



THINK NAMIBIA

FACT SHEET ON:

Climate Change

THE DEFINITION, CAUSES, EFFECTS AND RESPONSES IN NAMIBIA.

Climate change is a real and urgent challenge that is already affecting people and the environment worldwide. Significant changes are occurring on Earth, including increasing temperatures, rainfall variability, and rising sea levels. This fact sheet discusses key scientific facts that explain the causes and effects of climate change today, as well as projections for the future.

- Human causes include burning fossil fuels, cutting down forests, and developing land for farms, cities, and roads. These activities all release greenhouse gases into the atmosphere.
- Natural causes include changes in the Earth's orbit, the sun's intensity, the circulation of the ocean and the atmosphere, and volcanic activity.

Introduction

In simple terms, climate change is about the change over long periods of time (decades or longer) of temperature, precipitation, atmospheric pressure and winds on a global scale. Global warming is the increase in average surface temperature." (IPCC, 2007). Both human-made and natural factors contribute to climate change:

Although the Earth's climate has changed many times throughout its history, the rapid warming seen today cannot be explained by natural processes alone. Human activities are increasing the amount of greenhouse gases in the atmosphere. Some amount of greenhouse gases is necessary for life to exist on Earth – they trap heat in the atmosphere, keeping the planet warm and in a state of equilibrium. But this natural greenhouse effect is being intensified by human activities (such

The Link Between Greenhouse Gases and Temperature, 1850 - 2009

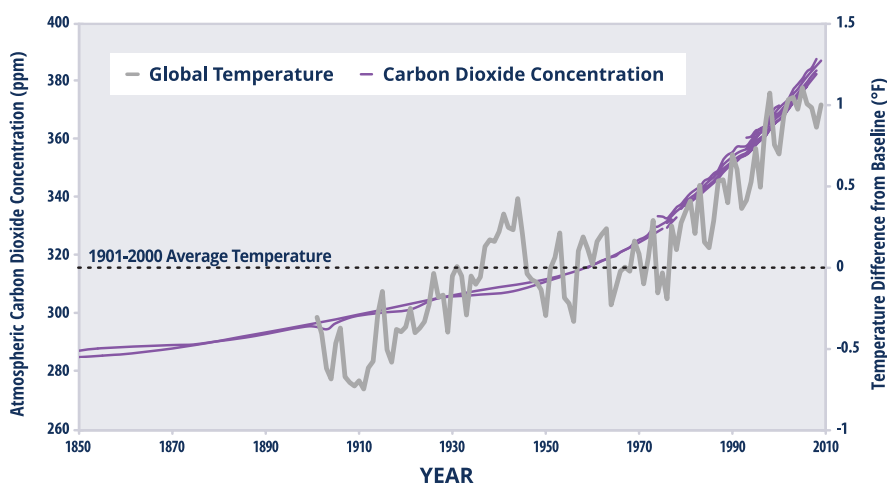


FIGURE 1:
The Link between Greenhouse Gases and Temperature 1850 - 2009

(Source: Carbon Dioxide Information Analysis Center. 2010. <http://cdiac.ornl.gov/> and National Oceanic and Atmospheric Administration. 2010. www.noaa.gov)

as the burning of fossil fuels) that add more of these gases to the atmosphere, resulting in a shift in the Earth's equilibrium.

FIGURE 1 (on the previous page) shows a clear relationship between one of the major greenhouse gases, carbon dioxide, and increase in atmospheric temperature. Emissions of carbon dioxide, an important greenhouse gas, have been increasing since the Industrial Revolution. These emissions are causing carbon dioxide levels to build up in the atmosphere and global temperatures to rise.

In particular, temperatures have gone up at an increased rate over the past 30 years.

FIGURE 2 (below) shows natural greenhouse effect and human enhanced greenhouse effect. The natural greenhouse effect is vital to life processes on earth, as it helps to keep the earth warm. The human enhanced greenhouse effect, is caused by human activities, and is the primary driver of climate change and global warming today. It occurs when more greenhouse gases are added to the atmosphere. The increased amounts of greenhouse gases absorb and reflect more infra-red radiation back to earth. This leads to higher temperatures and has a knock on effect by interfering with many components of earth's natural climate regulation systems.

