Primary Education Sector

AFRICA ADAPTATION PROGRAMME FOR CLIMATE CHANGE
REPUBLIC OF MAURITIUS

Factsheet

Africa Adaptation Programme for Climate change: Republic of Mauritius

Atmosphere

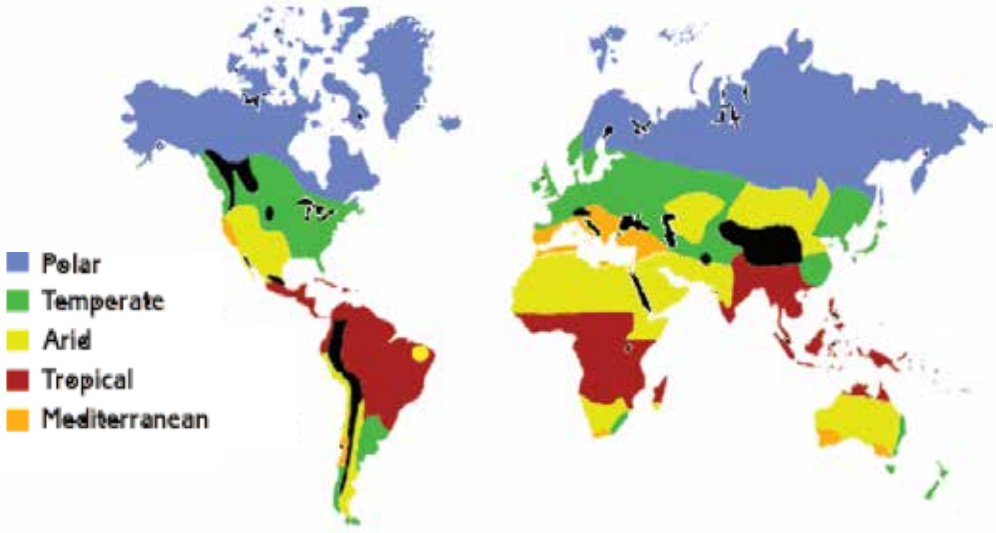
The Earth's atmosphere is the gaseous layer that surrounds the planet Earth. It contains about 4/5 of nitrogen and 1/5 of oxygen, with a few other gases including ozone. The atmosphere protects life on earth and it moderates the temperature between day and night.

Weather

Weather refers to the short-term atmospheric conditions that we see at any one moment (e.g cloud, wind, rainfall).

Climate

Climate is the average weather conditions occurring in the atmosphere over a long period of time (at least 30 years). The average climate over the world is called the global climate. The diagram below shows that the world has different climates at various regions.



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OUR Climate | Choice | Future

"Climate helps you decide what clothes to buy for the forthcoming season; weather helps you decide what clothes to wear on a particular day."

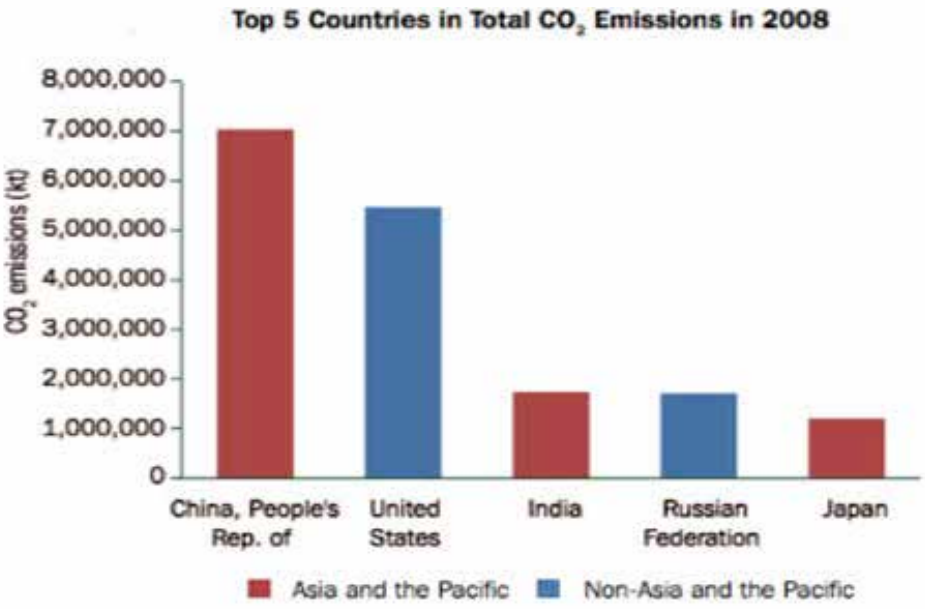
Climate Change: change in the earth's climate over time. Our planet has warmed and cooled many times during the 4.65 billion years of its history. This change can cause, among other things, increase in average global temperatures, changes in rainfall patterns; can lead to sea level rise, more droughts, stronger cyclones, more flooding and an increase in several health problems.

