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ISO 14090 Managing the Impact of Climate Change

What is 14090 Managing the Impact of Climate Change?

Contemporary **climate change** includes both **global warming** and its impacts on Earth's weather patterns. There have been previous periods of climate change, but the current rise in global average temperature is more rapid and is primarily caused by humans. Burning fossil fuels adds greenhouse gases to the atmosphere, most importantly carbon dioxide (CO_2) and methane. Smaller contributions come from agriculture, industrial processes, and forest loss. Greenhouse gases warm the air by absorbing heat radiated by the Earth, trapping the heat near the surface. Greenhouse gas emissions amplify this effect, causing the Earth to take in more energy from sunlight than it can radiate back into space.

Due to climate change, deserts are expanding, while heat waves and wildfires are becoming more common. Increased warming in the Arctic has contributed to melting permafrost, glacial retreat and sea ice loss. Higher temperatures are also causing more intense storms, droughts, and other weather extremes. Rapid environmental change in mountains, coral reefs, and the Arctic is forcing many species to relocate or become extinct. Climate change threatens people with food and water scarcity, increased flooding, extreme heat, more disease, and economic loss. Human migration and conflict can also be a result. The World Health Organization (WHO) calls climate change the greatest threat to global health in the 21st century. Even if efforts to minimise future warming are successful, some effects will continue for centuries. These include sea level rise, and warmer, more acidic oceans.

Many of these impacts are already felt at the current 1.2 °C (2.2 °F) level of warming. Additional warming will increase these impacts and may trigger tipping points, such as the melting of the Greenland ice sheet. Under the 2015 Paris Agreement, nations collectively agreed to keep warming "well under 2 °C". However, with pledges made under the Agreement, global warming would still reach about 2.7 °C (4.9 °F) by the end of the century. Limiting warming to 1.5 °C will require halving emissions by 2030 and achieving net-zero emissions by 2050.

Terminology

Before the 1980s, when it was unclear whether the warming effect of increased greenhouse gases were stronger than the cooling effect of airborne particulates in air pollution, scientists used the term *inadvertent climate modification* to refer to human impacts on the climate.

In the 1980s, the terms *global warming* and *climate change* became more common. Though the two terms are sometimes used interchangeably, scientifically, *global warming* refers only to increased surface warming, and *climate change* describes the full effect of greenhouse gases on Earth's climate system. *Global warming*—used as early as 1975—became the more popular term after NASA climate scientist James Hansen used it in his 1988 testimony in the U.S. Senate. Since the 2000s, *climate change* has increased in usage. *Climate change* can also refer more broadly to both human-caused changes or natural changes throughout Earth's history.

Various scientists, politicians and media figures have adopted the terms *climate crisis* or *climate emergency* to talk about climate change, and *global heating* instead of *global warming*. The policy editor-in-chief of *The Guardian* said they included this language in their editorial guidelines "to ensure that we are being scientifically precise, while also communicating clearly with readers on this very important issue".

Nature and wildlife

Recent warming has driven many terrestrial and freshwater species poleward and towards higher altitudes. Higher atmospheric CO_2 levels and an extended growing season have resulted in global greening. However, heatwaves and drought have reduced ecosystem productivity in some regions. The future balance of these opposing effects is unclear. Climate change has contributed to the expansion of drier climate zones, such as the expansion of deserts in the subtropics. The size and speed of global warming is making abrupt changes in ecosystems more likely. Overall, it is expected that climate change will result in the extinction of many species.

The oceans have heated more slowly than the land, but plants and animals in the ocean have migrated towards the colder poles faster than species on land. Just as on land, heat waves in the ocean occur more frequently due to climate change, harming a wide range of organisms such as corals, kelp, and seabirds. Ocean acidification makes it harder for organisms such as mussels, barnacles and corals to produce shells and skeletons; and heatwaves have bleached coral reefs. Harmful algal blooms enhanced by climate change and eutrophication lower oxygen levels, disrupt food webs and cause great loss of marine life. Coastal ecosystems are under particular stress. Almost half of global wetlands have disappeared due to climate change and other human impacts.

Humans

The effects of climate change are impacting humans everywhere in the world. Impacts can now be observed on all continents and ocean regions, with low-latitude, less developed areas facing the greatest risk. Continued warming has potentially “severe, pervasive and irreversible impacts” for people and ecosystems. The risks are unevenly distributed, but are generally greater for disadvantaged people in developing and developed countries.

Food and health

The WHO has classified climate change as the greatest threat to global health in the 21st century. Extreme weather leads to injury and loss of life, and crop failures to undernutrition. Various infectious diseases are more easily transmitted in a warmer climate, such as dengue fever and malaria. Young children are the most vulnerable to food shortages. Both children and older people are vulnerable to extreme heat. The World Health Organization (WHO) has estimated that between 2030 and 2050, climate change would cause around 250,000 additional deaths per year. They assessed deaths from heat exposure in elderly

people, increases in diarrhea, malaria, dengue, coastal flooding, and childhood undernutrition. Over 500,000 more adult deaths are projected yearly by 2050 due to reductions in food availability and quality. By 2100, 50% to 75% of the global population may face climate conditions that are life threatening due to combined effects of extreme heat and humidity.