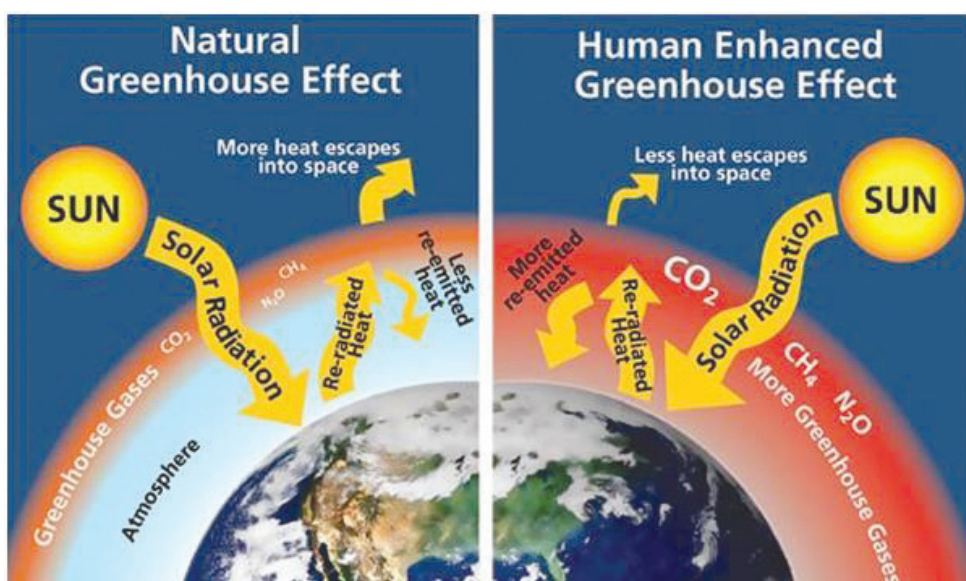


FIGURE 2:
The greenhouse effect
(Source: <https://greenfriendswoodlands.files.wordpress.com/2010/03/2.jpg>)

The Effects of Climate Change

Current and future effects of climate change pose considerable risks to people's health and welfare, and the environment. There is now clear evidence that Namibia is becoming hotter:

- Surface temperatures have risen by 1.2 degrees Celsius (°C) over the last 100 years.
- The frequency of extreme temperatures has increased by 10% over the last four decades.
- Since 1900, climate in Southern Africa has warmed by ~0.8°C. Temperatures in the past ten years have been the highest since measured records started in the 19th century.
- According to recent studies, summer temperatures are projected to increase

between 1°C and 3.5°C and winter temperatures between 1°C to 4°C in the period 2046-2065.

- Maximum temperatures have been getting hotter over the past 40 years, as observed in the frequency of days exceeding 35°C.

The evidence of climate change extends well beyond increases in surface temperatures. It also includes:

- Changing precipitation patterns. Given the variability of the Namibia rainfall patterning, it is difficult to ascribe changes in rainfall patterns to climate change
- Based on the available records, the frequency of drought and floods has increased by ~18%, on average, in the last 4 decades compared to the period before

Impacts of Climate Change in Namibia

Later onset of rainy seasons and thus growing seasons, overall changes in average seasonal temperature, continual threat of drought and unusually severe flooding in parts of Namibia have provided an indication of how climate change could affect the country.

Business and the economy have already felt some impact but the most vulnerable are the communities whose livelihood depend on natural resources – such as subsistent agriculture.

Response to Climate Change in Namibia

The prediction that weather conditions will become more severe during the next decades places the responsibility for adaptation on the shoulders of all Namibians, especially high-level managers and policy and decision makers across all sectors.

It is urgent to take action now to create resilience to the predicted changes by incorporating adaptation initiatives into existing and future policy and developments.

