest, is used in this document to provide a common, understandable and ambitious target, in line with scientific consensus on the global effort needed to limit warming to 1,5 °C with no or limited temperature overshoot. This organizational target aligns with the target stated in the Race to Zero Criteria[18].

NOTE 2 Governance organizations include:

— national and sub-national (e.g. regional, local, municipal) governments, as appropriate;

— regulators;

— voluntary initiatives;

— intergovernmental bodies;

— international and national non-governmental organizations.

NOTE 3 This document does not provide guidance on carbon neutrality for organizations or for products and services. Information on carbon neutrality for organizations will be provided in ISO 14068[1)].

2 Normative references

There are no normative references in this document.

NOTE The Normative references clause lists, for information, those documents which are cited in the text in such a way that some or all of their content constitutes requirements of the document.

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/

NOTE The Terms and definitions clause provides definitions necessary for the understanding of certain terms used in the document. Some definitions have been drafted specifically for this document, others are based on existing terminological entries from International Standards and from documents published by the Intergovernmental Panel on Climate Change (IPCC), the Greenhouse Gas Protocol (GHGP) and United Nations Framework Convention on Climate Change (UNFCCC).

3.1 Terms related to climate action

3.1.1
net zero
net zero GHG
condition in which human-caused *residual GHG emissions* (3.2.9) are balanced by human-led *removals* (3.3.3) over a specified period and within specified boundaries

Note 1 to entry: Human-led removals include ecosystem restoration, direct air carbon capture and storage, reforestation and afforestation, enhanced weathering, biochar and other effective methods.

Note 2 to entry: The words “human-caused” and “human-led” are intended to be understood as synonymous with the word “anthropogenic” in IPCC definitions.

1) Under development.

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

3.1.2
science-based pathway
trajectory to achieve global *net zero* (3.1.1) *greenhouse gas emissions* (3.2.2) based on scientific evidence

Note 1 to entry: Scientific evidence refers to evidence that has been confirmed through peer review.

Note 2 to entry: In this document, applicable science-based pathways are independent 1,5 °C aligned pathways.

3.1.3
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 Convention on Biological Diversity.

[SOURCE: ISO 14050:2020, 3.8.22, modified — Note 1 to entry has been added.]

3.1.4
renewable energy
energy collected from resources that are naturally replenished at a rate equal or faster than extracted or used

Note 1 to entry: Renewable energy includes sources such as sunlight, wind, rain, tides, waves, biomass, and geothermal heat.

[SOURCE: IPCC AR6, Working Group III, Annex 1, modified]

3.1.5
adaptation
adjustments in ecological, social or economic systems in response to actual or expected climatic stimuli and their effects or impacts

Note 1 to entry: Adaptation refers to changes in processes, practices and structures to moderate potential damages or to benefit from opportunities associated with climate change.

[SOURCE: UNFCCC Glossary of climate change acronyms and terms, modified]

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: Greenhouse gases caused by human activities and relevant for this document include carbon dioxide (CO_2), methane (CH_4), nitrous oxide (N_2O), hydrofluorocarbons (HFCs), perfluorocarbons (PFCs), sulfur hexafluoride (SF_6) and nitrogen trifluoride (NF_3).

[SOURCE: ISO 14050:2020, 3.9.1, modified — The words "both natural and anthropogenic" have been replaced with "natural or anthropogenic" in the definition and Note 1 to entry has been added.]

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

Note 1 to entry: greenhouse gas emissions include those released from:

— natural sources (e.g. decomposition of plants);

— combustion of fossil fuels;

— other processes, including unintentional release (e.g. caused by imperfections in processing equipment or conditions).

Note 2 to entry: For GHG emissions that occur not directly into the atmosphere but into a body of water or into soil, the relevant emission is the amount by which the concentration of the gas increases in the atmosphere as a result of this emission, according to scientific evidence for chemical and biological processes that can occur in water or soil.

[SOURCE: ISO 14050:2020, 3.9.8, modified — The admitted term "emission" has been added and Notes 1 and 2 to entry have been added.]

3.2.3
Scope 1 emission
direct GHG emission
greenhouse gas emission (3.2.2) from *sources* (3.2.7) owned or directly controlled by the *organization* (3.4.1)

Note 1 to entry: This document uses the concepts of equity share or control (territorial, financial and operational) to establish Scope 1 emission responsibility.

Note 2 to entry: Scope 1 emissions do not include those occurring from natural ecosystems owned or controlled by the organization that are not under management, or remain in a natural state and have not been modified.

Note 3 to entry: Scope 1 emissions for *governance organizations* (3.4.2) operating at a territorial level refer to GHG emissions from sources located inside the boundary of that territory. More information on Scope 1 emissions is provided in the GHG *Global Protocol for Community-Scale Greenhouse Gas Inventories, An Accounting and Reporting Standard for Cities Version 1.1.*

[SOURCE: GHG Protocol *Corporate Accounting and Reporting Standard*]

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

Note 1 to entry: Scope 2 emissions for organizations operating at a territorial level refers to GHG emissions other than *Scope 1 emissions* (3.2.3), occurring as a consequence of the use of grid-supplied electricity, heat, steam and cooling within the territorial boundary.

