

Global Climate Change and its Implications on National Security: How Prepared is Zambia?

Presented by: **George Kampamba** [gkampamba@gmail.com]
The Copperbelt University, P. O. Box 21692, Kitwe, Zambia.

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Overview

- Introduction
- Global climate change context
- Why should we be concerned about climate change?
- Climate impacts and vulnerability in Zambia
- Key sector & ecosystem vulnerabilities
- Key issues
- Conclusion and recommendations

Introduction

- The traditional view of national security is building military and intelligence capability of a nation
- A new dimension is viewing global climate change as the new security threat
- Climate change relates to traditional security concerns – how it may induce mass displacement, violent conflict, destruction of property and widespread epidemics

Introduction

- Climate change may undermine national security depending on a country's capacity to adapt to changes in climate
- Zambia has experienced destructive natural events associated with climate change such as floods and droughts that threaten national security

Global climate change context

- Climate change makes reference to significant changes in global temperature, precipitation and wind patterns that occur over several decades or longer (IPCC, 2007: Climate Change 2007)
- Scientists have projected the Earth's mean surface temperature to rise by 1.4 to 5.8°C between 1990 and 2100

Global climate change context

- It is plausible that rise in temperature may cause environmental changes, such as melting of ice, changing wind movement and occurrence of hurricanes
- Certain areas will experience floods and drought and others occurrence of climatic phenomena such as tsunami
- IPCC (2013) described climate change as “inevitable” in view of changes in weather parameters of the 20th century

Global climate change context

- Combined land and ocean surface temperature data shows a warming of 0.65 to 1.06°C over the period 1880 to 2012
- The total mean temperature increase for the period 1880 to 1900 and the period 2003 to 2012 is 0.72 to 0.85°C
- Potential for severe and irreversible climate changes may cause sea level rises > 10 m

Why climate change source of concern?

- At national level, environmental change can induce resource depletion and decline in economic output
- At community level, abandoned regions lose labour & productivity while recipient communities could suffer resource depletion
- Household level migration separates families and can cause destitution for households
- Human migration may result in ethnic conflict

Climate impacts and vulnerability in Zambia

4.1 Historic weather and climate

- Temperatures have increased by 1.3°C since 1960, warming at an average rate of 0.29°C every decade
- Annual rainfall has been decreasing at 1.9 mm every decade since 1960
- Frequency and intensity of drought and flooding events have been increasing

Climate impacts and vulnerability in Zambia

4.2 projections

- Annual temperatures will rise from an average of 1.2 – 3.4°C in 1970 – 1999 to 1.6 – 5.5°C by the 2090s
- It is plausible that there will be an overall decrease in annual rainfall
- An increase in frequency and intensity of heavy rainfall during wet seasons is also possible

Key sector vulnerability in Zambia

5.1 Food security

- Agriculture accounts for 18 – 29 % of the country's GDP and about two thirds of the nation's labour is employed by the sector
- In addition, 50 % of the country is dependent on agriculture for livelihoods

Key sector vulnerability in Zambia

5.1 Food security

- Farmers in central and southern provinces of Zambia are prone to drought, experience low and unevenly distributed rainfall
- High rainfall variability and limited irrigation capacity make agriculture and livestock production vulnerable

Key sector vulnerability in Zambia

5.1 Food security

- Degradation of range land for grazing due to increase in temperatures and high frequency of drought may lead to loss of livestock, threatening food security
- As a result of heavy rainfall floods have affected agriculture by inundating fields, destroying crops resulting in increased malnutrition and hunger and loss of livestock

Key sector vulnerability in Zambia

5.2 Water resources

- Surface water is unevenly distributed in the country and southern province experiences water scarcity
- Increase in heavy rainfall and flooding events in recent years will increase siltation of rivers and streams
- Heavy rainfall will carry point and non-point source pollutants compromising water security

Key sector vulnerability in Zambia

5.3 Hydroelectric power generation

- Climate change will negatively affect the generation of hydroelectric power along the Zambezi, Kafue and Kabompo rivers
- Prospects for increased power generation through the construction of the hydropower plants on will diminish

Key ecosystem vulnerability in Zambia

6.1 Forests and grasslands

- Savannas consist of 49 % of total land area while forests comprise about 16 % of Zambia's land area
- Forests and grasslands are important for wildlife resource which accounts for tourism
- Rise in temperature increases flood events and decreases rainfall resulting in loss of biodiversity and tourism revenue

Key ecosystem vulnerability in Zambia

6.1 Forests and grasslands

- Increased incidence of forest fires, occurrence of range pests and pathogens is expected
- Despite these projections the Forest Act does not emphasise on climate change and how it will impact forests areas