Figure 3 highlights key policies in Namibia's legislative framework to address climate change.

The Government of the Republic of Namibia, through the Ministry of Environment and Tourism (MET) has commissioned several studies on climate change adaptation.

These studies highlight comprehensive current and proposed adaptation strategies across different sectors in Namibia. The studies are freely available to download from the MET website.

For More Information

For detailed information about greenhouse gas emissions, the effects of climate change and the current efforts to address the impacts of climate change, visit the web site for the Intergovernmental Panel on Climate Change at www.ipcc.ch.

KEY MILESTONES IN NAMIBIA'S RESPONSE TO CLIMATE CHANGE

- 1995** **UNITED NATIONS FRAMEWORK CONVENTION ON CLIMATE CHANGE (UNFCCC)**
In 1995 Namibia ratified this international environmental treaty which has the ultimate objective to "stabilise greenhouse gas concentrations in the atmosphere at a level what will prevent dangerous human interference with the climate system."
- 2001** **NATIONAL CLIMATE CHANGE COMMITTEE (NCCC)**
The NCCC has the main function of advising and making recommendations to government on climate change and is comprised of representatives from various government ministries, NGOs, parastatals and the private sector.
- 2011** **NATIONAL CLIMATE CHANGE POLICY (NCCP)**
The Policy takes a cross-sectoral approach and elaborates on climate change adaptation and mitigation in Namibia. The policy outlines a coherent, transparent and inclusive framework on climate risk management in accordance with Namibia's national development agenda, legal framework, and in recognition of environmental constraints and vulnerability.
- 2012** **DISASTER RISK MANAGEMENT ACT**
The Act provides for the establishment of institutions for disaster risk management in Namibia. A disaster risk management plan is in place to cover amongst others drought and flood events from climate change.
- 2014** **NATIONAL CLIMATE CHANGE STRATEGY AND ACTION PLAN, 2013-2020 (NCCSAP)**
The Strategy and Action Plan lays out the guiding principles responsive to climate change that are effective, efficient and practical in order to realise the goals of the NCCP. It further identifies priority action areas for adaptation and mitigation.

Source: Various key documents comprising the national legal framework for adapting to and mitigating the impacts of climate change

FIGURE 3:
Namibia's Climate Change legislative framework

Glossary:

Atmosphere

The gaseous envelope surrounding the Earth. The dry atmosphere consists almost entirely of nitrogen and oxygen, together with trace gases including carbon dioxide and ozone.

Adaptation

Adjustment in natural or human systems in response to actual or expected climatic stimuli or their effects, which moderates harm or exploits beneficial opportunities.

Mitigation

An anthropogenic intervention to reduce the anthropogenic forcing of the climate system; it includes strategies to reduce greenhouse gas sources and emissions and enhancing greenhouse gas sinks.

Extreme weather events

An event that is rare within its statistical reference distribution at a particular place. Definitions of 'rare' vary, but an extreme weather event would normally be as rare as or rarer than the 10th or 90th percentile. By definition, the characteristics of what is called 'extreme weather' may vary from place to place. Extreme weather events may typically include floods and droughts.

Greenhouse gases

Greenhouse gases are those gaseous constituents of the atmosphere, both natural and anthropogenic, that absorb and emit radiation at specific wavelengths within the spectrum of infrared radiation emitted by the Earth's surface, the atmosphere, and clouds. This property causes the greenhouse effect. Water vapour (H₂O), carbon dioxide (CO₂), nitrous oxide (N₂O), methane (CH₄) and ozone (O₃) are the primary greenhouse gases in the Earth's atmosphere. As well as CO₂, N₂O, and CH₄, the Kyoto Protocol deals with the greenhouse gases sulphur hexafluoride (SF₆), hydrofluorocarbons (HFCs) and perfluorocarbons (PFCs).

Resilience

The ability of a social or ecological system to absorb disturbances while retaining the same basic structure and ways of functioning, the capacity for self-organisation, and the capacity to adapt to stress and change.

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