Climate change can be due to natural variabilities and human activities, specially the build up of greenhouse gases (GHGs) in the atmosphere, that traps the sun's heat.

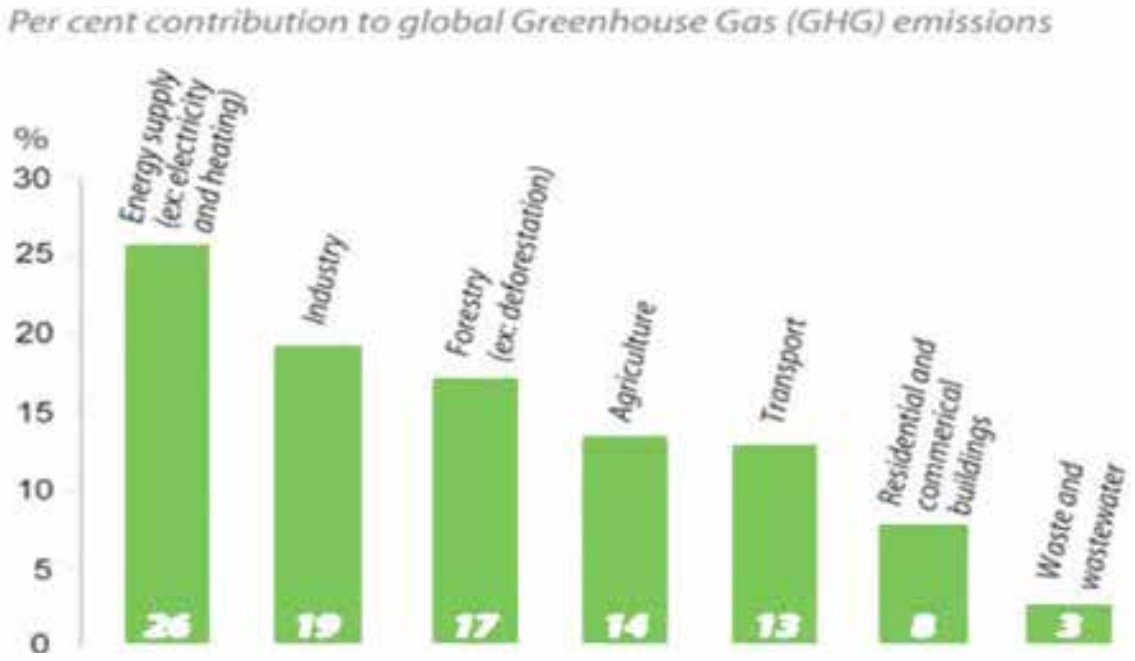
Natural climate variability refers to changes caused by natural processes such as changes in the earth's orbit around the sun, volcanic eruptions or even periods of increased and decreased solar activity.

Greenhouse gases (GHGs) are heat-trapping gases that warm up the planet (atmosphere land and oceans). These gases include carbon dioxide and methane. The increased warming up of the planet is known as **global warming**.

Different countries produce GHGs at different rates. The main GHG which is responsible for global warming is **carbon-dioxide**.
Top 5 carbon dioxide emitting countries (2008) : China, USA, India, Russia and Japan (see diagram below), but this trend is changing.



The diagram below shows that the two sectors which emit the most GHGs are energy supply and industrial activities.



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How do I contribute to GHG emissions?

Driving 20 km to work	5 kg
Watching TV for 1 hour	99 g
Microwaving my lunch for 5 minutes	43 g

For e.g, when we travel a distance of 20 km by car, 5 kg of GHGs are released in the astmosphere. We carry out many similar activities and emit a large amout of GHGs (especially carbon dioxide) every day.

Climate change in Small Island Developing States

According to the 2007 IPCC report, small islands are expected to experience serious impacts from climate change. Some of the latest research estimates a global sea level rise between 0.6 and 1.2 metres by the year 2100. Small Island Developing States (SIDS), where low-lying coastal plains have provided locations for human settlement are more at risk.

Beach erosion and coral bleaching will reduce the extent value of fisheries and tourism - both important economic activities for many SIDS. By the year 2050 the projected reduction in water resources will pose severe threats to food security, sanitation, and health on many islands.

