NDA

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GREEN CLIMATE FUND
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NDA - PROGRAMMING FOR SUSTAINABLE CLIMATE FINANCING

Climate Change in

ZAMBIA

What is climate change?

Whatever the different definitions of climate change, they all have certain things in common - that is acknowledging that climate change brings about; change in weather patterns, abnormal temperature changes, abnormal (reduced or increase) rainfall patterns, change in seasons and durations.

The Australia Academy of Science understands climate change as change in the pattern of weather, and related changes in oceans, land surfaces and ice sheets, occurring over time scales of decades or longer. A long-term change in the earth's climate, especially a change due to an increase in the average atmospheric temperature, for instance, melting glaciers are a sign that life in the Arctic is affected by climate change.

NASA's definition is that climate change is a change in the usual weather found in a place. This could be a change in how much rain a place usually gets in a year. Or it could be a change in a place's usual temperature for a month or season. Climate change is also a change in Earth's climate. This could be a change in Earth's usual temperature. Or it could be a change in where rain and snow usually fall on Earth. Weather can change in just a few hours. Climate takes hundreds or even millions of years to change.

Anthropogenic climate change (global warming) caused by human activity, as opposed to changes in climate that may have resulted as part of Earth's natural processes.

A long-term change in the earth's climate, especially a change due to an increase in the average atmospheric temperature: Melting glaciers imply that life in the Arctic is affected by climate change. Climate change is when there is a big difference in normal climate patterns over a long amount of time, usually 30 – 35 years. Climate change is any significant long-term change in the expected patterns of average weather of a region (or the whole Earth) over a significant period of time.

What causes climate change?

Climate change is caused by factors such as biotic processes, variations in solar radiation received by Earth, plate tectonics, and volcanic eruptions. Certain human activities have been identified as primary causes of ongoing climate change, often referred to as global warming.

Green houses emissions

A greenhouse gas is any gaseous compound in the atmosphere that is capable of absorbing infrared radiation, thereby trapping and holding heat in the atmosphere. By increasing the heat in the atmosphere, greenhouse gases are responsible for the greenhouse effect, which ultimately leads to global warming.

When sunlight reaches Earth's surface, it can either be reflected back into space or absorbed by the earth. Once absorbed, the planet releases some of the energy back into the atmosphere as heat (also called infrared radiation). Greenhouse gases like water vapor (H_2O), carbon dioxide (CO_2) and methane (CH_4) absorb energy, slowing or preventing the loss of heat to space. In this way, GHGs act like a blanket, making Earth warmer than it would otherwise be. This process is commonly known as the "greenhouse effect," according to the United States environmental Protection Agency.

Deforestation

Burning or cutting down trees reverses the effects of carbon sequestration and releases greenhouse gases (including carbon dioxide) into the atmosphere. Furthermore, deforestation changes the landscape and reflectivity of earth's surface, i.e. decreasing albedo.

Farming

How does farming affect climate change?

In addition to being a significant user of land and consumer of fossil fuel, agriculture contributes directly to greenhouse gas emissions through practices such as rice production and the raising of livestock; according to the Intergovernmental Panel on Climate Change.

Who is affected?

It is you!
In Zambia, approximately 70 out of every 100 people are subsistence farmers who depend on rain fed agriculture. These are the most affected, of which the majority are women and children, especially in rural areas.

Rainfall

Due to climate change, the duration of seasons, for instance rainy seasons, may reduce. We may experience droughts. This has been observed in some parts especially Southern, Western, Lusaka and Eastern provinces.

We may also experience excessive rainfall, as experienced sometimes in some parts of Eastern, Muchinga, Northern, Luapula, North Western and Copperbelt Provinces.

