



CLIMATE CHANGE & IWRM

A presentation to Runde SCCs Councillors
Induction Programme by Eng. T.Murinye.
(Pr.Eng.) : TA CRIDF.



What is Climate Change?

- ❑ Climate Change which is also called Global Warming refers to the rise in the average surface temperature of the Earth.
 - Emissions from human activities are increasing atmospheric concentration of greenhouse gases and this enhances the greenhouse effect resulting in an additional warming of the earth's surface.
 - More than 80% of these emissions are generated in the industrialized/developed countries and the balance in the developing countries.



What are the causes of Climate Change?

- ❑ Global Warming is primarily caused by human use of fossil fuels (coal and oils) which release Carbon Dioxide (CO₂) and other GreenHouseGases (GHGs) into the atmosphere.
- ❑ The GHGs form an increasingly thickening blanket/shield which traps the sun's heat under it resulting in a steady rise/increase in the Earth's temperature.
- ❑ Deforestation diminishes the natural environment's capacity to absorb Carbon Dioxide which is released from various processes. This Carbon Dioxide finally becomes part of the ever thickening blanket referred to earlier – thus worsening Global Warming.



GHGs Contribution by Sector

Sector	%age contribution
1. Energy – fossil fuels, petroleum etc;	• 46
2. Industry – mainly chlorofluoro carbons;	• 24
3. Forestry – deforestation, biomass burning etc.	• 18
4. Agriculture – livestock & rice cultivation(methane);	• 9
5. Others – landfills etc	• 3%



GreenHouse Gases (GHGs):

- Carbon Dioxide CO_2
- Methane CH_4
- Nitrous Oxide N_2O
- Chlorofluoro-carbons – CFCs



Effects of Global Warming.

- ❑ Rising temperatures result in Polar Ice Caps melting leading to rise in mean sea level – some islands and coastal settlements are slowly sinking.
- ❑ Warming ocean temperatures are associated with more frequent storms and floods – potential hazards.
- ❑ Extreme weather – heatwaves can cause loss of life especially among the vulnerable members of society.
- ❑ Incidents of droughts increase and wildfires threaten human & wildlife habitats and life.



UN Conventions & Protocols:

- ❑ UN Framework Convention on Climate Change (UNFCCC): An intergovernmental treaty developed to address challenges of Climate Change. Was signed at UN Earth Summit June 1992 & effective March 1994 on ratification thresholds.
- ❑ Parties meet regularly in Conference of Parties (COP) to review progress and map way forward. COP is highest decision making body.
- ❑ The 1997 Kyoto Protocol obliges industrialized countries to cut GHGs emissions by some agreed proportion – came into force in February 2005.
- ❑ UNFCCC provides for financial mechanisms to support developing countries through the Global Environmental Facility (GEF).



Conventions & Protocols...(cont'd).

- ❑ UNFCCC is serviced by a permanent secretariat based in Bonn-Germany.
- ❑ The Intergovernmental Panel on Climate Change (IPCC) was jointly established by the United Nations Environment Programme (UNEP) & World Meteorological Organization in 1988 and is based in Geneva-Switzerland.
- ❑ IPCC purpose is to review and assess recent scientific, technical and socio-economic information generated world wide and relevant to climate change and presenting it to policy/decision makers for their use.



Climate Change Impacts:

- ❑ Agricultural production & food security will be compromised;
- ❑ Water stress will be aggravated;
- ❑ Ecosystems will change at a faster rate;
- ❑ Human health will be under threat e.g. due to heatwaves, malaria, cholera etc;
- ❑ Droughts will intensify including mid-season dry spells;
- ❑ Floods, hail storms, whirlwinds etc will be more intense & erratic hence posing serious hazards;
- ❑ More areas are going to be marginal in terms of agricultural activities which would no longer be sustainable;
- ❑ Timing & amount of rainfall increasingly uncertain- distribution erratic in space & time hence threatening rural livelihoods.



Who is VULNERABLE to Climate Change?

- ❑ VULNERABILITY refers to the combined measure of threats to a particular system. It is the degree to which the system is susceptible to or unable to cope with the adverse effects of Climate Change including variability and extremes.
- ❑ At a global level developing countries with 75% of world population are most vulnerable to adverse effects of climate change due to:
 - Limited access to necessary information;
 - Poor infrastructure & support systems;
 - Limited human & financial resources.
- ❑ At home it is the women, children and the disabled who are most vulnerable.



Vulnerability in Zimbabwe:

- ❑ About 70% of population lives in rural areas depending on rain-fed agriculture. Livelihoods are under threat from climate change induced droughts & floods.
- ❑ 70% of Zimbabwean women are smallholder farmers depending on rain fed agriculture.
- ❑ Children and youths constitute the greater proportion of Zimbabwe's population. The future belongs to them hence they must be included in climate change policies, strategies and action plans.
- ❑ The sick and disabled are particularly vulnerable to extreme whether events like heatwaves and flooding.