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GREENHOUSE GAS	MAIN SOURCE	
CARBON DIOXIDE	1. Production of electricity (e.g. coal-fired power stations).	
	2. The burning of fossil fuels (e.g. coal, heavy oil) In industries More than 80% of the energy produced in Mauritius comes from imported fossil fuels.	
	3. All means of transportation (air, land, sea)	
	4. Deforestation	

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GREENHOUSE GAS	MAIN SOURCE	
METHANE	1. Extraction and transportation of fossil fuels such as natural gas and coal	
	2. Livestock farming (e.g. the rearing of cattle)	
	3. Agricultural practices (wet rice cultivation)	
	4. Decaying of organic waste in landfills such as at Mare Chicose	
OTHER GASES (for e.g, nitrous oxide, hydroflurocarbons)	1. Use of fertilizers 2. Burning of fossil fuels 3. Burning of solid waste	

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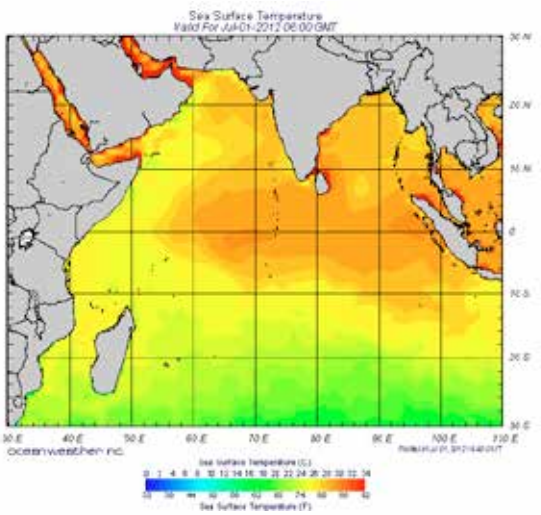
CLIMATE CHANGE OBSERVATIONS AROUND THE WORLD

Observations		
Increase in Air Temperature	• The Earth's average temperature has increased by about 0.8°C in the last 100 years. • Eleven of the warmest years during the past recent 12 years are: 1995-2006 • Average temperature in the Arctic region (Alaska, Western Canada, and Eastern Russia) has risen by twice the global average. Every 10 years, there is a decrease of 2% in snow cover in the northern hemisphere.	Melting of glaciers in Alaska due to increase in temperature:  *Muir Glacier, August 1941*  *Muir Glacier, August 2004*
Increase in Sea Surface Temperature	Average global sea surface temperature increased by 0.35°C from 1961 to 2003. It takes more heat to change the temperature of a given volume of water than it does for an equal volume of air. The earth's oceans absorb 20 times as much heat as the atmosphere. So, oceans are warmer now than in the last 50 years.	

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Observations

Increase in Sea Level

The sea level is rising at an alarming rate of about 3mm per year. It will rise between 20 to 50 cm by the year 2100

- Islands like the Maldives (Indian Ocean), Tuvalu and Kiribati (Pacific Ocean) are at the risk of being submerged.
- Two of the Kiribati Islands have already been submerged and the main island constantly faces flooding from high tides.
- Around two thirds of the rise in sea level is due to the expansion of the oceans (that is, they occupy more space) and one third, from the melting of polar ice.

Variation in Rainfall Pattern

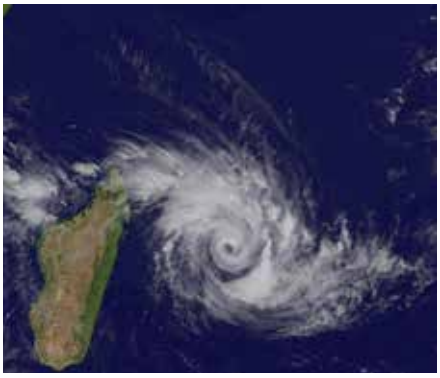
Many parts of the world are witnessing changes in rainfall patterns leading to more frequent floods in some places and droughts in other areas.
Over the last 100 years, there has been more rainfall in Northern Europe and less in Southern Africa.

Rainfall is very likely to increase in the high latitudes and many equatorial regions, while decreasing in parts of the tropics and subtropics.

More Cyclones, Typhoons and Hurricanes

The number of hurricanes in the Atlantic has increased since 1995. There is also some evidence that the intensity is increasing.

In year 2005, hurricanes Katrina, Rita and Wilma caused widespread destruction and environmental harm to coastal communities in the United States Gulf Coast region.