Key ecosystem vulnerability in Zambia

6.2 Terrestrial Wildlife

- About 30 % of Zambia's total land mass is in wildlife protected areas
- Wildlife in these areas is a source of tourism revenue, source of livelihoods and economic growth
- Drought and reduction in rainfall may induce water scarcity and reduce habitat quantity and quality for wildlife species

Key ecosystem vulnerability in Zambia

6.2 Terrestrial Wildlife

- Uncontrolled fires may reduce wildlife species diversity, distribution and quality of ecosystems
- Drought and reduced rainfall may induce uncontrolled wildlife migration resulting in increased human-wildlife conflicts
- Flooding events will increase crocodile range and threaten human life

Key ecosystem vulnerability in Zambia

6.2 Terrestrial Wildlife

- The Zambia Wildlife Act prohibits introduction of pollutants in protected areas
- However, climate variation in particular is not provided for in the policy and the Act

Key ecosystem vulnerability in Zambia

6.3 Aquatic and semi-Wildlife

- Environmental change will impact Semi-aquatic endemic Kafue lechwe, sedentary and migrant waterfowls of the Kafue Flats
- Rising temperatures and drought events will change levels of water bodies along river channels and lakes and degrade fish and wildlife habitat

Differential ecosystem vulnerability to climate stressors & Perspectives for Internal Migration in Zambia

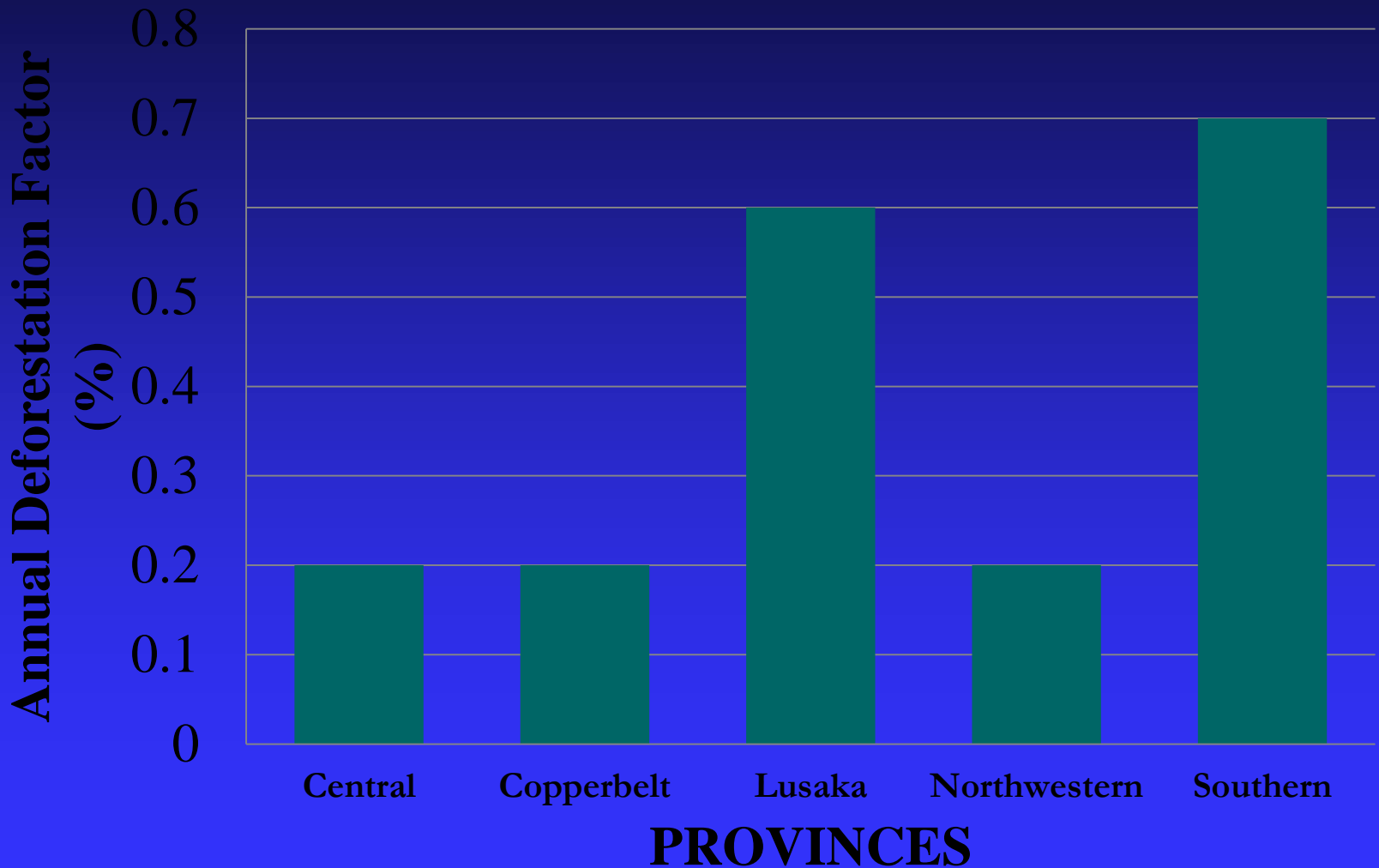
7.1 The Case of Southern Province of Zambia