Livelihoods

Economic damages due to climate change may be severe and there is a chance of disastrous consequences. Climate change has likely already increased global economic inequality, and this trend is projected to continue. Most of the severe impacts are expected in sub-Saharan Africa, where most of the local inhabitants are dependent upon natural and agricultural resources**,** and South-East Asia. The World Bank estimates that climate change could drive over 120 million people into poverty by 2030.

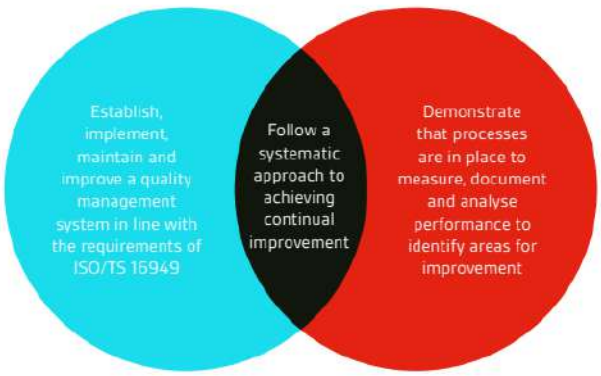
Development of a scientific consensus

In the 1950s, Gilbert Plass created a detailed computer model that included different atmospheric layers and the infrared spectrum. This model predicted that increasing CO_2 levels would cause warming. Around the same time, Hans Suess found evidence that CO_2 levels had been rising, and Roger Revelle showed that the oceans would not absorb the increase. The two scientists subsequently helped Charles Keeling to begin a record of continued increase, which has been termed the "Keeling Curve". Scientists alerted the public, and the dangers were highlighted at James Hansen's 1988 Congressional testimony. The Intergovernmental Panel on Climate Change, set up in 1988 to provide formal advice to the world's governments, spurred interdisciplinary research.

There is a near-complete scientific consensus that the climate is warming and that this is caused by human activities. As of 2019, agreement in recent literature reached over 99%. No scientific body of national or international standing disagrees with this view. Consensus has further developed that some form of action should be taken to protect people against the impacts of climate change. National science academies have called on world leaders to cut global emissions.

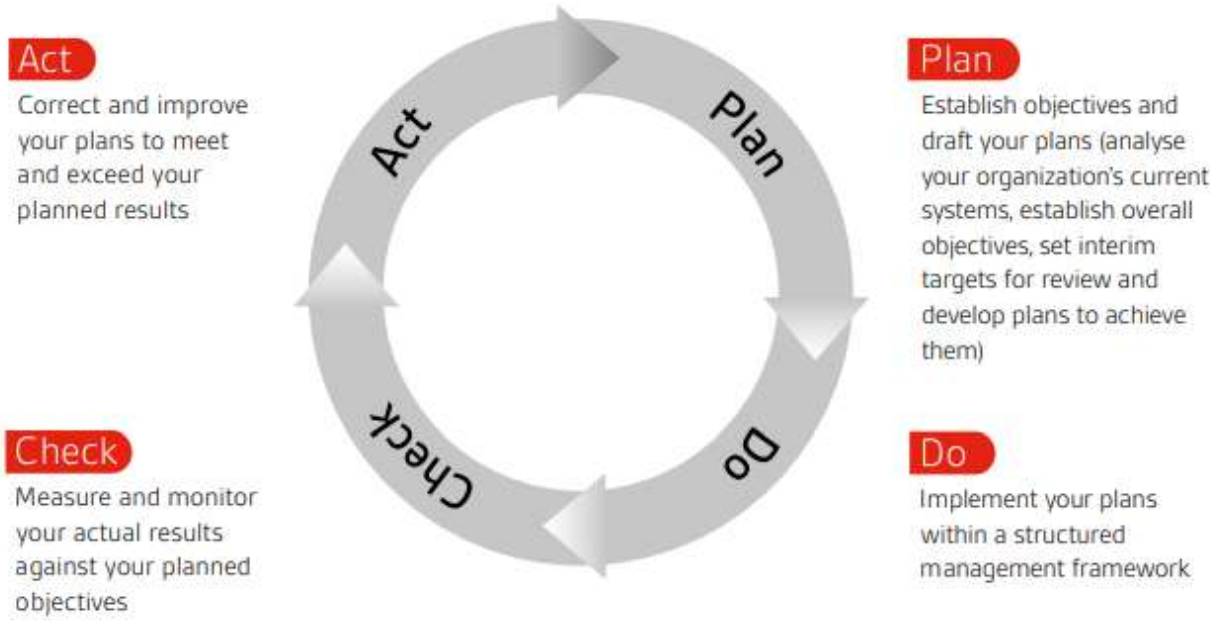
Scientific discussion takes place in journal articles that are peer-reviewed. Scientists assess these every few years in the Intergovernmental Panel on Climate Change reports. The 2021 IPCC Assessment Report stated that it is "unequivocal" that climate change is caused by humans.

The principal requirements of the standard are illustrated below:



The next few pages of the guide takes you through the Plan-Do-Check-Act (PDCA) methodology, common in all ISO management systems and how DCS can help and support you on your ISO/TS 16949 journey.

Understanding the principles of continual improvement



Once we have received your application, we will identify the best people to assist you on your journey – those that know your industry sector and will clearly understand your specific challenges. We also have some useful self-assessment tools to help you get started.