What the Zambian Government is doing to addressing the climate change challenges

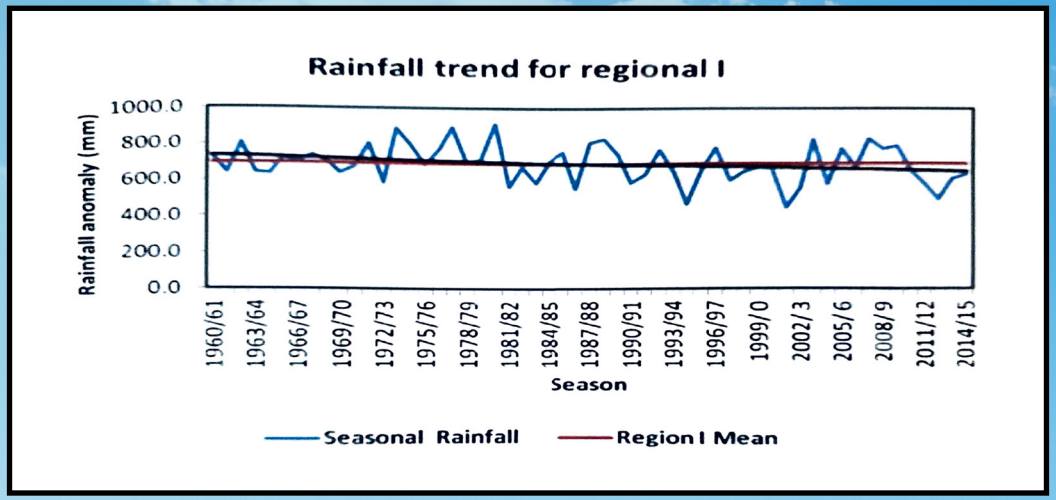
The Government of the Republic of Zambia is aware of the negative impact climate change on the people, economic growth and national development. It is aware how it could reverse the economic gains made in the past.

Government is, therefore, addressing and mitigating climate change through a number of projects and programmes. The Government developed the National Policy on Climate Change (2016) which outlined an institutional framework to coordinate climate change actions in Zambia.

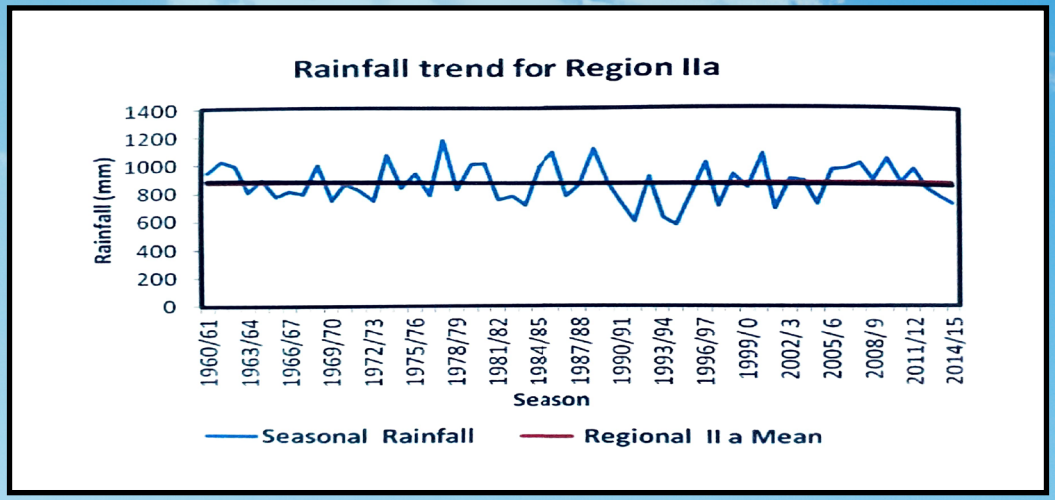
What causes climate change?

- **You must stop cutting down trees indiscriminately.**
- **Stop the Chitemene system and large scale clearing of trees for agriculture.**
- **Stop cutting trees at the river source for settlement or gardening.**
- **You must also stop greenhouse gas emissions.**

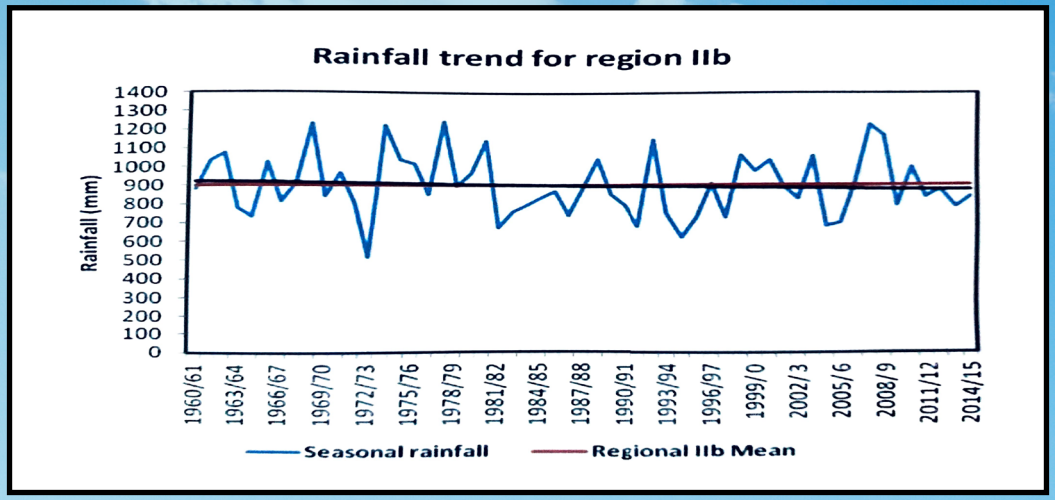
The following graphs below shows the rainfall variations from 1961 to 2015 with clear evidence of departure from the norm of rainfall due to human activities, and it is feared that if these human activities are not checked, the situation could worsen.



