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Adaptation to climate change — Principles, requirements and guidelines

Adaptation au changement climatique — Principes, exigences et lignes directrices

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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 the following URL: www.iso.org/iso/foreword.html.

This document was prepared by Technical Committee ISO/TC 207, *Environmental management*, Subcommittee SC 7, *Greenhouse gas management and related activities*.

This document is the generic standard for adaptation to climate change.

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.

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Introduction

Climate change is impacting organizations in various ways and will continue to do so for decades to come, owing to greenhouse gases emitted since the start of the Industrial Revolution. The extent of future climate change will depend on the effectiveness of efforts to limit further emissions of greenhouse gases and to manage other factors that impact radiative forcing. Therefore, climate change adaptation is required to reduce the threats and maximize the opportunities presented to organizations of all kinds by a changing climate.

In November 2016, the Paris Agreement came into force to limit global temperature rise and it established a global adaptation goal of "enhancing adaptive capacity, strengthening resilience and reducing vulnerability to climate change, with a view to contributing to sustainable development and ensuring an adequate adaptation response in the context of the temperature goal". Implementation of the Paris Agreement, along with the United Nations Sustainable Development Goals (UN SDGs) as agreed in 2015, helps to drive global efforts towards actions that will reduce greenhouse gas emissions as well as build climate resilience.

Climate change impacts can be direct or indirect and can take various forms such as physical, social, financial, political, regulatory or reputational, and as such climate change adaptation has a very broad scope. This document will enable organizations to prioritize and develop effective, efficient and deliverable adaptation tailored to the specific climate change challenges they face. Its main purpose is therefore to provide organizations with a consistent, structured and pragmatic approach to prevent or minimize the harm that climate change could cause and also to take advantage of opportunities. Applying this approach enables organizations to give appropriate consideration to climate change adaptation when designing, implementing, improving and updating policies, strategies, plans and activities.

The application of this document is intended to be performed alongside other organizational priorities. This includes carrying out all climate change adaptation activities in parallel with, or integrated with, climate change mitigation activities and other sustainability priorities.

Furthermore, application of this document can assist in demonstrating to interested parties that an organization's approach to climate change adaptation is credible. This document can also be of relevance to individuals and organizations involved in purchasing, investment and insurance when seeking to understand another organization's climate change adaptation. It is designed to help organizations develop measures and report on adaptation activity in a verifiable way.

This document's approach is relevant to all sizes and types of organizations where their activities, products and services might be threatened by, or in some cases able to take advantage of, climate change. The approach within this document is iterative, supporting continual learning and improvement processes aimed at all scales, from local to multinational organizations, those in the public and private sectors, voluntary and community organizations, single, small and medium size enterprises. This document is relevant regardless of the scope of adaptation and can be used in the context of both incremental change and transformation.

The purposely non-linear nature of this document's approach allows organizations to adopt its structure no matter what stage they are at in climate change adaptation, from those just starting out to those already engaged in adaptation to those choosing to lead the way. Organizations might find themselves moving back and forth between multiple elements, depending upon the challenges they face and the lessons they learn from delivery experience. The structure is however logical, iterative and designed to be applied into the future. The structure covers:

— pre-planning;

— assessing impacts including opportunities;

— adaptation planning;

— implementation;

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— monitoring and evaluation;

— reporting and communication.

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.

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Adaptation to climate change — Principles, requirements and guidelines

1 Scope

This document specifies principles, requirements and guidelines for adaptation to climate change. This includes the integration of adaptation within or across organizations, understanding impacts and uncertainties and how these can be used to inform decisions.

This document is applicable to any organization, regardless of size, type and nature, e.g. local, regional, international, business units, conglomerates, industrial sectors, natural resource management units.

This document can support the development of sector-, aspect- or element-specific climate change adaptation standards.

2 Normative references

There are no normative references in this document.

3 Terms and definitions

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

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

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

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

3.1
adaptation to climate change
climate change adaptation
process of adjustment to actual or expected *climate* (3.4) and its effects

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

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

[SOURCE: Adapted from IPCC, 2014]

3.2
adaptive capacity
ability of systems, institutions, humans, and other organisms to adjust to potential damage, to take advantage of opportunities, or to respond to consequences

[SOURCE: Adapted from IPCC, 2014]

3.3
adaptive management
process of iteratively planning, implementing and modifying strategies for managing resources in the face of uncertainty and change

Note 1 to entry: Adaptive management involves adjusting approaches in response to observations of their effects and changes in the system brought on by resulting feedback effects and other variables.

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[SOURCE: IPCC, 2014]

3.4
climate
statistical description of weather in terms of the mean and variability of relevant quantities over a period of time ranging from months to thousands or millions of years

Note 1 to entry: The classical period for averaging these variables is 30 years, as defined by the World Meteorological Organization.

Note 2 to entry: The relevant quantities are most often near-surface variables such as temperature, precipitation and wind.

[SOURCE: Adapted from IPCC, 2014]

3.5
climate change
change in *climate* (3.4) that persists for an extended period, typically decades or longer

Note 1 to entry: Climate change can be identified by such means as statistical tests (e.g. on changes in the mean, variability).

