

UNDERSTANDING ABC'S OF CLIMATE CHANGE



CLIMATE CHANGE: WHAT IS IT

- The atmosphere is a dynamic fluid that is continually in motion.
- a change in global or regional climate patterns, of the mid to late 20th century onwards attributed largely to the increased levels of atmospheric carbon dioxide produced by the use of fossil fuels
- Periodic modification of Earth's climate brought about as a result;
 - ✓ changes in the atmosphere
 - ✓ interactions between the atmosphere and various other geologic, chemical, biological, and geographic factors within the Earth system.

ABC'S OF CLIMATE CHANGE

- Last 30 years humans;
 - ✓ released as much greenhouse gas as that of our entire history up until 1990
 - ✓ released about 41 per cent of all CO₂ released since 1750
 - ✓ CO₂ levels now are higher than last 2 million years.
 - ✓ The world has warmed by just under 1.1C, compared to the "pre-industrial" baseline

- Warming has accelerated
- Devastating impacts of extreme weather around the world.
- Deeply gender differentiated impacts

- Climate change threatens to exacerbate all types of inequalities and inequities

IMPLICATION OF CC

- Weather related events
 - ✓ Frequency and intensity of fires
 - ✓ Rainfall related intense events; flooding
 - ✓ Droughts
- Socia-economic
 - ✓ Increased vulnerability
 - ✓ Poverty
 - ✓ Disease burden

Environmental

Impacting people

- Is Climate Change a myth or Reality?
- Impacting;
 - ✓ People
 - ✓ communities,
 - ✓ organisations,
 - ✓ development ambition
 - ✓ Livelihood
 - ✓ wellbeing

- Security challenge of extreme magnitude of the 21st century
- Increased vulnerability and poverty
- Reversing development

- .



DISRUPTION

- Affect;
 - ✓ local food security,
 - ✓ Sovereignty,
 - ✓ livelihood
 - ✓ reverse the basics of foundation of development ambition

- Our climate is changing
- The most marginalized communities bear the brunt
- Local communities historically shut out of decisions made about their futures
- Most vulnerable populations at risk

Starting point: Global warming



- Earth's average increase of surface temperature due to GHG's (burning of fossil fuels)
- long-term warming of the planet
- Forms atmosphere thickening blanket, trapping the sun's heat and causing the planet to warm up

Consequence: Rising sea levels



- Small increase can have devastating effects on coastal habitats further inland
- Cause destructive erosion,
- Wetland flooding,
- Aquifer and agricultural soil contamination
- Lost habitat for fish, birds, and plants.
- Hurricanes and typhoons occurrences;
 - ✓ more rain,
 - ✓ powerful storm surges

Driver: human activities

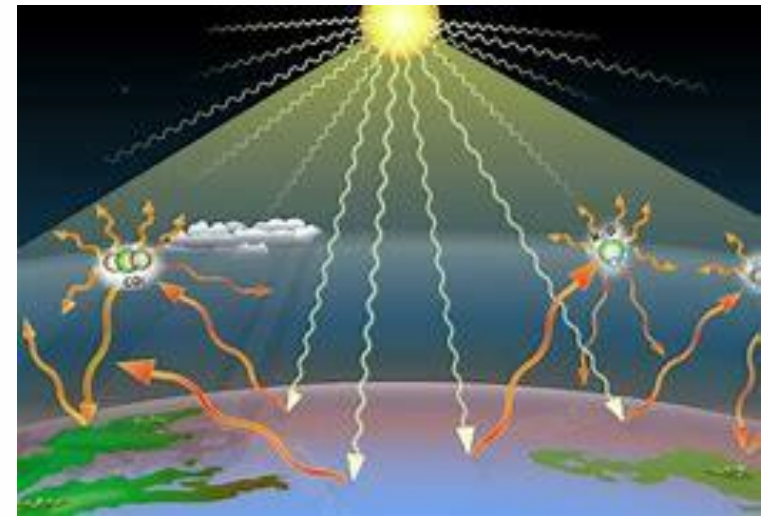
Driven by Human activities;

- ✓ greenhouse gas emissions,
 - carbon dioxide,
 - chlorofluorocarbons,
 - water vapor,
 - methane, and
 - nitrous oxide.