[SOURCE: GHG Protocol *Corporate Accounting and Reporting Standard*]

3.2.5
Scope 3 emission
indirect GHG emission
greenhouse gas emission (3.2.2) that is a consequence of the *organization's* (3.4.1) activities but arises from *sources* (3.2.7) that are not owned or directly controlled by the organization

Note 1 to entry: 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).

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Note 2 to entry: For organizations operating at a territorial level, Scope 3 emissions refer to GHG emissions that occur fully or partially outside the territorial boundary as a result of activities taking place within the boundary and include transport across boundaries. More information on Scope 3 emissions is provided in the GHG *Global Protocol for Community-Scale Greenhouse Gas Inventories, An Accounting and Reporting Standard for Cities Version 1.1.*

[SOURCE: GHG Protocol *Corporate Accounting and Reporting Standard*]

3.2.6
avoided emission
avoided GHG emission
potential effect on *greenhouse gas emission* (3.2.2) that occurs outside the boundaries of the *organization* (3.4.1) but arising through the use of its products or services, outside *Scope 1 emissions* (3.2.3), *Scope 2 emissions* (3.2.4) and *Scope 3 emissions* (3.2.5)

Note 1 to entry: Avoided emissions cannot be included in claims of progress towards Scope 1, Scope 2, and Scope 3 targets.

3.2.7
source
GHG source
human-caused activity or process that releases a *greenhouse gas* (3.2.1) into the atmosphere

[SOURCE: ISO 14064-1:2018, 3.1.2, modified — The preferred term "greenhouse gas source" has been replaced with "source" and the words "human-caused activity or" have been added to the definition.]

3.2.8
greenhouse gas inventory
GHG inventory
list of GHG *sources* (3.2.7) and GHG *sinks* (3.3.5), and their quantified *greenhouse gas emissions* (3.2.2) and *removals* (3.3.3) over a specified period of time and within specified boundaries

[SOURCE: ISO 14064-1:2018, 3.2.6, modified — The words "over a specified period of time and within specified boundaries" have been added.]

3.2.9
residual emission
residual GHG emission
greenhouse gas emission (3.2.2) that remains after taking all possible actions to implement *emissions reductions* (3.3.2)

Note 1 to entry: Residual emissions are estimated for each year from the *net zero* (3.1.1) target date (e.g. 2050), not for interim target dates, using a 1,5 °C aligned *science-based pathway* (3.1.2) .

Note 2 to entry: All possible actions refer to what is technically and scientifically feasible.

3.3 Terms related to mitigation of greenhouse gas emissions

3.3.1
mitigation
GHG mitigation
human intervention to reduce *greenhouse gas emissions* (3.2.2) or enhance *sinks* (3.3.5)

[SOURCE: IPCC AR6 WGIII Annex-I Glossary]

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3.3.2
emissions reduction
GHG emissions reduction
quantified decrease in *greenhouse gas emissions* (3.2.2) specifically related to or arising from an activity between two points in time or relative to a *baseline* (3.3.6)

[SOURCE: ISO 14050:2020, 3.9.17, modified — The preferred term "greenhouse gas emission reduction" has been replaced with "emissions reduction" and the words "between a baseline scenario and the project" have been replaced with "specifically related to or arising from an activity between two points in time or relative to a baseline" in the definition.]

3.3.3
removal
GHG removal
withdrawal of a *greenhouse gas* (3.2.1) from the atmosphere as a result of deliberate human activities

Note 1 to entry: Types of removals include afforestation, building with biomass (plant-based material used in construction), direct air carbon capture and storage, habitat restoration, soil carbon capture, enhanced weathering (mixing soil with crushed rock), bioenergy with carbon capture and storage.

Note 2 to entry: In this document, the term "removal" includes storage, including the durable storage of CO_2, which is referred to as "carbon dioxide removal" by the IPCC.

[SOURCE: IPCC AR6 WGIII Annex-I Glossary]

3.3.4
offset
emissions reduction (3.3.2) or *removal* (3.3.3) resulting from an action outside the *organization's* (3.4.1) boundaries used to counterbalance the organization's *residual emissions* (3.2.9)

Note 1 to entry: Offsets are usually represented by a *credit* (3.3.7) that has been retired or cancelled in a registry by or on behalf of the organization that is seeking to counterbalance residual GHG emissions. A registry is a platform that allows organizations to track, manage and trade GHG emissions.

Note 2 to entry: Only offsets that are removals can be used to counterbalance residual emissions to achieve *net zero* (3.1.1).

3.3.5
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".]

3.3.6
baseline
GHG baseline
quantified *greenhouse gas emissions* (3.2.2) and *removals* (3.3.3) of an *organization* (3.4.1) at a specified time against which assessment of progress to *net zero* (3.1.1) can be performed

Note 1 to entry: Emissions and removals are separate parts of the baseline and calculation of *emissions reduction* (3.3.2) only refers to the baseline emissions.

Note 2 to entry: The GHGP provides further information on baselines, which it refers to as "base years".

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