Note 2 to entry: Climate change might be due to natural processes, internal to the climate system, or external forcings such as modulations of the solar cycles, volcanic eruptions, and persistent anthropogenic changes in the composition of the atmosphere or in land use.

[SOURCE: Adapted from IPCC, 2014]

3.6
exposure
presence of people, livelihoods, species or ecosystems, environmental functions, services, resources, infrastructure, or economic, social or cultural assets in places and settings that could be affected

Note 1 to entry: Exposure can change over time, for example as a result of land use change.

[SOURCE: Adapted from IPCC, 2014]

3.7
hazard
potential source of harm

Note 1 to entry: The potential for harm can be in terms of loss of life, injury or other health impacts, as well as damage and loss to property, infrastructure, livelihoods, service provision, ecosystems and environmental resources.

Note 2 to entry: In this document, the term usually refers to climate-related physical events or trends or their physical impacts.

Note 3 to entry: Hazard comprises slow-onset developments (e.g. rising temperatures over the long term) as well as rapidly developing climatic extremes (e.g. a heatwave or a landslide) or increased variability.

[SOURCE: ISO/IEC Guide 51:2014, 3.2, modified — Notes 1 and 2 to entry have been added to reflect the definition of "hazard" in IPCC, 2014: Annex II: Glossary. Note 3 to entry has been added.]

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3.8
impact
effect on natural and human systems

Note 1 to entry: In the context of *climate change* (3.5), the term "impact" is used primarily to refer to the effects on natural and human systems of extreme weather and climate events and of climate change. Impacts generally refer to effects on lives, livelihoods, health, ecosystems, economies, societies, cultures, services and infrastructure due to the interaction of climate change or hazardous climate events occurring within a specific time period and the *vulnerability* (3.15) of an exposed society or system. Impacts are also referred to as consequences and outcomes. The impacts of climate change on geophysical systems, including floods, droughts and sea level rise, are a subset of impacts called "physical impacts".

[SOURCE: Adapted from IPCC, 2014]

3.9
indicator
quantitative, qualitative or binary variable that can be measured or described, in response to a defined criterion

[SOURCE: ISO 13065:2015, 3.27]

3.10
interested party
person or *organization* (3.11) that can affect, be affected by, or perceive itself to be affected by a decision or activity

EXAMPLE Customers, communities, suppliers, regulators, non-governmental organizations, investors, employees and academia.

Note 1 to entry: To “perceive itself to be affected” means the perception has been made known to the organization.

[SOURCE: ISO 14001:2015, 3.1.6, modified — "academia" has been added to the example.]

3.11
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, charity or institution, or part or combination thereof, whether incorporated or not, public or private.

[SOURCE: ISO 14001:2015, 3.1.4]

3.12
risk
effect of uncertainty

Note 1 to entry: An effect is a deviation from the expected. It can be positive, negative or both. An effect can arise as a result of a response, or failure to respond, to an opportunity or to a threat related to objectives.

Note 2 to entry: Uncertainty is the state, even partial, of deficiency of information related to, understanding or knowledge of, an event, its consequence, or likelihood.

[SOURCE: ISO 14001:2015, 3.2.10, modified — Note 1 to entry has been modified. Notes 3 and 4 to entry have been deleted.]

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3.13
sustainability
state of the global system, including environmental, social and economic aspects, in which the needs of the present are met without compromising the ability of future generations to meet their own needs

Note 1 to entry: The environmental, social and economic aspects interact, are interdependent and are often referred to as the three dimensions of sustainability.

Note 2 to entry: Sustainability is the goal of sustainable development.

[SOURCE: ISO Guide 82:2014, 3.1]

3.14
transformation
change in the fundamental attributes of natural and human systems

[SOURCE: Adapted from IPCC, 2014]

3.15
vulnerability
propensity or predisposition to be adversely affected

Note 1 to entry: Vulnerability encompasses a variety of concepts and elements including sensitivity or susceptibility to harm and lack of capacity to cope and adapt.

[SOURCE: Adapted from IPCC, 2014]

4 Principles

4.1 General

The principles described in this clause are fundamental to the process of climate change adaptation and are the basis for the requirements described in Clauses 5 to 10. This document does not provide specific requirements for all situations and these principles provide guidance for decisions that need to be made in unanticipated situations. The principles are not requirements.

4.2 Change-oriented perspective

When adapting to climate change, an organization prepares, supports and facilitates organizational change at all relevant levels. Change may be proactive in anticipation of changing circumstances or reactive in response to conditions that have altered. The magnitude of change can range from incremental, involving minor adjustments, through to transformation.

4.3 Flexibility

The organization continually reviews, responds and adapts to new conditions, information, methods and solutions as they emerge. It uses continual learning and adaptive management processes, adopting an iterative approach to improve understanding, decision-making and implementation processes.

4.4 Mainstreaming and embedding

Climate change adaptation is most effective when it is integrated into the organization's processes (such as policies, plans, procedures and implementation).

4.5 Robustness

The organization uses appropriate methodological approaches and information sources that are relevant and lead to robust decision-making and climate change adaptation actions. Information about uncertainties is recognized as a valuable contribution to decision-making.

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