Fact 4: Green House gases

- A greenhouse gas (GHG or GhG) is a gas that absorbs and emits radiant energy at thermal infrared wavelengths, causing the greenhouse effect.
- The greenhouse effect refers to the way the Earth's atmosphere traps and absorbs solar energy.



Facts: IPCC

- THE INTERGOVERNMENTAL PANEL ON CLIMATE CHANGE (IPCC) IS THE UNITED NATIONS BODY FOR ASSESSING THE SCIENCE RELATED TO CLIMATE CHANGE

THE INTERGOVERNMENTAL PANEL ON CLIMATE CHANGE (IPCC) COLLECT AND ASSESS EVIDENCE ON CLIMATE CHANGE

SINCE THEN, IT HAS PRODUCED A SERIES OF ALARMING CLIMATE MODELS. PRODUCES MODELS, MOST OF THE PLANET'S ICE COVER WOULD MELT BY THE END OF THE CENTURY AND TRIGGER A CASCADE OF IRREVERSIBLE CONSEQUENCES, INCLUDING FLOODING STRONG ENOUGH TO ENGULF ENTIRE CITIES.

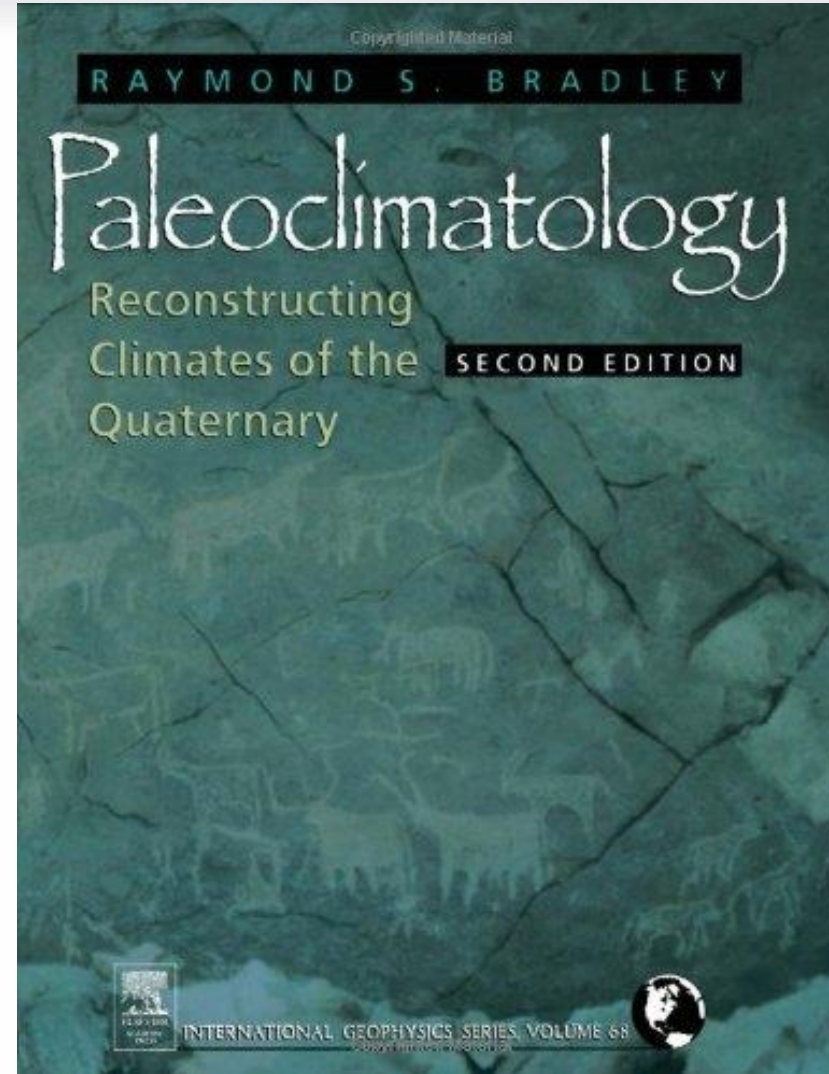
AR6 Synthesis Report: Climate Change 2023