- The people (Tonga) of Southern Province depend on crop-livestock farming systems for their livelihoods
- Before the coming of colonial rule, the Tonga people practiced shifting cultivation and cattle rearing
- By 1903 the first European farmers began to settle in Choma, Kalomo and Mazabuka

Differential ecosystem vulnerability to climate stressors & Perspectives for Internal Migration in Zambia

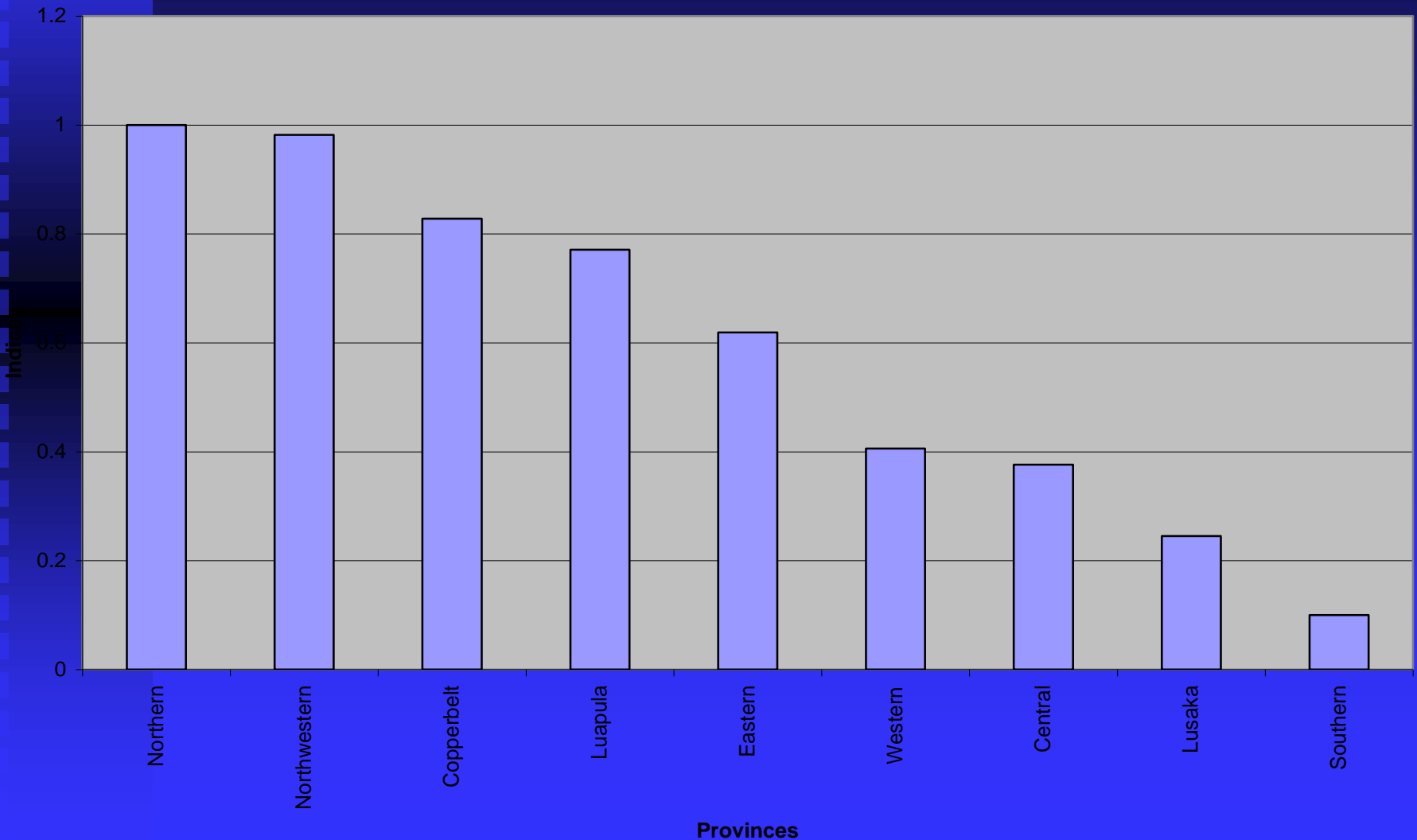
- ❑ The Tonga people of Southern province adopted these new agricultural practices (*Stumping out trees and breaking the soil for sowing*)
- ❑ You may over utilise environmental resources for economic development
- ❑ However, remember that at some point you will pay back heavily