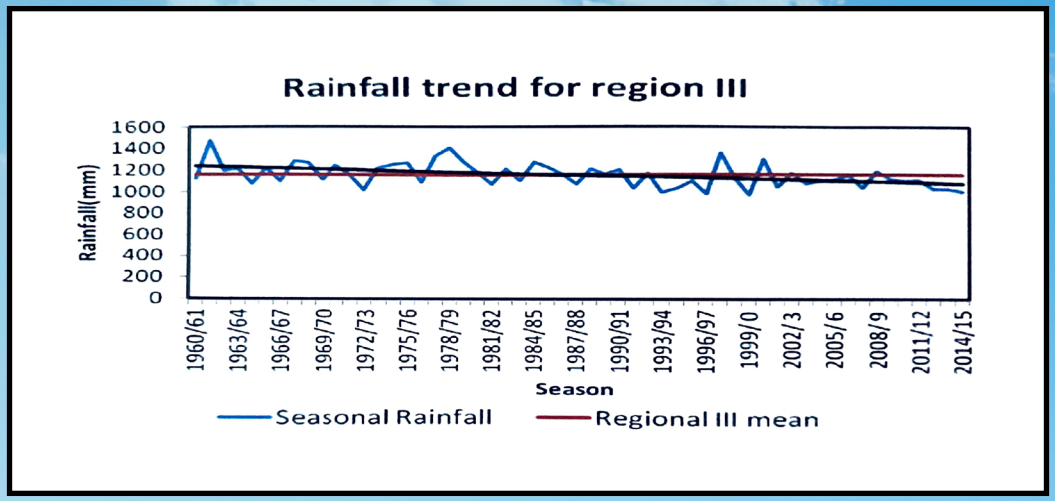
The Red line shows average rainfall (between 600mm – 800mm) over the period 1961 to 2015, while the blue zigzag line depicts fluctuations of rainfall over the same period, The graph therefore shows slight reduction of rainfall from normal in Agro – Ecological Zone I. This zones consists of parts of southern, western, and eastern provinces. The rainfall pattern has been cyclic due to climate variability attributed to intra annual variation of ENSO (Elnino Lanina Oscillation). Increase in temperature causing excess evaporation may have effect on vegetation if human activities are left unchecked.



Region II is divided into two, IIA and IIB. In region IIA which is parts of Central, Lusaka, Muchinga and parts of southern provinces, there is no significant Change from normal although the rainfall pattern has been cyclic due to climate variability attributed to intra annual variation of ENSO (Elnino Lanina Oscillation). The blue line shows fluctuations of rainfall while red shows the slight reduction from the normal.



In Region IIB, there is No significant Change from normal. The rainfall pattern has been cyclic due to climate variability attributed to intra annual variation of ENSO. This region consists of parts of North Western and parts of parts of western provinces.



The region has seen a slight reduction in rainfall from normal since 2000/01 season. This could be attributed to alteration in the hydrological cycle as a result of mining activities (North-west and Copperbelt), deforestation (charcoal burning) especially in Isoka, Mpulungu and Mbala areas. However, no significant change from normal. Region III has seen no shift to other region. The region covers parts of Muchinga, Northern, Luapula and parts of Northern Western Provinces.

Conclusion

Rainfall pattern in the three agro-ecological Zones has been cyclical. This has been due to climate variability caused mainly by inter-seasonal variation of the Elnino Lanina Oscillation. Other effects such deforestation, siltation of body waters, mining and other human activities have played a role in altering the hydrological cycle and consequently reducing causes of rainfall by the local effects. If all these activities are not taken care off there is a high likelihood of climate change to worsen. The stations have not shifted from one region to another but have maintained the rainfall amounts within the regional normal as evident by the graphs above. It is important to note that the impact of climate change has resulted in late onset of rains, and shorter rain season which also ends earlier, for instance, the 2018/2019 rain season.

Solution

- There is need for re-planting of trees across the country as trees;
- Need to protect watersheds;
- Address policy inconsistencies and conflicts.

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