Fact: Paleoclimatology

- study of the climate history of Earth
- helps people better understand the climate of Earth in the past and how it relates to the present and future climate

- study and understand how other environmental factors function,
 - ✓ continental drift,
 - ✓ solar energy,
 - ✓ greenhouse gases in the atmosphere, and
 - ✓ variation in Earth's orbit affect the climate of Earth over time.



CONCEPTS: CLIMATE CHANGE

- **Climate mitigation:**

- ✓ any action taken to permanently eliminate or reduce the long-term risk and hazards of climate change to human life, property
- ✓ “An anthropogenic intervention to reduce the sources or enhance the sinks of greenhouse gases

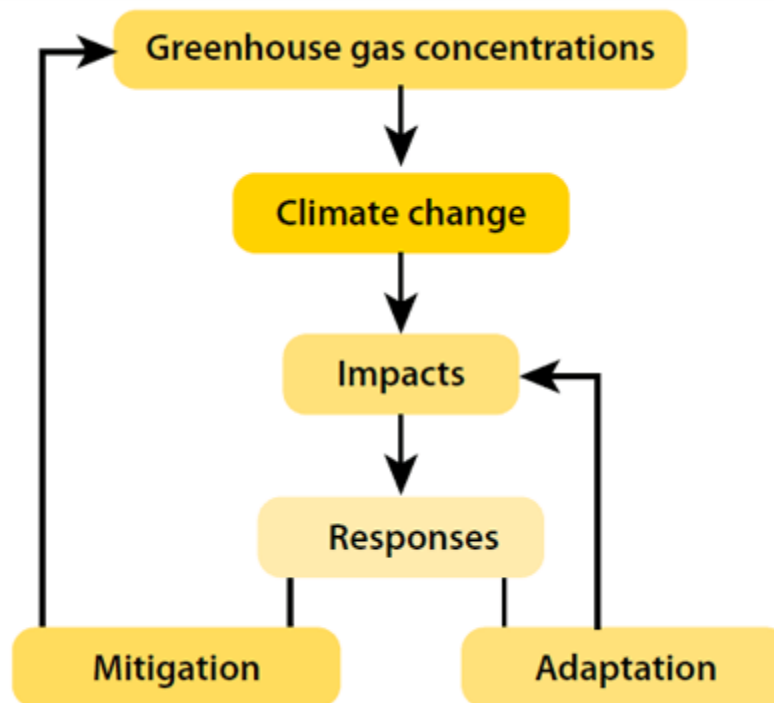
- **Climate adaptation:**

- ✓ ability of a system to adjust to climate change (including climate variability and extremes)
- ✓ moderate potential damage, to take advantage of opportunities, or to cope with the consequences.