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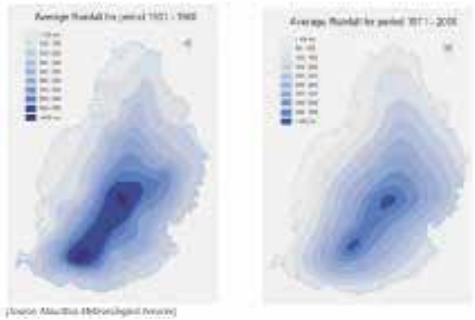
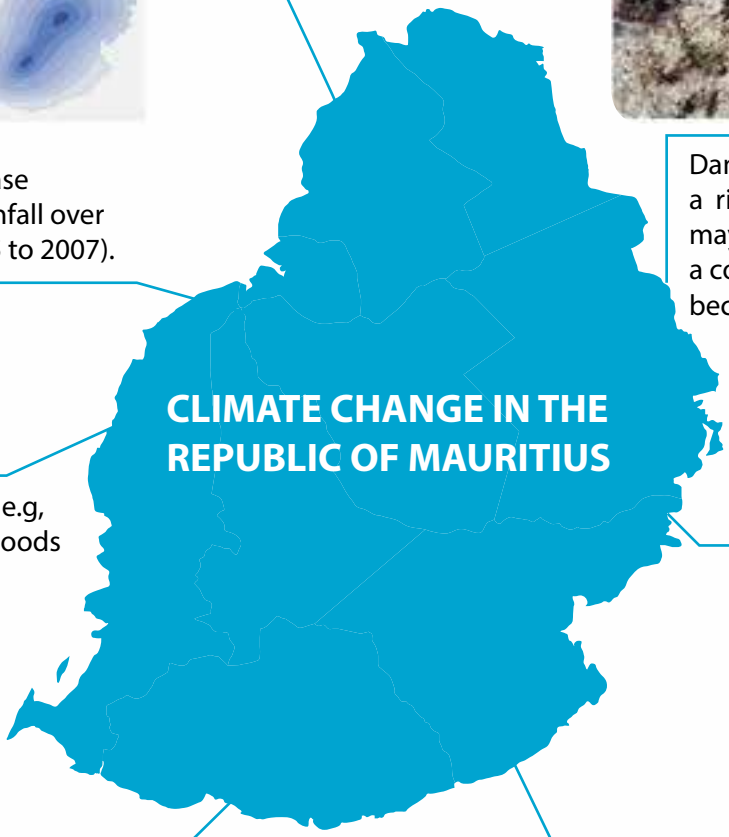
Effects of climate variability or change in the Republic of Mauritius



There has been a decrease by 8% in the annual rainfall over the past 100 years (1905 to 2007).

Average temperature has increased by about 0.7^0 C since 1951 .

Damage to coral reefs. For e.g., a rise in ocean temperature may lead to coral bleaching, a condition whereby corals become white and die.



Extreme weather conditions, e.g, heavy torrential rains, flash floods

The average sea level during the past decade has been around 1.2 cm (1.2 mm yearly)

More rise in sea level, more coastal erosion

Emergence of new vector borne diseases (e.g Chikungunya)

***Flash flood: sudden and severe flood**

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Loss of Biodiversity	**Coral bleaching** More than 60% of the coral has been bleached. Forest fires are due to an increase in air temperature. Places where these are mostly occurring include savannah grasslands in Africa, tropical forests in Brazil and forests in northern regions such as Alaska, Russia and Canada. A golden toad species was wiped out by a disease made more prevalent by climate change. The Apollo, one of the many butterfly species is threatened by global warming.	 *Healthy coral off the coast of Indonesia (right). The left part shows the bleached coral following a rise in sea temperature.*  *A forest fire in Russia caused by high temperatures, August 2010*
Impacts on Health	**More diseases** 1. Extreme high air temperatures can lead to death from heart and respiratory diseases, particularly among elderly people. 2. More heat waves have been observed over the past 5 decades. In 2003, a heat wave in Europe caused about 50,000 deaths. 3. By 2085, it is projected that 50 to 60% of the global population would be at risk of dengue. 4. There is loss of life, injuries, life long handicaps from intense weather events (cyclones, storms) 5. Heavy rainfall events may lead to increased risk of diseases related to contaminated water (water-borne) and to unsafe food (food-borne) 6. Droughts may lead to malnutrition and starvation particularly affecting children's growth and development.	 *Malaria-carrying mosquito*

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Agriculture/ Food and Water Supply	**Scarcity of food and water** 1. Changes in rainfall patterns, rise in sea level, floods and droughts harm crops and reduce yields. Places such as Australia and the Sahel in Africa constantly face droughts which reduce the supply of water for irrigation. 2. Heat waves decrease the population of livestock such as cattle. 3. Fisheries are also affected by a rise in ocean temperature. 4. Droughts threaten lives due to scarcity of water. By as early as 2030, 75 million to 250 million people in Africa will suffer water shortages.	 *Corn crops affected by drought*  *Women looking for water in a drought-affected area in India*

* In 2007, the Nobel Peace Prize was awarded to the Intergovernmental Panel on Climate Change (IPCC) and Al Gore for work on climate change.