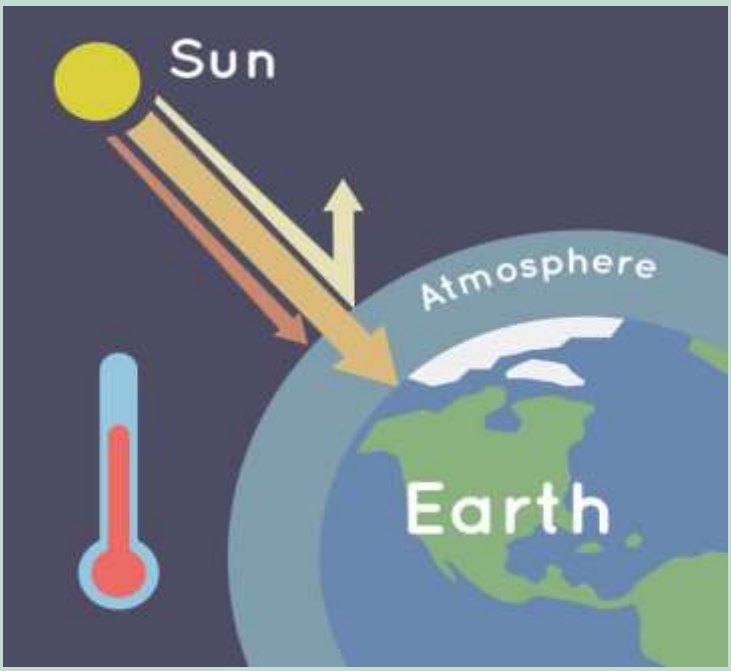
Fact sheet 1: CLIMATE CHANGE

DEFINITION, DRIVERS, EFFECTS, AND IMPACTS ON NAMIBIA'S VULNERABLE SECTORS.

Climate change is an actual and urgent challenge that is affecting people and the environment worldwide. Noteworthy changes are occurring on earth, including the increase temperature, rainfall variability, and rising sea levels. This factsheet discusses key scientific facts that explain the causes and effects of climate change today.

Introduction

In simple terms, climate change refers to any significant change in measures of climate (such as **temperature, precipitation, or wind**) lasting for an extended period (decades or longer). However, both natural factors and man-made contribute to climate change.



Source: NASA/JPL-Caltech

Drivers of climate change

- ✓ Anthropogenic actions such as burning fossil fuels, cutting down forests, and developing land for farms, cities, and roads. These activities increase the release greenhouse gases into the atmosphere.
- ✓ Deforestation which decreases the greenhouse gas sinks (forests and oceans).
- ✓ Natural causes include changes in the Earth's orbit, the sun's intensity, the circulation of the ocean and the atmosphere, and volcanic activity.

Greenhouse effect

The sun provides energy, which the Earth receives in the form of sunlight. Some of this energy is absorbed by the Earth's surface and causes it to warm up, whilst some of it is reflected into space as infrared radiation, which helps the Earth to cool down. However, greenhouse gases form a layer that prevent part of this radiation from being released back into space and instead the heat is trapped in the atmosphere and warms the Earth's surface as a result.

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, the 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 on Namibia's vulnerable sectors

WATER: Increasing pressure on an already challenged system

Namibia is exposed to large variability in rainfall between seasons and years, making the country prone to water scarcity, drought and flooding (Republic of Namibia, 2015).

At a 1.5°C and above increase in global temperature, the step changes in local temperature and rainfall will drive further water scarcity.

Source: ASSAR Namibia,2014 and 2018

AGRICULTURE: Decreases in crop and livestock productivity

Namibia's agricultural sector is extremely vulnerable to the impacts of 1.5°C warming and higher. For example, prolonged drought conditions in 2018 led to the death of 300 cattle and relocation of 17,000 animals in the Omaheke zone in the arid north (Relief web, 2018).

The largely arid climate does not allow for extensive agricultural activities, with livestock rearing making up most of the sector. Continued warming and drying will most likely lead to increasing losses in crop and livestock activities.

Source: Assar Namibia,2014 and 2018

BIODIVERSITY: Increased loss of endemic vegetation and animals

Namibia is home to a diversity of endemic vegetation and wildlife. Global temperature rises of 1.5°C and above is expected to negatively affect the distribution of biodiversity within the country.

The endemic vegetation in the Karoo Biome (arid south zone) is particularly vulnerable to the effects of reduced rainfall (Midgley et al., 2005).

The impacts on biodiversity will affect livestock production (due to reduce grazing), malnutrition, and the tourism industry (Reid et al., 2008).

Source: Assar Namibia,2014 and

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.

Anthropogenic

Relating to or resulting from the influence of human beings on nature.

Greenhouse effect

The rise in temperature of the earth because certain gases in the atmosphere trap energy from the sun.

Mitigation

An intervention aimed at reducing the severity of climate change by controlling emissions of greenhouse gases and/or enhancing carbon sinks.

REFERENCES:

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