Annual Deforestation Rates of Provinces in 1986



Long-term (1960-2008) Mean Rainfall Indices for Provinces of Zambia

Long-term Mean Rainfall Indices for Provinces of Zambia



Chronology of climatic hazards in Zambia

Year	Disaster	Killed	Total affected
1978	Flood	11	30,900
1981	Drought		0
1983	Drought		0
1989	Flood		800,000
1990	Drought		1,700,000
1995	Drought		1,273,204
1998	Flood		1,300,000
2000	Flood		12,000
2001	Flood	5	617,900
2003	Flood		10,000
2003	Flood	4	1,000
2004	Flood	2	196,398
2005	Flood		4,000
2005	Drought		1,200,000
2007	Flood	4	1,400,000
2007	Flood		118,755
2007	Flood	1	34,776
2008	Flood	4	15,000

Maize Production by Province in Zambia

PROVINCE	1981		1992 (Drought Year)		2008	
	Production (tonnes)	Yield (tonnes/ha)	Production (tonnes)	Yield (tonnes/ha)	Production (tonnes)	Yield (tonnes/ha)
CENTRAL	465,300	2.99	172,794	1.70	313,694	5.00
COPPERBELT	43,326	1.40	32,348	1.61	104,748	5.00
EASTERN	238,590	1.60	82,317	0.32	267,596	4.00
LUAPULA	21,130	1.48	29,027	2.26	40,008	4.60
LUSAKA	43,830	1.27	39,470	0.82	40,692	5.04
NORTHERN	53,649	1.34	71,983	1.97	171,232	5.19
N/WESTERN	11,655	1.17	16,602	1.39	60,561	4.84
SOUTHERN	553,230	4.03	25,214	0.19	106,891	2.17
WESTERN	54,306	1.08	13,733	0.33	36,007	2.99

Impacts of climate change

- ❑ **The 1991/92 Drought** caused total (96%) crop failure resulting in hunger and destitution for the people.
- ❑ **During the 2004/05 drought** 82, 019 persons were at risk of starvation and required 7, 874 tonnes of cereal as relief food
- ❑ **During the 2007/08 floods** income and food stock losses ranged between 40 and 60%.
- ❑ **Damaged** roads, schools, houses, clinics and bridges
- ❑ **Outbreaks** of livestock diseases (Corridor, Foot and mouth and Contagious bovine pleural pneumonia)
- ❑ **Outbreaks** of malaria, cholera and dysentery

Signals of potential ethnic conflicts

- In Chibombo locals felt threatened by farming practices of Tonga migrants.
- In Mkushi the Tonga migrants were demanding to install a chief of their own but were resisted by the host communities.

Source of environmental Scarcity

Social Effects

Deceased in quality and quantity of renewable resources

Population growth

Unequal resources access

Source of environmental Scarcity

Migration expulsion

Decreased economic productivity

Weakened states

Ethnic conflicts

Coups d'etat

Deprivation conflicts

Zambia's preparedness

- Zambia has made strides to prepare for impacts of climate variation. Some of the significant milestones are:
- National Strategy, Plan and Institutions relevant to address climate variation
- National Adaptation Programme of Action (NAPA) (2007), which identifies most vulnerable sectors as well as policies, stakeholders and programmes

Zambia's preparedness

- National Climate Change Response Strategy (NCCRS) (2010), which creates a national institutional and implementation frameworks through climate change adaptation, technology and outreach
- **However, there are important aspects that require attention**
- Linkages between the environment and the economy must be understood by economic planners and economic advisors

What are the key issues?