Responses to Climate Change Impacts:

- ❑ MITIGATION – Any strategy or action taken to remove GHGs that are released into the atmosphere or to reduce their amount.
 - (IPCC) – Technological change and substitution that reduce resource inputs and emissions per unit output with respect to climate change;
 - Mitigation means implementing policies to reduce GHGs emissions and enhance SINKS.



Responses to Climate Change Impacts:

- ADAPTATION to Climate Change refers to adjustment in natural or human systems in response to actual or expected climatic stimuli or their effects which moderates harm or exploits beneficial opportunities.
 - Adaptation refers to the ability to adjust to climate change in order to reduce vulnerability and enhance resilience to observed and anticipated impacts. It can involve:
 - ✓ changes in social & environmental processes;
 - ✓ Perceptions of Climate Change risk;
 - ✓ Practices and functions to reduce risk;
 - ✓ Exploration of new opportunities to cope with the changed environment.



Some MITIGATION Measures:

- **CONSERVE FORESTS** – Do not cut trees : In Climate Change language Forests are called **CARBON SINKS** : The mechanisms that take carbon out of the atmosphere are called carbon sinks. Forests are a big carbon sink and deforestation is reducing the size of this sink allowing more carbon dioxide to remain in the atmosphere.
- **DRIVE LESS** – The more you drive, the more GHGs you directly emit to the atmosphere. Use public transport, bike or walk. Optimize fuel efficiency by driving at lower speeds. Mobile air-conditioners in vehicles cause more emissions.
- **USE LESS ELECTRICITY**- If you reduce electricity demand by minimizing air conditioner use, heaters, computers etc you are reducing GHGs. Renewable energy is best option to follow.



Mitigation Measures ...(cont'd).

- **BUY SMART** – stop buying products that contain powerful GHGs, use less air-conditioning in car/home/work, use less refrigerators, avoid foam products & aerosols (hairspray, shaving cream etc);
- Minimize emissions from agricultural activities eg improved livestock waste management etc;
- Use cleaner energy sources and technologies to reduce emissions eg hydropower, nuclear, wind, gas etc;
- **SPREAD THE WORD** – share your climate change knowledge and experience with colleagues, family and friends. A well informed population is essential to promote awareness of issues & provide guidance on positive practices.



Some Adaptation Strategies:

- ❑ Build robust infrastructure (roads, bridges, dams etc) that will stand extreme weather events like floods & high winds;
- ❑ Build and/or rehabilitate large and small scale irrigation schemes to counter droughts and deforestation;
- ❑ Use water & energy efficient irrigation technologies like drip rather than flood & sprinkler irrigation;
- ❑ Improve rain fed crop production by optimizing crop mix;
- ❑ Improve livestock production by optimizing breed mix;
- ❑ Conserve nature as alternative source of livelihood eg CAMPFIRE;
- ❑ Develop emergency & disaster preparedness policies & programmes.



Adaptation.....(cont'd):

- Assessing areas prone to flooding due to burst river banks or sea level rise & develop comprehensive management plans to reduce future vulnerabilities of people settled in those areas;
- Planting more trees to counter threats of desertification.



Women, children & Climate Change:

- ❑ Women constitute 70% of smallholder farmers relying on rain-fed agriculture – very vulnerable in that respect;
- ❑ Women are usually responsible for household water supply- climate change brings a huge burden on them;
- ❑ Women take care of the children, the sick, the elderly & the disabled. Together with these, they are a vulnerable group;
- ❑ For the above reasons, there must be full representation and participation of women at all policy, planning and management levels relating to climate change matters.
- ❑ Gender mainstreaming in Climate Change Interventions is a MUST.



IWRM & Climate Change:

- ❑ IWRM approach promotes co-ordinated development and management of water, land and related resources in order to maximize economic and social welfare of stakeholders in an equitable manner without compromising the sustainability of vital ecosystems.
- ❑ IWRM Components include:
 - ✓ Managing water, land & other resources etc at basin level;
 - ✓ Optimizing supply including recycling – efficiency;
 - ✓ Managing demand- cost recovery & efficient technologies;
 - ✓ Equitable access to cater for the marginalized & vulnerable;
 - ✓ Establishing policy- polluter pays, norms & standards;
 - ✓ Inter-sectoral Approach- involve all stakeholders.



IWRM & Climate Change....(cont'd):

- IWRM essentially takes care of all the necessary mitigation and adaptation measures that are necessary to counter the negative impacts of Climate Change;
- Challenge is whether IWRM is being practised to the fullest eg Do Catchment Councils have power to arrest a person who is destroying trees in the basin? Are activities of EMA and CCs/SCCs, ZINWA, Ministry of Environment, Water & Climate etc co-ordinated?
- Once IWRM is properly implemented, huge progress would have been made in Climate Change Mitigation & Adaptation at River Basin level.



YOUR CHALLENGE!

- Play your part in mitigating negative climate change impacts by effectively practising IWRM in your Sub-Catchment.

• HAVE A PLEASANT DAY.