DIFFERENCE BETWEEN ADPTATION AND MITIGATION

	Mitigation	Adaptation
Spatial scale	Primarily an international issue, as mitigation provides global benefits	Primarily a local issue, as adaptation mostly provides benefits at the local scale
Time scale	Mitigation has a long-term effect because of the inertia of the climatic system	Adaptation can have a short-term effect on the reduction of vulnerability
Sectors	Mitigation is a priority in the energy, transportation, industry and waste management sectors	Adaptation is a priority in the water and health sectors and in coastal or low-lyi

RESPONSE FLOW



Conceptual model of adaptation and mitigation

	Objective View	Subjective View	Subjective Behaviour
Adaptation	<pre> graph TD A[Risks & Opportunities for Agriculture] --> B[Adaptation Strategies] B --> C[Consequences] C --> A </pre>	Perception and Evaluation of Climate Change Consequensies, Risks and Opportunities for Agriculture and Adaptation Strategies → Social Constructs	Decision Making and Behavioural Change leading to a Choice of Adaptation (Risk Minimazation & Opportunities Maximazation) Strategies → Individual Behaviour
Mitigation	<pre> graph TD D[Negative Externalities from Agriculture] --> E[Climate Change] E --> F[Mitigation Strategies] F --> D </pre>	Perception and Evaluation of Climate Change, Negative Externalities from Agriculture and Mitigation Strategies → Social Constructs	Decision Making and Behavioural Change leading to a Choice of Mitigation (Risk Minimazation and Opportunities Maximazation) Strategies → Individual Behaviour

Achieving mitigation and adaptation

	Livelihood	Mitigation	Adaptation
Carbon benefit	[Income]	+++	+
Wood energy	[Asset]	+++	++
Buffer climate risks/ water recycling	[Asset]	++	+++
Improve ecosystem resilience/microclimate/ soil fertility	[Asset-Income]	+	+++
Ecosystem services: Food /fruits/medicine	[Asset-Income]	-	+++
Reduce pressure on natural forest	[Asset-Income]	+++	+

+++: high positive impact; ++: positive impact;
 +: limited positive impact; -: zero positive or potential negative impact



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Cost of inaction

- by 2060, the cost of inaction on climate change is predicted to reach a staggering **\$44 trillion**,
- anticipated GDP losses in the Middle-East, Northern, and Sub-Saharan Africa, and South and Southeast Asia
- Reversal of economic gains attained so far
- disasters between 2015-2021 cost Africa 12.3% of its GDP,
- a significant amount of loss,
- harsh economic consequences, major disruptions to national, regional and international markets,
- far-reaching impacts on the socioeconomic well-being of its citizens

Cost of CC

- In 2018, 14 extreme-weather events occurred
- Resulted in more than \$1 billion in damages. (UN)
- Past 30 years, extreme rainfall events more frequent, more severe
- biodiversity loss, water shortages, reduced food production, loss of lives and reduced economic growth.”
- Intense and frequent disaster, *Cyclone Freddy in Malawi, and floods in Nigeria and South Africa have exacted a staggering death toll*
 - ✓ Cyclone Freddy: deadliest tropical cyclone on record for Africa,
 - ✓ surpassed Cyclone Idai of 2019
 - ✓ Freddy left 679 dead and 537 people
 - ✓ in Malawi, with additional fatalities in Madagascar (17), Mozambique (198), Zimbabwe (2), and Mauritius (1)
- 2020-22 rainfall deficit due to La Niña and a phenomenon
- Africa to most severe climate change impacts of any place on Earth.

Facts 9: People

- average number of people exposed to rising temperatures
- approximately 125 million since the beginning of the century (Source: UN)
- Africa expected to suffer the most



Theory to Action: Means of implementation

- Capacity
- Technology
- Finance

URGENT ACTION

- biggest challenges that African societies are facing
- African communities are vulnerable due to limited ability to cope and adapt
- a question of survival rather than debate
- Without action the future is bleak



INCLUSIVE INVOLVEMENT & ACTIONS

- impacts are spreading widely and rapidly
- inclusive and proactive involvement of stakeholders required
- practical investment in knowledge building and practical resilient actions
- we all have a stake and role to play
- talk alone is inadequate



RESPONSIBILITY

- High expectations at local level
- business as usual is not an option
- need for practical transformative ideas
- the pendulum is ticking
- we are losing time
- Need for joint actions



END



- THANK YOU FOR YOUR ATTENTION