- What is more important, environment or the economy?
- What is the link between economics, environment and climate change?
- **11.1 The environment vs economic debate**
- In the environment vs economic conversation, we often decide to ignore the fact that natural capital (forests, rivers, land) provide ecosystem services without which we as a species would not survive

Key issues

- Although, there are links between the economy and the environment we know that the environment, forests and wildlife have got the short end of the stick
- The environment provides raw materials to the economy
- Resources act as a sink for emissions and waste from the economy
- Thus, natural resources are key to securing economic growth

Key issues

- Thus, there should a paradigm shift from economics vs environment to environmental economics
- Environmental economics is critical in identification of apportions for efficient natural resources use that provide for sustainable development

Key issues

(i) Adaptation and coping strategies

- Rural people have always adapted to a changing environment
- They have developed sophisticated and sustainable strategies to cope with environmental changes
- They interpret and respond to climate change in creative ways
- They draw on indigenous knowledge of the natural resource base
- The *only issue* is that they lack other technologies to find solutions

Key issues

(ii) Legal and institutional barriers

- The main barrier to peoples' coping and adaptation capacities is the lack of recognition and promotion of their *human rights*
- Rural people are among the most affected by climate change
- But peoples' rights and concerns have so far been almost invisible in the climate change discussions at national level

Key issues

(iii) Legal and institutional barriers

- Lack of involvement of rural people in decision making processes as well as design and implementation of initiatives to address climate change at the national level
- The livelihoods and cultures of people depend on their abilities to adapt to climate change
- Rural people should take part in shaping the new forms of economies, governance and livelihoods necessary to meet climate change challenges

Key issues

(iv) Legal and institutional barriers

- Despite recognition by the CBD, the importance of indigenous knowledge has not been recognized in relation to climate change
- Contributions of indigenous knowledge to find appropriate solutions to mitigate effects of climate change is yet to be acknowledged

Key issues

(v) Legal and institutional barriers

- People lack information on climate change policies and interventions
- They are provided with neither *technology* nor *financial resources* to adequately respond to climate change

Recommendations

a) **The Zambian Government**

(i) Create a Ministry or Department of Environmental Change and National Security

(ii) Take a lead in ensuring meaningful climate change meetings and negotiation processes leading up to agreement

(ii) Ensure that the official *Strategy for support to rural people* is developed and implemented as government commitment and initiatives to address climate change

Recommendations

(b) Governments and inter-governmental institutions

(i) Ensure full and effective participation of rural people in the conception, design and implementation of sustainable solutions to combat climate change

- Rural peoples' right to participate has been confirmed by Agenda 21

Recommendations

(b) Governments and inter-governmental institutions

(ii) Ensure the full and effective participation of rural people in the United Nations Framework Convention on Climate Change, including the meetings and negotiation processes;

(iii) Ensure that climate change policies and programmes affecting rural people are fully complied with

Recommendations

(b) Governments and inter-governmental institutions

(iv) Promote the implementation of international human rights standards, including the principle of Prior Informed Consent

- This commitment must encompass all multi- and bilateral agreements and initiatives on climate change

Recommendations

(b) Governments and inter-governmental institutions

(v) Develop mechanisms to avoid ill-conceived climate change mitigation policies and schemes that risk violating the rights of local people

(vi) Respect and take into account indigenous traditional knowledge when identifying and designing climate change mitigation policies and programmes;

Recommendations

(b) Governments and inter-governmental institutions

(vii) Address legal and institutional barriers that promote climate change impacts by supporting deforestation

(viii) Develop mechanisms to ensure that information on planned and current mitigation and adaptation schemes is made available to local peoples

Recommendations

(b) Governments and inter-governmental institutions

(ix) Support initiatives to conduct participatory and multi-disciplinary research with and among local people in the context of climate change

(x) Engage in productive collaboration with civil society partners

Recommendations

(c) Universities and research institutes

(i) Allow indigenous knowledge to become an integral part of climate change research

(ii) Identify and promote best practices and lessons that can influence climate change interventions to have positive impacts on indigenous peoples

Recommendations

(c) Universities and research institutions

(iii) Conduct participatory and multi-disciplinary research with and among local people in the context of climate change

(iv) Ensure that relevant research results are made available to local people and to national, regional and international policy makers

Recommendations

- (d) Civil society partners (international and national)**
 - (i) Support indigenous peoples' meaningful participation in international and national climate change fora
 - (ii) Support indigenous peoples' participation in the search for sustainable solutions to combat climate change
 - (iii) Support peoples' capacities to negotiate with private companies and governments

Recommendations

(d) Civil society partners (international and national

(iv) Support local peoples' networking on climate change issues;

vi) Facilitate dissemination of relevant research information and documentation to local people and partners;

Is Zambia prepared to cop, adapt and mitigate impacts of climate change right now?

Well, a lot still needs to done



Thank you for your attention